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|  | **Document** **TDAG-21/2/****DT/4-E** |
| **4 November 2021**  |
| **Original:** **English**  |
| Chairman, ITU-D Study Group 1 |
| Revised terms of reference for Study Group 1 Questions |
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| **Summary:**As per TDAG decision taken at its 28thmeeting (24-28 May 2021), an additional set of Study Group 1 meetings were held from 11 to 15 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 1 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 SG1 meetings held in October 2021.**Action required:**TDAG is invited to examine the revised ToRs and take any further action as deemed appropriate.Note: some Questions may include additional texts (introductory section “*Discussion and proposal*”, or annex) that are not part of the revised ToRs. They are 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-21/2/5](https://www.itu.int/md/D18-TDAG29-C-0005) |

## STUDY GROUP 1

| **QUESTION 1/1****Strategies and policies for the deployment of broadband in developing countries** |
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| Statement of the situation or problemBroadband technologies are transforming fundamentally the way we live. Broadband infrastructure, applications and services offer important opportunities for boosting economic growth, enhancing communications, improving energy efficiency, safeguarding the planet and improving people’s lives.Broadband access has had a significant impact on the world economy. [[1]](#footnote-1)Rapid evolution and new business opportunities are driving rapid but uneven growth in digital technologies. [[2]](#footnote-2)According to ITU data, 2019 marked the first full year when more than half the world begun to participate in the global digital economy by logging onto the Internet. The latest ITU data show that some 49 per cent of the world’s population currently remain unconnected (ITU, 2020 estimates). The COVID-19 Pandemic has also restated the importance of diverse ICTs in ensuring connectivity as is illustrated by insights shared on the Reg4Covid platform[[3]](#footnote-3).As noted in [SG1 Chairperson’s report](https://www.itu.int/md/D18-TDAG25.2-C-0012/en) (annex 8) to TDAG virtual meetings from 2 to 5 June 2020, and is recognized in several instances and reports of study Question 1/1 of the ITU-D study period 2018-2021, that the question has to continue for the next study period, and the topics of interest are to be reflected in the next study period;* Policies, strategies and regulatory aspects of broadband
* Broadband Access technologies
* Financing and investment aspects of broadband
* COVID-19 and other pandemics on broadband networks
* Digital Transformation/Infrastructure
* Co-deployment & sharing broadband infrastructure with other infrastructural networks
* Strategies and policies for the deployment of broadband in developing countries.

Question or issue for studyContinuing topics from previous study period1. Policies and regulations that promote increased high-speed, high-quality broadband network connectivity in developing countries considering trends in the various broadband access technologies, barriers for infrastructure deployment and investment, best practices on cross-border connectivity and SIDs challenges.
2. Effective and efficient ways to fund increased broadband access for the unserved and underserved populations in non-rural or urban areas.
3. The regulatory and market conditions necessary to promote deployment of broadband networks and services, including, as appropriate, the establishment of asymmetric regulation for operators with significant market power (SMP), such as local loop unbundling, if required, for such SMP operators, and organizational options for national regulatory authorities resulting from convergence.
4. Promoting incentives and an enabling regulatory environment for the investments required to meet the growing demand for access to the Internet generally, and bandwidth and infrastructure requirements in particular, for delivering affordable broadband services to meet development needs, including consideration of public, private and public-private partnerships for investment.
5. Methods and strategies to implement affordable (in possible collaboration with Q4/1) and sustainable broadband networks, including the transition from narrowband to high-speed, high-quality networks and interconnection and interoperability features.
6. Demand-side factors and practices to generate and increase the adoption and usage of ICT devices and services.
7. Methods and strategies influencing the effective deployment of wireline and wireless, including satellite, broadband access technologies, including backhaul considerations, for unserved and underserved populations in non-rural and urban areas.
8. Methodologies for migration planning and implementation of broadband technologies, taking into account existing networks, as appropriate.
9. National digital policies, strategies and plans which seek to ensure that broadband is available to as wide a community of users as possible.
10. Flexible, transparent approaches to promoting robust competition in the provision of network access (in possible collaboration with Q4/1).
11. Co-investment (in possible collaboration with Q4/1) and the co-location and shared use of infrastructure, including through active infrastructure sharing.
12. Licensing approaches and business models for promoting broadband network expansion that more effectively integrate the use of terrestrial, satellite, backhaul and submarine telecommunication infrastructure (in possible collaboration with Q4/1 and Q5/1).
13. Holistic universal access and service strategies and financing mechanisms, including universal service funds, for both network expansion and connectivity for unserved and underserved populations in non-rural and urban areas (in possible collaboration with Q4/1 and Q5/1).

