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| Chairman, ITU-D Study Group 2 | | | | |
| Revised terms of reference for Study Group 2 Questions | | | | |
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| **Summary:**  As per TDAG decision taken at its 28th meeting (24-28 May 2021), an additional set of Study Group 2 meetings were held from 18 to 22 October 2021 to, amongst others, refine the terms of reference (ToRs) of Questions which were submitted as part of the contingency proposals in Document [TDAG-21/10](https://www.itu.int/md/D18-TDAG28-C-0010/en) Item 2.  During the last Study Group meetings, consensus was reached on the revised ToRs for the seven Study Group 2 Questions. These agreed ToRs are submitted in this document. The revision marks indicate changes between the approved ToRs at WTDC-17 and the revised ToRs agreed at the SG2 meetings held in October 2021.  **Action required:**  TDAG is invited to examine the revised ToRs annexed to this document and take any further action as deemed appropriate.  Note: any annex included is not part of the revised ToR. It is provided for information and should be noted.  **References:**  [TDAG-21/39](https://www.itu.int/md/D18-TDAG28-C-0039), [TDAG-21/10](https://www.itu.int/md/D18-TDAG28-C-0010), [TDAG-21/2/6](https://www.itu.int/md/D18-TDAG29-C-0006) | | | | |

## STUDY GROUP 2

| **QUESTION 1/2**  **Creating smart cities and society: Employing information and communication technologies for sustainable social and economic development** |
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| Statement of the situation or problem All areas of society – culture, education, health, transport, trade and tourism – will depend for their development on the advances made through information and communication technology (ICT) systems and services in their activities. ICTs can play a key role in the protection of property and persons; smart management of motor vehicle traffic; saving electrical energy; measuring the effects of environmental pollution; improving agricultural yield; increasing efficiency in global travel and tourism; management of healthcare and education; management and control of drinking water supplies; and solving the problems facing cities and rural areas. This is the smart society. Similarly, as highlighted by the World Summit on the Information Society (WSIS), ICT applications can support sustainable development in public administration, business, education and training, health, the environment, agriculture and science within the framework of national cyber strategies.  The United Nations 2030 Agenda for Sustainable Development recognizes the enormous possibilities offered by ICTs and calls for significant increase in access to such technologies, which have a decisive contribution to make in support of implementation of all the Sustainable Development Goals (SDGs). ITU therefore deems it a priority to support its membership in achieving the SDGs, in close collaboration with other associates.  Delivering the promise of the smart society relies on three technological pillars – connectivity, smart devices/terminals and software – as well as on sustainable development principles.  Connectivity or the underlying infrastructure encompasses both traditional and emerging networks and technologies. It is a key enabler upon which all smart services could be provided. Examples include machine-to-machine (M2M) communication, the Internet of Things (IoT), and resulting applications and services such as e‑government, traffic management and road safety.  It is estimated that at present over 50 per cent of IoT activity is focused on manufacturing, transport, smart cities and user applications, but that in the future all industries will be able to benefit from IoT initiatives, highlighting and enabling new business models and workflow processes.  Smart devices/terminals are the things and edge components that are connected via the enabling infrastructure and connectivity layer to exchange data between the field and the city operation centre. Cars, traffic lights and cameras, water pumps, electricity grids, home appliances, street lights and health monitors are all examples of things that need to become smart so as to deliver significant advancements towards the achievement of sustainability, economic and social goals. This is especially important in developing countries[[1]](#footnote-1)1.  Then the role of software development gets essential to make use and capitalize on the first two pillars (connectivity and terminals), such that all three pillars can function altogether to support new services that would never have been possible before. Software includes both the city platform which interfaces with all terminals seamlessly as well as the specific-service functions that are tailored to perform each vertical application or service in the city.  It will be possible for the work carried out under this study Question to be founded on Resolutions 139 (Rev. Busan, 2014), on the use of telecommunications/ICTs to bridge the digital divide and build an inclusive information society, and 197 (Busan, 2014), on facilitating IoT to prepare for a globally connected world, of the Plenipotentiary Conference; Resolutions 44 (Rev. Hammamet, 2016), on bridging the standardization gap between developing and developed countries, and 98 (Hammamet, 2016), on enhancing the standardization of IoT and smart cities and communities (SCCs) for global development of the World Telecommunication Standardization Assembly; and Resolution ITU-R 66 (Geneva, 2015) of the Radiocommunication Assembly, on studies related to wireless systems and applications for the development of IoT. Question or issue for study  1. Based on the statement explained in Section 1 above the issue of study will revolve around the main three pillars in addition to other complementary components as follows:Using the notion of smart cities and communities (SCCs) to enlarge the scope of study and include smart villages and any form of communities. 2. Raising awareness and sharing experiences on improving connectivity and underlying infrastructure to support the smart society and potential smart services including smart grids, public administration, transport, business, education and training, health, the environment, agriculture, tourism and science. 3. Examination of best practices for fostering and enabling deployment and use of smart devices/terminals used for providing smart services in the city/society. 4. Survey of methods and examples of how software and platforms, both open-source and/or proprietary, enables connectivity of smart devices/terminals and integration of data for supporting smart services, cities and communities. 5. Studying policies and business models that ensure involvement of different stakeholders and yield sustainable development of smart cities and communities. 6. Discuss and share reference data management architectures that would promote and enable development of smart cities and communities. 7. Defining performance benchmarks and assessment mechanisms for smartness in terms of quality-of-life, technical aspects, and policy mechanisms. . 8. Sharing of experiences and best practices in building smart cities and choosing/providing smart services and applications. 9. Promotion of capacity building and the acquisition of knowledge on ICTs for adoption of the skills required for development of a smart society. 10. Encouraging city planners and city officials to participate in the study and share their experiences.  Expected output The output expected from this Question will include:  a) Guidelines on policy approaches to facilitate the development of ICT applications in society, fostering social and economic development and growth.  b) Case studies on the application of IoT, communications and ICT applications in building SCCs, identifying the trends and best practices implemented by Member States as well as the challenges faced, in order to support sustainable development and foster smart societies in developing countries.  c) Increasing awareness among relevant participants regarding the adoption of open-source strategies for enabling access to telecommunications, and studying the drivers for increasing the degree of preparedness to use and develop open-source software to support telecommunications in developing countries, as well as creating opportunities for cooperation between ITU members by reviewing successful partnerships.  d) Analysis of factors affecting the efficient roll-out of connectivity to support ICT applications that enable e‑government applications in SCCs.  e) Organization of workshops, courses and seminars for the development of capacities allowing improved uptake of ICT applications and IoT.  f) Annual progress reports, which should include case studies, and a detailed final report containing measurement analysis, information and best practices, as well as any practical experience acquired in the areas of use of telecommunications and other means of enabling ICT applications and connecting devices for development of the smart society.  