New topics for this study period1. Analysis of trends in the data traffic increasing, including investigation into whether the overall increase in data traffic prompted by the prevalent telework, e-education among others, will become new normal in the post-COVID world;
2. Strategies to enhance the QoS of the network with increased data traffic (in possible collaboration with Q6/1);
3. Analysis of the impact of the expected delay in the deployment of terrestrial and non-terrestrial advanced telecommunication infrastructures, caused by the COVID-19 pandemic, and the consequent economic downturn as well as technological alternatives complementary to the existing network to accommodate increased data traffic;
4. National digital policies, strategies, and plans which seek to accelerate the deployment of advanced networks along with the promotion of e-education, e-health, and telework after the COVID-19 pandemic.
5. Co-deployment &sharing broadband infrastructure with other infrastructural networks

Expected outputsRevision of the Question 1/1 Final Report for ITU-D study period 2018-2021, as appropriate.TimingAnnual progress reports will be presented to Study Group 1 in 2022, 2023 and 2024. Deliverables set in Section 3 could be sent for Study Group 1 for approval on readiness without waiting for the end of study period.Proposers/sponsorsITU Telecommunication Development Sector (ITU-D) Study Group 1 proposed the continuation of this Question as modified herein.Sources of input 1. Results of related technical progress in relevant ITU-R and ITU-T study groups.
2. Contributions from Member States, Sector Members and Associates and from relevant ITU-R and ITU-T study groups, and other stakeholders.
3. 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.
4. Material from regional telecommunication organizations, telecommunication research centres, manufacturers and working groups should also be used, in order to avoid duplication of work.
5. ITU publications, reports and Recommendations on broadband access technologies.
6. Relevant output and information from study Questions related to ICT applications.
7. Relevant inputs and information from BDT programmes related to broadband and the different broadband access technologies.

Target audience

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| **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 |

Target audience All national telecom policy-makers, regulators, service providers and operators, especially those in developing countries, as well as manufacturers of broadband technologies.Proposed methods for implementation of the resultsThe 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 1 should they need it.Proposed methods of handling the Question or issueClose coordination is essential with ITU‑D programmes, and other relevant ITU‑D study Questions, and with ITU‑R and ITU‑T study groups.How?1. Within a study group:

– Question (over a multi-year study period) ☑1. Within regular BDT activity:

– Programmes ☑– Projects ☑– Expert consultants ☑3) In other ways – describe (e.g. regional, within other organizations, jointly with other organizations, etc.) ☑Why?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 group. This will enable Member States and Sector Members to contribute their experiences and lessons learned with respect to policy, regulatory and technical aspects of the migration from existing networks to broadband networks.Coordination and collaboration The ITU-D study group dealing with this Question will need to coordinate with: relevant ITU-R and ITU-T study groups; the relevant outputs from other ITU-D Questions; relevant focal points in BDT and ITU regional offices; coordinators of relevant project activities in BDT; experts and experienced organizations in this field.BDT programme linkLinks to BDT programmes aimed at fostering the development of telecommunication/ICT networks as well as relevant applications and services, including bridging the standardization gap.Other relevant informationAs may become apparent within the life of the Question.\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Annex 1: Topics to be considered later at WTDC-21 and not included in current revision of ToR**Demand-side measures to increase the affordability, particularly of high speed, high quality broadband services, including direct subsidies to consumers and supply-side measures to help operators by easing regulations and providing financial incentives, including flexible spectrum management and direct subsidies to operators (in possible collaboration with Q4/1 and Q6/1) |

| **QUESTION 2/1****Strategies, policies, regulations and methods of migration to and adoption of digital technologies for broadcasting, including to provide new services for various environments** |
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| Discussion and proposalThis contribution intends to reflect in the Terms of Reference of ITU-D Question 2/1 the current ongoing discussions regarding the future of study questions. In this context, the Question would continue in the next study period 2022-2025, with a new scope and new items for study.The Rapporteur Group for Question 2/1 understands that the question should continue by taking broadcasting in a more general manner, considering the relationship among content delivery networks and evaluating the new video-centric converged service providers from the regulatory, economic and technical points of view. The items of study for the next study period would include: (i) transition from traditional digital broadcasting to video-centric converged service providers, (ii) strategies of introducing new broadcasting technologies, emerging services and applications, (iii) best practices on spectrum planning related to the referred transition, (iv) costs of the referred transition, and (v) the digital dividend.Below, the text of the new Terms of Reference for the new Question 2/1, based on the current text for the question, is proposed.**------------------Begin of the Proposed Text------------------**Statement of the situation or problem1.1 The migration to digital broadcasting technologies has been completed in some countries, while others are in the process of completing the transition. The Final Reports of last study periods indicate that the transition results in a variety of strategies, plans and implementation actions that achieve a successful process to maximize the benefits. 1.2 The ITU Telecommunication Development Sector (ITU-D) can continue playing a role in helping Member States evaluate the technical and economic issues involved in the transition to digital technologies and services. On these matters, ITU-D has been collaborating closely with both the ITU Radiocommunication (ITU-R) and the ITU Telecommunication Standardization Sector (ITU-T), thus avoiding duplication. 1.3 ITU had been working to analyse and identify best practices for the transition to digital technologies and the implementation of new services and applications in the context of new video delivery platforms. It is important to identify public policies that should be applied as means for countries to be able to implement the digital transition. 1.4 It is also important to mention the Digital Terrestrial Television Broadcasting Switchover (DSO) database, which contains information on relevant events (e.g. workshops, frequency coordination meetings and seminars), publications (e.g. ITU-R and ITU-D, roadmaps and workshop presentations), websites (e.g. ITU-R and ITU-D, GE-06), contacts and sources of information. 1.5 In this context, the Reports from last study periods presented best practices that accelerate the transition and narrow the digital divide by deploying new services, communication strategies for public awareness on digital broadcasting, and radio spectrum issues related to the analogue switch-off process, among other case studies. 1.6 It is also important to acknowledge the relationship between different environments, notably broadcasting and broadband, and the necessity to treat broadcasting in a more general manner and considering the relationship among the various networks which deliver audiovisual content.1.7 Moreover, the broadcasting arena is changing and the offers to users are evolving. New experiences in accessing audiovisual content are being provided and one of the consequences of these new offers is that users no longer have only the traditional media services/applications. They are instead starting to experience different ways of watching audiovisual content in their broadcasting services. 1.8 Therefore, to implement new broadcasting technologies, services and applications in this new environment, which seems to be heading to a global media strategy for service providers and not restricting the service offers to the traditional broadcasting market, it seems that consolidation, co-investment and infrastructure sharing are key trends to reduce costs and allow for massive investments in network deployment and content delivery.1.9 Bearing that in mind, it is beneficial to study broadcasting as a key infrastructure to deliver innovative applications and services when combined with other networks and service platforms. Additionally, these interactions are important to be considered in the regulatory, economic and technical points of view, to leverage the strengths of each network to the benefit of the users and to a more diverse availability of services.1.10 Considering, that there have been developments of broadcasting systems using IP throughout the broadcasting chain, including, the production, the contribution and the transmission parts, and that these developments of IP based technologies in