g) Development of a city’s ability to respond to crises like the global pandemic through smart cities with special emphasis on a contactless society and continuity of urban systems. Timing A preliminary report should be submitted to the study group in 2020. The studies should be concluded in 2021, by which time a final report will be submitted. Proposers/sponsors The Question was approved by WTDC-17, on the basis of Questions 1/2 and 2/2. Sources of input a) Progress on study of the Questions relevant to this issue in the ITU Telecommunication Standardization Sector (ITU‑T) and ITU Radiocommunication Sector (ITU‑R) study groups.  b) Contributions from Member States, Sector Members, Associates, other United Nations agencies, regional groups and Telecommunication Development Bureau (BDT) coordinators.  c) Progress of BDT initiatives with other United Nations organizations and the private sector on using ICT applications for development of the smart society.  d) Progress on any other relevant activity carried out by the ITU General Secretariat or BDT. Target audience  | Target audience | Developed countries | Developing countries | | --- | --- | --- | | Telecom policy-makers | Yes | Yes | | Telecom regulators | Yes | Yes | | Service providers/operators | Yes | Yes | | Manufacturers (telecommunication/ICT equipment manufacturers, automobile industry, etc.) | Yes | Yes | | Corresponding ministries | Yes | Yes | | BDT programmes | Yes | Yes | | City planners and operational managers | Yes | Yes |  a) Target audience – Who specifically will use the output Relevant policy‑makers, regulators and participants in the telecommunication/ICT and multimedia sectors, as well as manufacturers, service providers and city planners and operational managers. b) Proposed methods for the implementation of the results In guidelines for implementing BDT regional initiatives. Proposed methods of handling the Question or issue Within ITU-D Study Group 2. Coordination and collaboration  * The relevant Questions under both ITU-D Study Groups 1 and 2. In particular joint collaboration is sought with Q1/1 (for broadband and connectivity infrastructure), Q4/1 (for business models and economics) and Q3/2 (on data management and trust-related issues). * The relevant BDT unit dealing with the Question issues * Relevant work in progress in the other two ITU Sectors * Connection between the Question and other development projects carried out by ITU (e.g., BDT projects) * Broad cooperation with other UN agencies in the relevant fields for creating a smart city or community.  BDT programme link All BDT programmes are concerned by the Question as regards, in particular, aspects relating to information and communication infrastructure and technology development, ICT applications, enabling environment, digital inclusion and emergency telecommunications. Other relevant information To be identified later during the life of this new Question. |

| **QUESTION 2/2**  **Telecommunications/information and communication technologies for e-health** |
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| Statement of the situation or problem In order to continue to contribute and to promote attainment of the UN Sustainable Development Goals (SDGs) defined in September 2015 and objectives set by the Geneva Plan of Action of the World Summit on the Information Society (WSIS) in the era of digital transformation, it is necessary to address the challenge of digital infrastructure development to make available consequent benefit in developing countries.  In developing countries, especially in the remote areas, there are few health professionals, and the UN's goal of "minimum health care for all” will not be achieved by 2030 without the use of eHealth technology.  The coronavirus pandemic has made it more difficult to meet people in person, and the relationship between patients and medical doctors, pregnant women and midwives, and elderly people and visiting nurses has begun to change in many ways in the medical field. A particularly significant change is the increased adoption of telemedicine (or online medical consultation) and eHealth (digital health), including initial consultations, in many countries, which has connected medical professionals with citizens. While not all medical care can be implemented online, at least the actual operation of telemedicine is undergoing a significant change from the era of research level to the era of practical use. Such approaches are also efforts towards a more gender-balanced perspective, whether in developed or developing countries.  The ITU-D SG2 Q2/2 has a very important role to play in this major historical trend. There are many issues to be addressed, such as high-definition image diagnosis, remote robotic surgery as a progress of 5G applications, and healthcare big-data processing technology linking with networks. In addition to these goals, the fight against the recent pandemic is far to be tackled, so we shall carefully study new eHealth technologies to protect people's lives. Question or issue for study The scope of activities are:   * to introduce best practice models for eHealth in developing countries; * to study on eHealth application for the 5th generation mobile communications system; * to study on eHealth application related remote robotic surgery and other eHealth applications with ultrahigh definition TV technologies over the 5th mobile communication networks; * to study on other new eHealth technologies combating pandemics; * to support healthy living for elderly dementia, and telepsychiatry for patients confined to a closed space under the environment of pandemics; * to study on social reception related to eHealth, especially in developing countries; * to introduce and disseminate ITU-T’s eHealth standardizations to developing countries; * to provide content that supports human resource development in this field; * to assist BDT’s eHealth program and/or workshop/symposium.  Expected output The output will be a report on the results of the work conducted for each item studied, together with a handbook, case study analysis reports, and other relevant materials at appropriate times, either during the course of or at the conclusion of the cycle.  Information shall be consolidated and disseminated to the membership to organize/support seminars and workshops for sharing best practices on the deployment of eHealth in developing countries. Specifically, study outputs may promote gender equality and greater access by women to communication technologies, as well as to employment, health and education. Timing The output will be generated on an annual basis. The output of the Question will be completed during the study cycle.  4.1 Annual progress reports should be submitted to ITU-D Study Group 2.  4.2 Draft final reports and guidelines should be submitted to ITU-D Study Group 2 within the study cycle.  4.3 The Rapporteur group will work in close collaboration with relevant BDT programmes, regional offices, regional initiatives and relevant ITU-D Questions, and ensure proper liaison with ITU-R and ITU-T Sectors. Proposers/sponsors The Question was originally approved by WTDC-94, and subsequently revised by WTDC-98, WTDC-02, WTDC-06, WTDC‑10, WTDC‑14 and WTDC-17. Sources of input Contributions are expected from Member States, Sector Members, Academia and Associates, as well as inputs from relevant Telecommunication Development Bureau (BDT) programs, particularly those that have successfully implemented telecommunication/ICT eHealth projects in developing countries, especially in rural and remote areas. These contributions will enable those responsible for work on this Question to develop the most appropriate conclusions, recommendations and outputs. The intensive use of correspondence and online exchange of information, workshops and field experiences is encouraged for additional sources of inputs. Target audience  |  |  |  | | --- | --- | --- | | **Target audience** | **Developed countries** | **Developing countries** | | Relevant policy-makers | Yes | Yes | | Telecom regulators | Yes | Yes | | Rural authorities | Yes | Yes | | Service providers/operators | Yes | Yes | | Manufacturers, including software developers | Yes | Yes |    |  |  |  | | --- | --- | --- | | Vendors | Yes | Yes |  a) Target audience – Who specifically will use the output Telecommunication/ICT and health communities, between developed and developing countries and among developing countries, as well as telecom regulators, manufacturers, medical organizations, NGOs and service providers. b) Proposed methods for implementation of the results The outputs of this Question will be distributed through ITU-D reports and made available via the ITU-D website. Proposed methods of handling the Question or issuea) How? 1) Within a study group:  – Question (over a multi-year study period) ☑  2) Within regular BDT activity (indicate which programmes,  activities, projects, etc., will be involved in the work of the study Question):  – Programmes: ICT applications and services ☑  – Projects □  – Expert consultants □  – Regional offices ☑  3) In other ways – describe (e.g. regional, within other organizations  with expertise, jointly with other organizations, etc.) □ b) Why? To take into account the ongoing/planned programmes/regional initiatives and optimize resources. Coordination and collaboration Coordination between the telecommunication/ICT and health communities, between developed and developing countries and among developing countries, as well as telecom regulators, manufacturers, medical organizations, NGOs and service providers. Collaboration with other study group Questions will also be explored, especially Q5/1 (rural communications), with possible joint deliverables. BDT programme link WTDC Resolution 11 (Rev. Buenos Aires, 2017), Resolution 68 (Rev. Dubai, 2014) and Recommendation ITU-D 19.  Links to BDT program aimed at fostering the development of telecommunication/ICT for eHealth as well as relevant applications and services. Other relevant information As may become apparent within the life of the Question. |