these parts are progressing quite quickly.1.11 Taking into account possible innovations for broadcasting in the UHF band, proposed by new systems like 5G Broadcast, ATSC3.0 and the expected new Brazilian second generation system, and also with the use of the VHF Band III for DAB or DTT, could lead to new ways broadcasting services and applications.1.12 The use of the "digital dividend" is an important issue, and continues to be widely debated by broadcasters and operators of telecommunication and other services operating in the same frequency bands. The role of the regulatory authorities in this regard is crucial to balancing the interests of users with the demands of growth in all branches of the industry. Furthermore, it still seems that the digital dividend availability and effective usage, for example, to bridge the digital divide and to provide new innovative broadcasting applications and services, is a priority that needs to be addressed.1.13 Other issues to consider are the studies from other ITU Sectors, especially taking into account the decisions of the World Radiocommunication Conference (WRC-15 and WRC-19) on the exploitation of the digital dividend in the future. In this regard, it is relevant to take into consideration the maintenance of study topics related to technical and economic aspects involved in the transition from analogue to digital broadcasting.1.14 Finally, another important issue for the future of broadcasting is the emergence of new broadcasting technologies and standards that could be taken into account when developing countries[[4]](#footnote-4) are implementing the digital television transition. Alongside with that, traditional broadcasting services, with or without the interaction with other platforms and networks, should also be considered.Question or issue for study Studies under the Question will focus on the following issues. The Question will continue to cover the topics in the scope of possible revision of the Question 2/1 Final Report for ITU-D study period 2018-2021, and new topics targeted at new deliverables for ITU-D study period 2022-2025, as appropriate.2.1 Analysis of methods and issues for the transition from traditional digital broadcasting (sound and television) to video-centric converged service provisioning, including the deployment of new services and applications, such as UHDTV, AR/VR, interactive applications, for consumers/viewers in various environments (in possible collaboration with Question 3/1).2.2 Analysis of the effects to public broadcasting services in the developing countries of the rapid growth of traditional and online linear TV and video on demand subscription services.2.3 National experiences on strategies of the introduction of new broadcasting technologies, emerging services and capabilities, including regulatory, economic and technical aspects, reflecting the need of massive investments to cope with the ever-growing demand of video content (in possible collaboration with Question 3/1 and Question 4/1, where appropriate). 2.4 Analysis of the development of broadcasting systems using IP based technologies throughout the broadcasting chain, including, the production, the contribution and the transmission parts.2.5 Best practices and national experiences on spectrum planning activities related to the implementation of the referred video-centric converged service providers.2.6 National experiences on interference mitigation measures in the context of the referred transition scenarios. 2.7 Analysis of the gradual transition to digital sound broadcasting, study cases, sharing of experiences and strategies implemented, including the use of the VHF Band III for DAB or DTT.2.8 Analysis of possible innovations for broadcasting in the UHF band, proposed by new systems for broadcasting, such as 5G Broadcast, ATSC3.0 and other next generation systems. 2.9 Costs of the transition from traditional digital broadcasting (sound and television) to video-centric converged service providers, including, sharing best practices of new innovative business models, derived from this transition, for the various players: broadcasters, operators, technology providers, internet enterprises, manufacturers and distributors of receivers, and consumers, among others (in possible collaboration with Question 4/1 and Question 3/1).2.10 The use of the digital-dividend frequency bands resulting from the transition to digital broadcasting (sound and television), including technical, regulatory and economic aspects, such as: 1. status of the use of the digital-dividend frequency bands;
2. sharing of the digital-dividend frequency band;
3. harmonization and cooperation at regional level;
4. the role of the digital dividend in saving financing, cost savings on the transition to digital, and best experience and practice in this regard;
5. use of the digital dividend to help bridge the digital divide, especially for the development of communication services for rural and remote areas;
6. guidelines on the transition to digital sound broadcasting, focusing on the experiences of those countries that completed the process.