| **QUESTION 3/2**  **Securing information and communication networks:  Best practices for developing a culture of cybersecurity** |
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| Statement of the situation or problem The use of telecommunications and information and communication technologies (ICTs) has been invaluable in fostering development and social and economic growth globally. However, despite all the benefits and uses these technologies offer, there are risks and threats to security.  From personal finances to business operations, national infrastructure and public and private services, all transactions are increasingly managed through information and communication networks, making them more vulnerable to some form of attack.  In order to build trust in the use and application of telecommunications/ICTs for applications and content of all kinds, especially those having a major positive impact in economic and social areas where all players exert an effect on the protection of personal data, network security and the actual network user, close collaboration is required between national authorities, foreign authorities, industry, academia and users.  Based on the foregoing, securing information and communication networks and developing a culture of cybersecurity have become key in today’s world for a number of reasons, including:  a) the explosive growth in the deployment and use of ICT;  b) cybersecurity remains a matter of concern of all, and there is thus a need to assist countries, in particular developing countries[[2]](#footnote-3)1, to protect their telecommunication/ICT networks against cyberattacks and threats;  c) the need to endeavour to ensure the security of these globally interconnected infrastructures if the potential of the information society is to be achieved;  d) the growing recognition, at the national, regional and international levels, of the need to develop and promote best practices, standards, technical guidelines and procedures to reduce vulnerabilities of and threats to ICT networks;  e) the need for national action and regional and international cooperation to build a global culture of cybersecurity that includes national coordination, appropriate national legal infrastructures, watch, warning and recovery capabilities, government/industry partnerships and outreach to civil society and consumers;  f) the requirement for a multistakeholder approach to effectively make use of the variety of tools available to build confidence in the use of ICT networks;  g) United Nations General Assembly (UNGA) Resolution 57/239, on creation of a global culture of cybersecurity, invites Member States "to develop throughout their societies a culture of cybersecurity in the application and use of information technology";  h) UNGA Resolutions 68/167, 69/166 and 71/199, on the right to privacy in the digital age, affirm, *inter alia*, "that the same rights that people have offline must also be protected online, including the right to privacy";  i) best practices in cybersecurity must protect and respect the rights of privacy and freedom of expression as set forth in the relevant parts of the Universal Declaration of Human Rights, the Geneva Declaration of Principles adopted by the World Summit on the Information Society (WSIS) and other relevant international human rights instruments;  j) the Geneva Declaration of Principles indicates that "A global culture of cybersecurity needs to be promoted, developed and implemented in cooperation with all stakeholders and international expert bodies", the Geneva Plan of Action encourages sharing best practices and taking appropriate action on spam at national and international levels, and the Tunis Agenda for the Information Society reaffirms the necessity for a global culture of cybersecurity, particularly under Action Line C5 (Building confidence and security in the use of ICTs);  k) ITU was requested by WSIS (Tunis, 2005), in its agenda for implementation and follow-up, to be the lead facilitator/moderator for Action Line C5 (Building confidence and security in the use of ICTs), and relevant resolutions have been adopted by the Plenipotentiary Conference, the World Telecommunication Standardization Assembly (WTSA) and the World Telecommunication Development Conference (WTDC);  l) UNGA Resolution 70/125 adopted the outcome document of the high-level meeting of the General Assembly on the overall review of the implementation of the WSIS outcomes;  m) the WSIS+10 Statement on the implementation of WSIS outcomes, and the WSIS+10 vision for WSIS beyond 2015, adopted at the ITU‑coordinated WSIS+10 high-level event (Geneva, 2014) and endorsed by the Plenipotentiary Conference (Busan, 2014), which were submitted as an input into the UNGA’s overall review on the implementation of WSIS outcomes;  n) WTDC Resolution 45 (Rev. Dubai, 2014) supports the enhancement of cybersecurity among interested Member States;  o) Resolution 130 (Rev. Busan, 2014) of the Plenipotentiary Conference resolves to continue promoting common understanding among governments and other stakeholders of building confidence and security in the use of ICTs at the national, regional and international level;  p) WTSA Resolution 50 (Rev. Hammamet, 2016), highlights the need to harden and defend information and telecommunication systems from cyberthreats and cyberattacks, and continue to promote cooperation among appropriate international and regional organizations in order to enhance exchange of technical information in the field of information and telecommunication network security;  q) the conclusions and recommendations set out in ITU Telecommunication Development Sector (ITU-D) Study Group 2's final report on Question 3/2, to the effect that the activities in the current terms of reference be continued and that evolving and emerging technical threats beyond spam and malware be considered for the next study period;  r) there have been various efforts to facilitate the improvement of network security, including the work of Member States and Sector Members in standards-setting activities in the ITU Telecommunication Standardization Sector (ITU‑T) and in the development of best-practice reports in ITU‑D; by the ITU secretariat in the Global Cybersecurity Agenda (GCA); and by ITU‑D in its capacity-building activities under the relevant programme; and, in certain cases, by experts across the globe;  s) governments, service providers and end-users, particularly in least developed countries (LDCs), face unique challenges in developing security policies and approaches appropriate to their circumstances;  t) reports detailing the various resources, strategies and tools available to build confidence in the use of ICT networks and the role of international cooperation in this regard are beneficial for all stakeholders;  u) spam and malware continue to be a serious concern, although evolving and emerging threats must also be studied;  v) the need for simplified test procedures at basic level for security testing of telecommunication networks to promote a security culture. Question or issues for study a) Discuss approaches and best practices for incidents impacting ICT systems.  b) Discuss approaches and best practices for evaluating the impact of spam and malware within a network, as well as evolving and emerging threats, and provide the necessary input for measures and guidelines, including mitigation techniques and legislative and regulatory aspects that countries can use, taking into account existing standards and available tools.  c) Collect and share the information on current cybersecurity challenges that service providers, regulatory agencies and other relevant parties are facing.  d) Continue to gather national experiences from Member States relating to cybersecurity and child online protection and to identify and examine common themes within those experiences, using that information to provide input for guidelines to assist Member States in developing effective mechanisms for security in the digital environment.  e) Analyse the cybersecurity challenges facing emerging technologies such as Internet of Things (IoT) and artificial intelligence (AI), etc., and measures to address those challenges.  f) Share perspectives regarding how cybersecurity supports the protection of personal data.  g) Promote awareness-raising for users and capacity building regarding cybersecurity.  h) Provide a compendium of relevant, ongoing cybersecurity activities being conducted by Member States, organizations, the private sector and civil society at the national, regional and international levels, in which developing countries and all sectors may participate, including information gathered under d) above.  