2.11 Follow the related work in the topics of study above within the other two sectors of the ITU to strengthen collaboration and avoid duplication.Expected Output a) A report reflecting the studies outlined in §§ 2.1, 2.2, 2.3 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10 and 2.11 above, and possible revisions to the Report of the previous study period, as appropriate. b) Periodic dissemination of relevant data emanating from the organizations and groups listed in §7 below. Periodic updates on studies taking place in the other ITU Sectors. c) National experiences on strategies and socio-economic aspects of the introduction of new broadcasting technologies, services and capabilities. Timing An annual progress report is expected at each study group meeting. Other deliverables, including annual deliverables and the revision of the report of the previous study period, sent for study group’s approval on readiness, as appropriate.Proposers/sponsors TBD. Sources of input 1. Collection of related contributions and data from Member States and ITU-D Sector Members, and those organizations and groups listed in § 9 below.
2. Updates and outputs of ITU-R and ITU-T study groups; relevant Recommendations and reports related to digital broadcasting.
3. Collection of information on the impact on developing countries of transition to digital broadcasting, re-planning and interactivity, and to the implementation of video-centric service providers across various environments.
4. Outputs of WTDC Resolution 9 (Rev. Buenos Aires, 2017), including relevant Recommendations, guidelines and reports.

Target audience

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| **Target audience**  | **Developed countries** | **Developing countries** |
| Telecom policy-makers  | Yes | Yes |
| Telecom regulators  | Yes | Yes |
| Service providers/operators  | Yes | Yes |
| Broadcasting operators  | Yes | Yes |
| ITU-D programme  | Yes | Yes |

Target audience – Who specifically will use the outputBeneficiaries of the output are expected to be middle and higher-level managers in broadcasters, telecommunication/ICT operators and regulators worldwide.Proposed methods for implementation of the resultsActivities include conducting technical studies, observing best practices, and developing comprehensive reports serving the target audience’s interests.Proposed methods of handling the Question or issue How?1. Within a study group:
* Question (over a multi-year study period) ☑
1. Within regular BDT activity (indicate which programmes, activities, projects, etc., will be involved in the work of the study Question):
* Programmes ☑
* Projects ☑
* Expert consultants ☑
* Regional offices ☑
1. In other ways – describe (e.g., regional, within other organizations with expertise, jointly with other organizations, etc.) □

Why? To be defined in the workplan. Coordination and collaboration The ITU‑D study group dealing with this Question should coordinate closely with:* Other ITU‑R and ITU‑T study groups dealing with similar issues, and in particular other relevant ITU‑D groups, for example the ITU‑D Working Group on Gender Issues
* The Technical Committee of the Inter-Regional Broadcasting Union
* UNESCO and relevant international and regional broadcasting organizations, as appropriate
* The Director of the Telecommunication Development Bureau (BDT) shall, through the appropriate BDT staff (e.g. regional directors, focal points) provide information to rapporteurs on all relevant ITU projects in different regions. This information should be provided to the meetings of the rapporteurs when the work of the programmes and regional offices is in the planning stages and when it is completed.

It is worth mentioning that it is beneficial to the membership that collaboration be incentivised with other Questions and ITU sectors in the investigation of other networks and service platforms which can be combined with broadcasting to implement new experiences in content delivery, for instance, in ITU-D Questions 1/1, 3/1 and 4/1; ITU-R SG1, SG5 and SG6; and ITU-T SG9 and SG16, each of the groups in their mandates and within their scopes of work.BDT programme linkWTDC Resolutions 10 (Rev. Hyderabad, 2010), Resolution 9 (Rev. Buenos Aires, 2017), Resolution 17 (Rev. Buenos Aires, 2017) and Resolution 33 (Rev. Dubai, 2014) Links to BDT programmes aimed at fostering the development of telecommunication/ICT networks as well as relevant applications and services, including bridging the standardization gap.Other relevant informationAs may become apparent within the life of the Question.**------------------End of the Proposed Text------------------** |

| **QUESTION 3/1**Emerging technologies, including cloud computing, m-services and OTTs: Challenges and opportunities, economic and policy impact for developing countries[[5]](#footnote-5) |
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| Statement of the situation or problem Technologies including cloud computing, m-services and over-the-top (OTT) offerings, present new opportunities for economic development, particularly in developing countries. Cloud computing is a paradigm towards which the world is now gradually moving, and this was even accelerated during and after the COVID-19 pandemic, in view of the many powerful advantages it offers. This concept can be summarized as a model enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service-provider interaction.The key characteristics of cloud computing are: broad network access, measured service, multi-tenancy, on-demand self-service, rapid elasticity and scalability, and resource pooling. For many countries, cloud computing represents a possible solution to the lack of adequate computing resources and it has achieved remarkable growth in many of the most developed countries, particularly after the adoption of this trend by mobile-telephone operators and manufacturers. Cloud computing is considered by key industry leaders to be the next technological revolution of the twenty-first century. The main key characteristics of cloud computing are economies of scale (infrastructure sharing), flexibility of use and large scale accelerated innovation.  Consumer demand for "Over-the-top (OTT)" applications continue to grow as consumers want more of, and perceive large benefits from them. Consumers expect to be able to access content, applications and services and want information about their subscriptions. Such offerings create demand for broadband access and services. Network operators are responding to this consumer demand by adopting technologies and that reflect the modern digital economy. Increased broadband networks also lead to the development and deployment of new services and applications, such as mobile money transfer, m-banking, m-commerce and e-commerce. The outbreak of the COVID-19 pandemic in 2020 created an unprecedented moment in modern history, forcing the lockdown of companies, cities and even countries. This global pandemic has demonstrated the high importance of ICT tools and connectivity, especially the value of m-services, over-the-top applications (OTTs), and cloud services and infrastructure.Over-the-top applications have connected communities, families, businesses, clients, and partners all around the world to stay informed, socialize, practice sport or yoga, and be entertained. M-services were at the core of the pandemic response. Health authorities developed mobile applications for COVID tracing and provided remote consultation on telemedicine platforms using mobile networks, which also enabled the transfer of money to the most vulnerable, and education to those who did not have computers. Most cloud service providershave faced high demand and pressure on their infrastructure to serve existing customers and workloads as well as the very high and unpredictable demand from new customers moving to the cloud. Some service providers have reported close to an eight-fold increase in demand for some services. Finally, Cloud Computing technologies played a critical role in the vaccine development to the management of the largest vaccine campaign ever organized. In view of the importance of the topic, cloud computing is dealt with by two study groups in the ITU Telecommunication Standardization Sector (ITU-T). ITU‑T Study Group 13 develops standards that detail requirements and functional architectures of the cloud-computing ecosystem, covering inter- and intra-cloud computing and technologies supporting XaaS (X as a Service). This work includes infrastructure and networking aspects of cloud-computing models, as well as deployment considerations and requirements for interoperability and data portability. Study Group 13 also develops standards enabling consistent end-to-end, multi-cloud management and monitoring of services exposed by and across different service providers’ domains and technologies. Study Group 13’s standardization work also covers network aspects of the Internet of Things (IoT), additionally ensuring support for IoT across future networks (FN) as well as evolving next-generation networks (NGN) and mobile networks. Cloud computing in support of IoT is an integral part of this work. Also, part the digital transformation of telecom operators, cloud computing is becoming mainstream. IT and telecommunication are merging, giving rise to telco cloud infrastructures, such as Cloud Radio Access Networks (RAN), Could Evolved Packet Core (EPC), 5G Cloud Core, Cloud IP Multimedia Subsystem (IMS), etc, which will benefit from all the innovative characteristics from cloud computing, brought to the telecommunication environment. Collaboration is therefore required as between ITU-D Questions and as between both Sectors in order to successfully deal with the challenges and opportunities facing the developing countries in terms of access to cloud computing. Question or issue for study The questions and issues for study, should consider all possible collaborations, and where relevant, with other SG1 questions, including, but not limited to Q1, Q4, Q6, …Cloud computing1. Infrastructure needs for supporting and enabling access to cloud services.
2. Strategies, policies and infrastructure investments to foster the emergence of a cloud computing ecosystem in developing countries, taking into consideration relevant standards recognized or under study in the other two ITU Sectors (in possible collaboration with Q 4/1 on investment issues).
3. Cloud-computing infrastructures and services trends including business models.
4. Cloud computing and telco cloud infrastructures.
5. Cost models for the adoption of cloud computing (in possible collaboration with Q4/1).
6. Develop case studies on the use of cloud computing to address core social, environment, and economic issues to address Sustainable Development Goals (in possible collaboration with Q6/2 on environment issues and Q4/1 on economic issues).
7. Lessons learned regarding deployment and use of the Cloud in addressing the challenges brought by the global health pandemic

M-services 1. Policies, strategies and relevant approaches in the field of m-services.
2. Methods of development and deployment of cross-cutting m-services related to e-commerce, e-finance and e-governance, including money transfer, m-banking and m-commerce (in possible collaboration with Q1/2 on smart services).
3. Strategies for availability, access, and use of mobile services and applications.
4. Ways to promote an enabling environment among ICT stakeholders for the development and deployment of m-services.
5. Develop case studies on the use of m-services to address core social, environment, and economic issues.