i) Examine specific needs of persons with disabilities, in coordination with other relevant Questions.  j) Examine ways and means to assist developing countries, with the focus on LDCs, in regard to cybersecurity-related challenges.  k) Collect and share information regarding regulatory policies developed and/or implemented by national competent authorities to build confidence and security in the telecommunication/ICT sector. Expected output a) Reports to the membership on the issues identified in § 2 a) to n) above. The reports in question will reflect that secure information and communication networks are integral to building the information society and to ensuring the economic and social development of all nations. They will also provide contributions that assist countries in formulating guidelines to address cybersecurity challenges.  Cybersecurity challenges include potential unauthorized access to, destruction of and modification of information transmitted on ICT networks, as well as countering and combating spam and malware. However, the consequences of such challenges can be mitigated by increasing awareness of cybersecurity issues, establishing effective public-private partnerships and sharing successful best practices employed by policy-makers and businesses, and through collaboration with other stakeholders.  In addition, a culture of cybersecurity can promote trust and confidence in these networks, stimulate secure usage, ensure protection of data, including personal data, while enhancing access and trade, and enabling nations to achieve the economic and social development benefits of the information society more effectively.  b) Educational materials for use in workshops, seminars, etc.  c) Accumulation of knowledge, information and best practices on effective, efficient and useful measures and activities to enhance cybersecurity in developing countries resulting from ad hoc sessions, seminars and workshops.  d) Holding ad hoc sessions, seminars and workshops to share knowledge, information and best practices concerning effective, efficient and useful measures and activities to enhance cybersecurity, increase confidence and protect data and networks, taking into consideration existing and potential risks for ICTs, using outcomes of the study, to be collocated as far as possible with meetings of ITU-D Study Group 2 or of the rapporteur group for the Question. Timing This study is proposed to last four years, with preliminary status reports to be delivered on progress made after 12, 24 and 36 months. Proposers/sponsors ITU‑D Study Group 2, Arab States, Inter-American proposal, Japan, and the Islamic Republic of Iran. Sources of input a) Member States and Sector Members  b) Relevant ITU‑T and ITU‑R study group work  c) Relevant outputs of international and regional organizations  d) Relevant non-governmental organizations concerned with the promotion of cybersecurity and a culture of security  e) Surveys, online resources  f) Experts in the field of cybersecurity  g) Global Cybersecurity Index (GCI)  h) Other sources, as appropriate. Target audience  | Target audience | Developed countries | Developing countries | | --- | --- | --- | | Telecom policy-makers | Yes | Yes | | Telecom regulators | Yes | Yes | | Service providers/operators | Yes | Yes | | Manufacturers | Yes | Yes | | Academia | Yes | Yes |  a) Target audience National policy-makers and Sector Members, and other stakeholders involved in or responsible for cybersecurity activities, especially those from developing counties. b) Proposed methods for implementation of the results The study programme focuses on gathering information and best practices. It is intended to be informative in nature and can be used to raise awareness of cybersecurity issues in Member States and Sector Members and to draw attention to the information, tools and best practices available, the results of which may be used in conjunction with BDT-organized ad hoc sessions, seminars and workshops. Proposed methods of handling the Question or issue The Question will be addressed within a study group over a four-year study period (with submission of interim results), and will be managed by a rapporteur and vice‑rapporteurs. This will enable Member States and Sector Members to contribute their experiences and lessons learned with respect to cybersecurity. Coordination and collaboration  * The relevant questions under both ITU-D Study groups 1 and 2. In particular joint collaboration is sought with Q6/1 (on evaluation the impact of spam and malware from the consumer protection perspective as well as on awareness-raising for users and capacity building) and Q7/1 (on specific needs of persons with disabilities). * ITU‑T, in particular ITU-T Study Group 17, which is responsible for building confidence and security in the use of ICTs. * Coordination with other relevant organizations and agencies. Given the existing level of technical expertise on the issue in these groups, they should be given the opportunity to comment and provide input on all documents (questionnaires, interim reports, draft final reports, etc.) before the documents are submitted to the full ITU‑D study group for comment and approval.  BDT programme link The BDT programme under Objective 2 shall facilitate exchange of information and make use of the output, as appropriate, to satisfy programme goals and the needs of Member States. Other relevant information –  \_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Annex: Additional proposals for Q3/2 ToR that were not agreed on**  1. Proposal on including the discussion on approaches and best practices for determining the origin of and recovery from incidents impacting the confidentiality, integrity and availability of ICT systems to the ToR of Q3/2.  2. Proposal on including references to developments on cybersecurity issue being achieved at the UN level to the ToR of Q3/2 by the UN First committee, the UN Secretary-General’s High-level Panel on Digital Cooperation, the UN Group of Governmental Experts on Advancing responsible State behaviour in cyberspace in the context of international security (GGE), Open-Ended Working Group on Developments in the Field of ICTs in the Context of International Security (OEWG).  3. Proposal on recalling UNGA Resolution 74/247, on countering the use of information and communications technologies for criminal purposes, that decides “to establish an open-ended ad hoc intergovernmental committee of experts, representative of all regions, to elaborate a comprehensive international convention on countering the use of information and communications technologies for criminal purposes”. |

| **QUESTION 4/2**  Assistance to developing countries[[3]](#footnote-4)1 for implementing conformance and interoperability programmes and combating counterfeit information and communication technology equipment and theft of mobile devices |
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| Statement of the situation or problem COVID-19 brought new challenges and opportunities to conformance and interoperability (C&I) structures that are worth to be studied by the ITU-D Membership and guidance provided to the ICT community.  Q4/2 extended Terms of Reference for 2021 will include the following three items:  **i) Conformance and interoperability (C&I)**  Inclusion of an ITU Telecommunication Development Sector (ITU‑D) study group Question on this matter provides an effective way to further the aims of Resolutions 177 (Rev. Busan, 2014) and 188 (Busan, 2014) of the Plenipotentiary Conference, Resolution 47 (Rev. Buenos Aires, 2017) of the World Telecommunication Development Conference (WTDC), and Resolutions 76 (Rev. Hammamet, 2016) and 96 and 97 (Hammamet, 2016) of the World Telecommunication Standardization Assembly (WTSA).  According to the Buenos Aires Declaration, widespread C&I of telecommunication/ICT equipment and systems allow increased market opportunities as well as the reliability and integration of world trade, which can be achieved through programmes, policies and decisions.  Member States and ITU‑D Sector Members can assist and guide each other by conducting studies, building tools to bridge the standardization gap, and navigating issues related to matters raised in the above-mentioned resolutions. ITU‑D can harness the energy of its membership to examine these important issues.  In this regard, to facilitate safe usage of products and services anywhere in the world, regardless of who is the manufacturer or service provider, it is crucial that products and services be developed in accordance with relevant international standards, regulations and other specifications, and that their compliance be tested.  The Question will ultimately contribute to international community's effort to achieve the Sustainable Development Goals (SDGs), especially the targets on infrastructure[[4]](#footnote-5)2 (namely 9.1, 9.a, 9.b, and 9.c), by adopting an eco‑friendly set of harmonized standards, since C&I regime instruments enable countries to better control and authenticate products.  Conformity assessment increases the probability of interoperability, i.e. equipment built by different manufacturers being capable of communicating successfully. In addition, it helps to ensure that products and services are delivered according to expectations. Conformity assessment builds consumer trust and confidence in tested products and consequently strengthens the business environment and, thanks to interoperability, the economy benefits from business stability, scalability and cost reduction of systems, equipment and tariffs.  To increase the benefits of C&I, many countries have adopted harmonized C&I regimes at both national and bilateral/multilateral level. However, some developing countries have not yet done so because of a number of major challenges, such as the lack of appropriate/adequate infrastructure and technology development to be in a position to test or to recognize tested ICT equipment (e.g. accredited laboratories).  The availability of high-quality, high-performing products will accelerate widespread deployment of infrastructure, technologies and associated services, allowing people to access the information society regardless of their location or chosen device, and contributing to implementing the SDGs.  Also, simplifying the conformity assessment process will facilitate the homologation of products destined for telecommunications, will give legal certainty to users on compliance in the products they acquire, and will promote adoption of the best technological standards and measures to protect intellectual property.  Considering the role of C&I in a hyperconnected world where billions of people and objects connect with each other, Q4/2 will give additional focus on:   * New technologies and their impact in national C&I frameworks; * Efforts to manage the increasing number of devices sharing the same limited resources; * Measures to cover cost related to conformity procedures and controls of ICT products to allow only approved products to access markets; * Reassess how harmonization of procedures and collaboration can be achieved under this scenario, considering:   + Robust C&I frameworks: making sure every country has or is part of a robust C&I framework with minimal costs (e.g., agreements on the shared use of national C&I infrastructure, such as testing facilities and certificates of conformity);   + Collaboration: effective tools/aspects of MRAs that need to be adapted to improve existing collaboration agreements or develop new ones.   In addition, this will contribute to raising the quality standards of services, making them more efficient, for the benefit of the population.  **ii) Counterfeit telecommunication/ICT equipment**  Counterfeit telecommunication/ICT equipment is a growing issue and socio-economic problem. It causes significant negative impact on innovation, levels of foreign direct investment, growth in the economy and levels of employment, and may also redirect resources into organized criminal networks.  **iii) Mobile device theft**  Preventing and combating the use of stolen mobile devices is another issue. The theft of user-owned mobile devices may lead to the criminal use of telecommunication/ICT services and applications, resulting in economic losses for the lawful owner and user.  Implementing measures to combat counterfeit telecommunication/ICT devices and mobile device theft is a matter of urgency and high interest for developing countries. Question or issue for study Q4/2 is expected to examine issues related to ICT equipment and systems, a key component for spreading ICT networks, access, services and applications. The work covers the below items:  2.1 In close collaboration with the relevant Telecommunication Development Bureau (BDT) programme(s), identifying and assessing the challenges, priorities and problems for countries, subregions or regions with respect to the application of ITU Telecommunication Standardization Sector (ITU‑T) Recommendations and approaches to meeting the need for confidence in the conformity of equipment with ITU‑T Recommendations.  2.2 Identifying critical/priority issues related to C&I in countries, subregions or regions, and related best practices.  2.3 Examining how information transfer, know-how, training and institutional and human capacity development can strengthen the ability of developing countries to reduce risks associated with low-quality equipment and equipment interoperability issues. Examining effective information-sharing systems and best practices to assist in this work.  2.4 Elaborating a methodology for the implementation of this Question, in particular gathering evidence and information regarding current best practices being adopted to create C&I programmes, taking into consideration progress achieved by all the ITU Sectors in this regard.  2.5 Techniques designed to promote harmonization of C&I regimes, to establish administrative procedures (e.g. market surveillance) to increase resilience on ICT devices, to improve local and regional integration and to contribute to bridging the standardization gap, thereby reducing the digital divide, considering the current scenario of hyperconnected societies.  2.6 Information regarding the establishment of mutual recognition agreements (MRAs) between countries. Guidance on concepts and procedures to establish and manage MRAs.  2.7 Assessing the impact of the increase of ICT devices to the radiocommunication environment, including the Internet of Things (IoT), and providing guidelines to the ITU-D membership for ICT‑readiness related to C&I.  2.8 Techniques and national experiences on combating counterfeit, sub-standard, and tampered devices:  – prepare and document examples of best practices on limiting counterfeit and tampered devices, for distribution;  – prepare guidelines, methodologies and publications to assist Member States in identifying counterfeit and tampered devices and methods of increasing public awareness and restricting trade in these devices, as well as the best ways of limiting them;  – study the impact of counterfeit and tampered telecommunication/ICT devices being transported to developing countries.  2.9 Future challenges for C&I, such as:  – new technologies outpacing regulation/testing procedures;  – regulatory aspects for Open RAN and interoperability adoption related to 5G (in possible collaboration with Question 1/1 on broadband infrastructure);  – smart objects’ communication paradigms (in possible collaboration with Question 1/2 on smart objects and IoT);  – intentional or unintentional software modifications to ICT devices after homologation and their impacts to existing C&I frameworks (in possible collaboration with Question 3/2 on hacking issues);  – effective harmonization of procedures and technical collaboration, etc.  2.10 How to prioritize device/type-approval while achieving a good balance between providing confidence to the user (e.g. through homologation) and applicable regulatory measures by the responsible authorities.  2.11 C&I challenges and opportunities during the COVID-19 pandemic.  2.12 Ways in which new technologies can help to improve the international C&I framework and trade in and use of ICT devices. Expected outputs In the ITU‑D study period 2018-2021, studies of various issues related to C&I, combating counterfeit ICT equipment and theft of mobile devices are to be reported. Outputs are to be prepared in three separate components.  Specifically, the following outputs are envisaged:  C&I programmes  a) Review of guidelines and best practices on technical, legal and regulatory aspects of a C&I regime  b) Feasibility studies regarding the establishment of laboratories in different C&I domains  c) Guidance on the framework and procedures for establishing technical collaboration on C&I and sharing of resources  d) Questionnaire to collect and update the database of current status of C&I regimes established at national, regional or global levels  e) Development of a methodology for assessing the status of C&I regimes in place in the regions (or subregions)  f) Experience-sharing and case study reports on implementation of C&I programmes focusing on efficient and affordable methods to improve the level of conformity.  g) Additional topics for the study period extension:  – Future challenges to C&I facing new technologies, Open RAN, and collaborative C&I frameworks  – C&I Challenges and opportunities from COVID-19  – Ways in which new technologies can help to improve the international C&I framework and trade in and use of ICT devices.  Combating counterfeit ICT equipment  h) Best practices and guidelines, including methodologies to combat counterfeit ICT equipment.  Mobile device theft  i) Experience-sharing and case-study reports on combating mobile device theft. Timing 4.1 Annual progress reports will be submitted to ITU‑D Study Group 2.  4.2 A final report will be submitted to ITU‑D Study Group 2. Proposers/sponsors – Sources of input 1) Member States, Sector Members and relevant experts.  2) A questionnaire covering relevant C&I matters.  3) Examination of regulations, policies and practices in countries that have created systems to manage these matters.  4) Other relevant international organizations.  5) Interviews, existing reports and surveys should also be used to gather data and information for the finalization of a comprehensive set of best-practice guidelines for administering C&I information.  