Over-the-top1. Impacts of regulatory frameworks on the provisioning of OTTs, network infrastructure availability and business models (in possible collaboration with Q4/1 on business models).
2. Identification of policy tools to facilitate the availability to consumers at the local and national levels of competitive OTT (in possible collaboration with Q6/1 on competition and consumer-related issues).
3. Identification of best practices that create incentives for investment in OTTs (in possible collaboration with Q4/1 on investment issues).
4. Continued study of issues relating to facilitating access to IP networks, thereby enabling access to OTTs (in possible collaboration with Q1/1 on broadband access issues).
5. National case studies and experiences regarding legal frameworks and partnerships seeking to facilitate the development and deployment of OTTs.
6. Enabling environments for voluntary commercial partnerships among OTTs, network operators, and others in the ICT value chain.
7. Impact of OTTs on end-user demand for the Internet.
8. Impact of OTTs on SMEs and content creators.
9. Lessons learned regarding deployment and use of OTTs in addressing the challenges brought by the global health pandemic.

Expected output1. Annual progress report on the above study items.
2. A progress report midway through the study cycle.
3. Annual deliverables that are standalone documents and address specific topic of the study. These could be developed in collaboration with other Questions.
4. A final report for the Question that includes:
	* An analysis of the factors influencing effective access to support emerging technologies, including cloud computing, m-services and OTT offerings.
	* A set of guidelines, such as policy or technical approaches, among others, for facilitating infrastructure deployment, which could be delivered, inter alia, through training seminars in accordance with the ITU Telecommunication Development Sector (ITU-D) programme on capacity building.
	* A handbook on infrastructure and services supporting cloud computing in developing countries, including consideration of strategies and policies that could be implemented.This handbook will be the result of study group collaboration between ITU‑T Study Groups 3 and 13 and the rapporteur group dealing with this Question under ITU‑D Study Group 1.
	* Draft Recommendation(s), as appropriate and if justified.

Timing The interim report on this Question is expected by XXXX. The final report is expected in XXXX at the end of the ITU-D study period. Proposers/sponsors Sources of input 1. Results of related technical progress in relevant ITU-T study groups, in particular Study Groups 3 and 13.
2. ITU publications on emerging technologies, including cloud-computing services, m-services and OTT offerings.
3. Relevant reports of national and/or regional organizations in developing and developed countries.
4. Contributions on experiences with providing access to emerging technologies, including cloud computing, m-services and OTT offerings in developed and developing countries.
5. Relevant inputs from service providers and manufacturers.
6. Relevant inputs from industry experts, researchers, NGOs, and academia.
7. Develop new forums and tools, like web dialogs, to indulge new contributions and dialogs.
8. Relevant inputs from Telecommunication Development Bureau (BDT) programmes relating to emerging technologies, including cloud computing, m-services and OTT offerings.

Target audience Target audience

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| Target audience | Developed countries | Developing countries |
| Telecom policy-makers | Yes | Yes |
| Telecom regulators | Yes | Yes |
| Service providers/operators | Yes | Yes |
| Manufacturers | Yes | Yes |
| ITU-D programme | Yes | Yes |

Proposed methods for implementation of the results The work of the rapporteur group will be conducted and publicized through the ITU-D website as well as through documents and appropriate liaison statements. The results of the work will also be used by relevant BDT programmes as components of the toolkit BDT uses when solicited by Member States and Sector Members to support their efforts to develop and deploy emerging technologies, including cloud-computing, m-services and OTT offerings. Proposed methods for handling the Question The Question will be handled by a rapporteur group of ITU-D Study Group 1. Coordination and collaboration In order to coordinate effectively and avoid duplication of activities, the study should take into consideration:* outputs from the relevant ITU‑T study groups, in particular those made available by ITU‑T Study Groups 3 and 13;
* the relevant outputs from ITU‑D Questions;
* inputs from the relevant BDT programmes.

BDT programme linkThe relevant programme will be the programme on network infrastructure and services.Other relevant informationAs may become apparent within the life of the Question.  |