6) Material from regional telecommunication organizations, telecommunication research centres, manufacturers and working groups should also be utilized in order to avoid duplication of work.  7) Close cooperation with ITU‑T study groups, in particular Study Group 11 and the Joint Coordination Activity on C&I testing, and with other organizations (e.g. ILAC, IAF, ISO, IEC) involved in C&I activities and other actions within ITU‑D is required and extremely important. Target audience  | Target audience | Developed countries | Developing countries | | --- | --- | --- | | Telecom policy-makers | Yes | Yes | | Telecom regulators | Yes | Yes | | Service providers/operators | Yes | Yes | | Manufacturers | Yes | Yes | | Consumers/end-users | Yes | Yes | | Standards-development organizations, including consortia | Yes | Yes | | Testing laboratories | Yes | Yes | | Certification bodies | Yes | Yes |  a) Target audience Depending on the nature of the output, policy- and decision-makers, middle to upper‑level managers in operators, laboratories, standards-development organizations (SDOs), certification bodies, market-research agencies, regulators and ministries in developed, developing and least developed countries (LDCs) will be the predominant users of the output. Compliance managers at equipment manufacturers and system integrators could also use the output for information. b) Proposed methods for implementation of the results The results of the Question are to be distributed through ITU‑D interim and final reports. This will provide a means for the audience to have periodic updates of the work carried out and to provide input and/or seek clarification/more information from ITU‑D Study Group 2 should they need it.  We will use virtual meetings to advance the work due to the COVID-19 restrictions. Proposed methods of handling the Question or issue The Question will be addressed within a study group over a four-year study period (with submission of interim results), and will be managed by a rapporteur and vice‑rapporteurs. This will enable Member States and Sector Members to contribute their experiences and lessons learned with respect to conformity assessment, type-approval and interoperability, testing laboratories, recognition of testing reports, as well as combating counterfeit devices. Coordination 9.1 The ITU‑D study group dealing with this Question will need to coordinate with:  – Relevant ITU‑T study groups, particularly Study Group 11  – Relevant focal points in BDT and ITU regional offices  – Coordinators of relevant project activities in BDT  – SDOs  – Conformity-assessment bodies (including testing organizations and laboratories, accreditation organizations, etc.) and industry consortia  – Consumers/end users  – Experts in this field. BDT programme link a) WTDC Resolution 47 (Rev. Buenos Aires, 2017)  b) WTSA Resolution 76 (Rev. Hammamet, 2016)  c) Resolution 123 (Rev. Busan, 2014) of the Plenipotentiary Conference  d) ITU C&I Programme  Links to BDT programmes aimed at human capacity development and assistance to operators in developing countries and LDCs, programmes that deal with technical assistance and programmes concerning C&I. Other relevant information As may become apparent within the life of the Question. |

| **QUESTION 5/2**  Utilizing telecommunications/information and communication technologies for disaster risk reduction and management |
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| Statement of the situation or problem The importance of telecommunications and ICTs to support disaster mitigation, preparedness, response, and recovery is well established. Over the study period from 2018 to 2021, ITU-D Study Group 2 Question 5/2 has examined the use of ICTs in disaster risk reduction with case studies, examples of technologies, applications, checklists, guidelines for exercise and drills, planning aspects etc. Before that, during the study period 2010-2017, the focus was on “Utilization of telecommunications/ICTs for disaster preparedness, mitigation, and response”.  Year 2019-20 has seen significant disaster events in terms of numbers and fatalities. There has been widespread loss of lives and property. As per the Emergency event database[[5]](#footnote-7) during the year 2019, a total of 396 natural disasters were recorded with 11,755 deaths, 95 million people affected and there was a total of US$103 billion worth of economic loss across the world. The burden was not equally shared by the world as Asia suffered the highest impact and accounted for 40% of disaster events, 45% of deaths and 74% of the total affected. Floods were the deadliest type of disaster accounting for 43.5% of deaths, followed by extreme temperatures at 25% (mainly due to heat waves in Europe) and storms at 21.5%. Storms affected the highest number of people, accounting for 35% of the total affected, followed by floods with 33% and droughts with 31%. There has been more wildfire reported in 2019 (14) as compared to the annual average number of wildfires (9) during 2009-2018. Similarly, a greater number of floods (194) during 2019 as compared to the annual average of 149 floods during 2009-2018.  By the end of year 2019 and beginning of the year 2020, the world had been hit by another disaster namely the COVID-19 epidemic. It resulted in widespread loss of lives across the world, unemployment, and huge economic loss due to lockdown in various countries.  Most developed and developing countries recognize disaster communications as a priority and are taking steps to;   * build national preparedness plans; * develop early warning systems; and * put technologies and systems in place to ensure a disaster resilient system.   Such system enables operational continuity and rapid restoration of networks which support the disaster communication requirements. Question 5/2 has been able to establish a baseline of information about country experiences, plans, tools, stakeholders, and policies for disaster preparedness, mitigation and risk reduction, with the guidelines for drills and exercises, policy guidelines, technologies related to disaster communication, etc. It will be possible for countries to incorporate these in their National Emergency Telecommunication Plans (NETP) so as to utilise the knowledge gained by exchange of information and best practices amongst the various countries. Based on the past two years’ experience, it is felt that during the next phase of study the focus should be on disaster response and recovery, as telecommunications/ICTs can help in giving effective response and can help in recovery from the disasters.  In view of the above, the next study Question for the year 2022-2025 should be “Utilisation of Telecommunications/ICTs for disaster response and recovery”. Question or issue for study  1. Continue examination of terrestrial, space‑based and integrated telecommunications/ICTs to assist affected countries in utilizing relevant applications for disaster prediction, detection, monitoring, early warning, response, relief, and recovery, including consideration of best practices/guidelines for implementation, and in ensuring a favourable regulatory environment to enable rapid deployment and implementation. 2. Continue gathering and examining national experiences and case studies in use of telecommunications/ICTs for disaster preparedness, mitigation, response and recovery, including response to pandemics like COVID-19, and analysing lessons learned and common themes between them. 3. Examine the role that administrations and Sector Members and other expert organizations and stakeholders share in collaboratively addressing disaster management and the effective use of telecommunications/ICTs particularly in the areas of disaster response and recovery. 4. Examine the enabling environment for more resilient communications networks and for the deployment of emergency communications systems and latest digital communication technologies, which includes, but is not limited to, emergency preparedness, response and recovery. 5. Gather national experiences and case studies and develop best practices for the elaboration, implementation, and refinement of national and regional disaster-management plans or frameworks for the use of telecommunications/ICTs in natural and man-made disaster and/or emergency situations including those of pandemics, working in coordination with the relevant BDT programmes, regional offices, and other partners. 6. Continue updating the online toolkit with relevant information and materials collected during the study period.  Expected output It is proposed that succinct outputs summarizing case studies and capturing lessons learned, best practices, and tools/templates will be prepared and presented to the Study Question for approval.  Additionally, throughout the study period, Question 5/2 welcomes contributions on new technologies, systems and applications for disaster communications and management for mitigation, preparedness, risk reduction, response and recovery, as well as considerations to support implementation. The focus will be on both technology examples and deployment case studies of new and emerging systems and applications for disaster communications and response. Timing 4.1 Annual progress reports should be submitted to ITU‑D Study Group 2.  4.2 Succinct outputs/annual reports summarizing case studies and capturing lessons learned, best practices and tools/templates on the agreed themes discussed.  4.3 Draft final reports and any proposed draft Recommendations/guidelines should be submitted to ITU‑D Study Group 2 within the study period.  4.4 The rapporteur group will work in close collaboration with relevant BDT programme(s), regional offices, regional initiatives and relevant ITU‑D Questions, and ensure proper liaison with the ITU Radiocommunication (ITU‑R) and Telecommunication Standardization (ITU‑T) Sectors.  4.5 The activities of the rapporteur's group will come to an end within the study period. Proposers/sponsors The new text for this revised Question stems from the final report of ITU-D Study Group 2 for the period 2018-2021. Sources of input Contributions are expected from Member States, Sector Members and Associates, as well as inputs from relevant BDT programme(s) and relevant ITU‑R and ITU‑T study groups, and any relevant ITU‑D Question. International and regional organizations responsible for the utilization of telecommunications/ICTs for disaster management are encouraged to provide contributions related to experiences and best practices. The intensive use of correspondence and online exchange of information is encouraged for additional sources of inputs. Target audiencea) Target audience Depending on the nature of the output, middle- to upper-level managers in operators and regulators in developed and developing countries will be the predominant users of the outputs.   | Target audience | Developed countries | Developing countries | | --- | --- | --- | | Telecom policy-makers | Yes | Yes | | Telecom regulators | Yes | Yes | | Service providers/operators | Yes | Yes | | Manufacturers | Yes | Yes |  b) Proposed methods for implementation of the results The results of the Question are to be distributed through ITU‑D reports, or as agreed during the study period in order to address the Question for study. Proposed methods of handling the Question The Question will be addressed within a study group over a four-year study period (with submission of interim results), and will be managed by a rapporteur and vice‑rapporteurs. This will enable Member States and Sector Members to contribute their experiences and lessons learned with respect to emergency communications. Coordination The ITU‑D study group dealing with this Question will need to coordinate with:  – Relevant ITU‑D Question(s)  – Relevant BDT programme(s)  – Regional offices  – Relevant ITU‑R and ITU‑T study groups  – Working Group on Emergency Telecommunications (WGET)  – Relevant international, regional and scientific organizations with mandates relevant to this Question. BDT programme link – Other relevant information As may become apparent within the life of the Question. |

| **QUESTION 6/2**  Information and communication technologies and the environment |
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| Statement of the situation or problem1.1 ICT and climate change The issue of climate change has emerged as a global concern and requires global collaboration by all concerned, in particular the developing countries[[6]](#footnote-8)1 (which are the most vulnerable group of countries with respect to climate change). International initiatives in this domain are seeking to achieve sustainable development and identify ways and means in which information and communication technologies (lCTs) can monitor climate change and reduce overall global greenhouse gas (GHG) emissions. The focus of this Question is “responsible consumption and production”.  Information and communication technologies (ICTs) have direct and indirect effect upon the environment. ICTs can help emerging economies overcome and thrive despite climate change and fluctuations, while helping the world mitigate climate change.  New technologies, systems and applications can monitor the climate and reduce its adverse impact by utilizing big data. They can be pivotal in helping policymakers and industry to tackle challenges with regard to environment changes while formulating new policies, setting new standards of production towards reduction of emissions. Also, artificial intelligence can contribute to the collection of information through various methods and channels of data collection, by utilizing both human and historical experience to face extreme and unpredictable weather scenarios.  Study Group 5 of the ITU Telecommunication Standardization Sector (ITU-T) is the lead study group for study of ICT environmental aspects of electromagnetic phenomena and climate change, including design methodologies to reduce environmental effects, such as recycling related to ICT facilities and equipment; and Study Group 7 (Science services) of the ITU Radiocommunication Sector (ITU‑R) is the lead study group for studies related to the use of radio technologies, systems and applications, including satellite systems, for environment and climate‑change monitoring and climate‑change prediction.  In this respect, the outcomes of ITU‑T and ITU‑R resolutions and Recommendations, and in particular Resolution 73 (Rev. Hammamet, 2016) of the World Telecommunication Standardization Assembly (WTSA) and Resolution 673 (Rev. WRC‑12) of the World Radiocommunication Conference, should serve as a basis for the study of this Question. 1.2 Telecommunication/ICT waste material The growth of telecommunications/ICTs, especially in developing countries, has been exponential in recent years. For instance, between 2002 and 2007, mobile‑phone penetration in the Americas region grew from 19 to 70 terminals per 100 inhabitants. Globally, the share of mobile‑phone subscriptions in developing countries increased by 20 percentage points, from 44 per cent to 64 per cent over the same period of time.  The growth of electrical and electronic equipment and their peripherals, as well as the continuous updating of technology, has generated a significant growth in telecommunication/ICT waste. It is estimated that between 20 and 50 million tonnes of telecommunication/ICT waste are generated every year worldwide. However, recycling and responsible disposal of telecommunication/ICT waste remain at low levels, making it difficult to even find figures on this issue at regional level.  According to The Global E-waste Monitor 2020, the world generated 53.6 million tonnes of e-waste in 2019, whilst global waste generation is predicted to reach 74 Mt by the year 2030, which is almost double the 2014 figures. This equates to an average of 7.3 kg per person.  Recycling and efficient disposal of telecommunication/ICT waste have not been handled properly, proving a major challenge to even obtain correct total ICT waste/e-waste present in the world.  The consequences of not carrying out proper recycling or disposal of e-waste have environmental problems of large magnitude and health issues, especially for developing countries.  The exponential growth of telecommunication/ICT terminals, the associated high turnover of terminals and advances in technology make it imperative to put forward actions in the immediate future to prevent the environmental catastrophe that would result in developing countries if we fail to produce an adequate regulatory framework and work towards policies that address this problem. Question or issue for study There are a variety of issues that members will address under this Question in the next four years. It is expected that the following steps for the study will play a major role in the future in order to meet the objective of this Question:  a) In close collaboration with the respective BDT programme(s), identify the regional needs for relevant applications for developing countries.  b) Elaborate a methodology for the implementation of this Question, in particular gathering evidence and information regarding current best practices on how ICTs can help reduce overall GHG emissions, taking into consideration progress achieved by ITU‑T and ITU‑R in this regard.  c) Consider the role of Earth observation in climate change, as determined by the implementation of Resolution 673 (Rev. WRC‑12), on radiocommunication use for Earth observation applications, in order to enhance the knowledge and understanding of developing countries in respect of the utilization and benefits of relevant applications in connection with climate change.  d) Develop best-practice guidelines for the implementation of relevant Recommendations adopted by ITU‑T as a result of the implementation of Resolution 73 (Rev. Hammamet, 2016), both for monitoring changes in the climate and reducing the impact of climate change using the action plan in WTSA Resolution 44 (Rev. Dubai, 2012), in particular programmes 1, 2, 3 and 4 thereof.  e) Strategies to develop a responsible approach to, and comprehensive treatment of, telecommunication/ICT waste: policy and regulatory actions required in developing countries, in close collaboration with ITU‑T Study Group 5.  f) Consider the role of ICTs towards greener world post COVID-19. Expected outputs The output will be a report or reports on the results of the work concluded for each step identified above, taking into account the specific needs of developing countries.  Other outputs could be the organization of workshops in relation with the relevant ITU‑D programme and in consultation with the relevant ITU‑T and ITU‑R study groups. Timing The output will be generated on an annual basis. The output for the first year will be analysed and assessed in order to update the work for the next year, and so on. An interim report will be produced by 2019. The final report is due by the end of 2021. Proposers/sponsors The Question was approved by WTDC-17. Sources of input Contributions are expected from:  Member States, Sector Members and Associates, as well as inputs from:  a) Relevant BDT programmes, and particularly ICT initiatives successfully implemented for climate change and to address e-waste.  b) Regional needs as identified by workshops on the subject.  c) Regional and/or national action plans and/or national experiences in ICTs and climate change or e-waste.  d) Progress achieved by ITU‑T and ITU‑R study groups in this domain, in particular the results of the Joint Coordination Activity on ICTs and climate change (JCA-ICTCC).  e) Progress achieved by the United Nations Intergovernmental Panel on Climate Change (IPCC) and other similar initiative(s). Target audience  |  |  |  | | --- | --- | --- | | **Target audience** | **Developed countries** | **Developing countries** | | Telecom policy-makers | Yes | Yes | | Telecom regulators | Yes | Yes | | Service providers/operators | Yes | Yes | | Manufacturers | Yes | Yes |   **a) Target audience – Who specifically will use the output**  The output of this Question will be used by both developed and developing countries, and in particular the least developed countries (LDCs), small island developing states (SIDS), landlocked countries (LLDCs) and countries with economies in transition.  **b) Proposed methods for implementation of the results**  A set of guidelines and recommendations about strategies for a responsible and comprehensive approach to the treatment of waste related to telecommunications/ICTs: policy and regulatory actions required in developing countries and LDCs.  This guide could be implemented by the developing countries and LDCs, as well as operators and manufacturers, in establishing actions for responsible and integral treatment of waste related to telecommunications/ICTs. Proposed methods of handling the Question or issue Close coordination is essential with ITU‑D programmes, and other relevant ITU‑D study Questions, and with ITU‑R and ITU‑T study groups. a) How? 1) Within a study group:  – Question (over a multi-year study period) ☑  2) Within regular BDT activity:  – Programmes ☑  – Projects ☑  – Expert consultants ☑  3) In other ways – describe (e.g. regional, within other  organizations, jointly with other organizations, etc.) ☑ b) Why? To ensure that the work and output of this study Question is not duplicated and that there is better collaboration among BDT, the other ITU Sectors, Sector Members and other United Nations agencies.  To elaborate the set of guidelines, it would be necessary to have the experience of different countries, operators and manufacturers, as well as different organizations concerned with the topic which could provide information. Coordination and collaboration – Regular ITU‑D activities  – Other study group Questions or issues, in particular with Question 3/1 on m-services to address environment issues.  – Regional organizations, as appropriate  – Work in progress in the other ITU Sectors. BDT programme link Output 4.4. Other relevant information To be determined during the implementation of this Question. |

| **QUESTION 7/2**  Strategies and policies concerning human exposure to electromagnetic fields |
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| Statement of the situation or problem With the advent of the wireless technologies, human exposure to electromagnetic field raised public concerns. The importance of developing strategies and guidance concerning human exposure to electromagnetic fields has been well discussed. Over the study cycle from 2018 to 2021, ITU-D Study Group 2 Question 7/2 has studied science-based policies, guidelines, national experiences and assessments of human exposure to RF-EMF. New version of EMF standards have also been published in the study cycles: in March 2020, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) published an update to the ICNIRP (1998) Guidelines. The Institute of Electrical adnd Electronics Engineers (IEEE) also published the updated C95.1-2019 in October 2019. The ICNIRP and IEEE limits are largely harmonized, and the power density limits for whole-body exposure to continuous fields are identical above 30 MHz.  Due to the characteristics of Multiple-Input Multiple-Output (MIMO), beamforming and millimetre-wave technologies used in the new communication systems, some pioneer studies have been conducted to evaluate RF EMF levels. Risk communication, including the benefit of new wireless technologies for the pandemic and people, is an important method to reduce unnecessary public concerns about RF-EMF exposure. WHO and ITU constantly help the exchange of knowledge between countries and regions on the current state of the science.  In view of the above, the next study Question for the years 2022-2025 should be “Strategies and policies concerning human exposure to electromagnetic fields”. Question or issue for study The study theme will encompass workshops featuring subject matter experts, administrations and sector members who can share expertise and experiences related to the theme, collection of case studies and input contributions related to the theme, interactive discussions to allow the Question to compare experiences and identify lessons learned and best practices. Additionally, throughout the study cycle, the Question will continue to examine new wireless technologies, best practice of EMF management, harmonization of the standard as well as risk communication, with the priority on:   * Responding to EMF miscommunication * Exposure at new EMF scenarios * Examine the implementation of exposure limits via a broad range of country case studies, including on the ICNIRP (2020) Guidelines * EMF issue of new deployment methods of wireless equipment  Expected output It is proposed that succinct outputs summarizing case studies and capturing lessons learned, best practices, and tools/templates will be prepared and presented to the Study Question for approval.  Additionally, throughout the study cycle, Question 7/2 welcomes contributions that describe new technologies, best practice of EMF management, harmonization of the standard as well as risk communication. Timing A provisional report is to be presented to Study Group 2 in 2019. It is proposed that the study be completed in 2021, at which date a final report containing guidelines will be submitted. Proposers/sponsors ITU membership. Sources of input – Member States, Sector Members, Associates and Academia.  – Regional organizations  – Expert ITU Sectors and Groups  – World Health Organization (WHO)  – International Commission on Non-Ionizing Radiation Protection (ICNIRP)  – Institute of Electrical and Electronics Engineers (IEEE)  – Telecommunication Development Bureau (BDT) focal points. Target audiencea) Target audience – Who specifically will use the input?  | Target audience | Developed countries | Developing countries1 | | --- | --- | --- | | [[7]](#footnote-9)Telecom/ICT decision-makers, local authorities | Yes | Yes | | Telecom/ICT regulators | Yes | Yes | | Service providers/operators | Yes | Yes | | Constructors/equipment provider | Yes | Yes |  b) Proposed methods for implementation of the results The results of the Question are to be distributed through ITU‑D reports, or as agreed during the study period in order to address the Question for study. Proposed methods of handling the Question or issue Close coordination is essential with ITU‑D programmes, as well as with other relevant ITU‑D study Questions and ITU‑R study groups dealing with spectrum matters including RF technologies, ICT for climate change, and ITU‑T Study Group 5. a) How? 1) Within a study group:  – Question (over a multi-year study period) ☑  2) Within regular BDT activity:  – Programmes ☑  – Projects ☑  – Expert consultants ☑  3) In other ways – describe (e.g. regional, within other  organizations, jointly with other organizations, etc.) □ b) Why? To ensure that the work and output of this study Question is not duplicated and that there is better collaboration among BDT, the other ITU Sectors, Sector Members and other United Nations agencies. Coordination and collaboration The ITU‑D study group dealing with this Question will need to coordinate with:  – Relevant ITU‑D Question(s)  – Relevant BDT programme(s)  – Regional offices  – Relevant ITU‑R and ITU‑T study groups  – Relevant international, regional and scientific organizations with mandates relevant to this Question. BDT programme link Objective 2, Output 2.1. Other relevant information To be defined in the work plan. |

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1. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-1)
2. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-3)
3. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-4)
4. 2 SDG 9: <https://sustainabledevelopment.un.org/sdg9> [↑](#footnote-ref-5)
5. <https://www.emdat.be> [↑](#footnote-ref-7)
6. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition [↑](#footnote-ref-8)
7. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-9)