| **QUESTION 4/1****Economic aspects of the national telecommunication/information and communication technologies and networks** **/** **Economic policies and methods of determining the costs of services related to national telecommunication/information and communication technology networks, including next-generation networks** |
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| Statement of the situation or problemAs recognized in the Final Report on study Question 4/1 of the ITU-D study period 2018-2021, there is the continuing importance of considering economic aspects in national telecommunications/ICT.With the emergence of new types of telecommunication enterprise, such as MVNOs, tower companies, capacity wholesale operators and the convergence of traditional telecom businesses, regulators and operators are having to adapt their policies and strategies to this new digital reality. Finding suitable authorisations, cost and business models and using relevant policy and regulatory tools such as infrastructure sharing should be considered by NRAs in order to help their national markets thrive, as shown in contributions received from both NRAs, policymakers and operators and considered by the Rapporteur Group for Question 4/1 in the current study period. At the same time, further global forces pushing towards increased digitalization, as well as national economic and global emergencies like the COVID-19 pandemic, are throwing up many new relevant issues that call for additional study and investigation in the next ITU-D study period.Expansion of the number of topics follows the need of divide the work on Final Reports of Question 4/1. Thus, the topics which will be the continuation of the same from ITU-D study period 2018-2021 could be reviewed in the scope of revision of the Question 4/1 Final Report for certain study period, but new topics could be considered at the new Question 4/1 Final Report for 2022-2025 study period.Thus, the work programme set out below to guide the activities related to Question 4/1 should cover:* identification of active collaborators;
* expected outputs of the Question;
* working methods; and
* work programme.

Question or issue for study Continuing topics from previous study period with some expansionsThe Question will continue to cover the following main topics from national perspectives in the scope of possible revision of the Question 4/1 Final Report for ITU-D study period 2018-2021:1. New charging methods (or models, if applicable) for services provided over NGN networks:
	1. Methods for determining the costs of wholesale services.
2. The impact of infrastructure sharing (local loop unbundling, tower companies, etc.) on investment cost, provision of telecommunication/ICT services, competition and prices to consumers: case studies with quantitative analysis.
	1. For what type of infrastructure (or facilities) the provider party is free to negotiate reasonable commercial terms and conditions with a requesting party.
	2. Methods for determining the costs of passive and active infrastructure sharing services
3. Consumer price evolution and impact on ICT service usage, innovation, investment and operator revenues:
	1. New and innovative business models for services deployed in an NGN environment, including methods encouraging the adoption and use of ICT services.
	2. Trends in offers and prices of telecommunication/ICT services, including international mobile roaming.
	3. Assessment of telecommunication/ICT services bundles, bonuses and their impact.
4. Trends in the development of virtual mobile operators and their regulatory framework.

New topics for next study periodThe Question will cover the following main topics from national perspectives in the scope of development new Question 4/1 Final Report or other deliverables for ITU-D study period 2022-2025:1. Impact of new converging ICTs on cost-modelling strategies traditionally carried out by stakeholders forming the ICT networked Value Chain (e.g. telecom operators, over-the-top, digital service providers, etc.);
	1. The role and design of new tariffs for convergent networks/services (e.g.: bundling);
	2. The role and impact of tower companies as new entrants for converging telecommunications/ICT market;
2. The role and impact on achieving SDGs of new types and modes of investment in telecommunications/ICT, e.g. blended investment and crowd-funding;
3. Analysis of case studies on the economic contribution of digital telecommunication/ICTs technologies and services to the national economy;
4. Framework for establishing Contribution of telecommunications/ICT to the GDP of the country;
5. Economic incentives and mechanisms for bridging the digital divide;
6. Analysis of Economic impact of the COVID-19 pandemic on the Telecommunications/ICT markets;
7. Analysis of the contribution of Telecommunications/ICT on the economic recovery from the COVID-19 pandemic.

New topics for this study period to work in collaboration with other ITU-D Questions[[6]](#footnote-6)1. National experiences on the contribution to the national economy in bridging the digital divide to provide accessible and affordable connectivity (in possible collaboration with Questions 1/1, 5/1 and 7/1);
2. Different models for infrastructure sharing, including through commercially negotiated terms (in possible collaboration with Question 1/1)
	1. Usage and impact of alternative infrastructure from oters actors (ex: aerial optical fiber using electric pole of Energy company or telephonic pole of incumbent operator, railway company’s optical fiber) (in possible collaboration with Question 1/1).

Expected output* Revision of the Question 4/1 Final Report for ITU-D study period 2018-2021 over the topics set in Section 2.1, as appropriate;
* Revision of the Question 4/1 Guidelines on cost modelling, as appropriate;
* New Question 4/1 Final Report and other deliverables for ITU-D study period 2022-2025, covering one/some/all of proposed new topics set in Section 2.2;
* Joint deliverables with other ITU-D Questions over the topics set Section 2.3, as appropriate;
* Inputs for ITU Regional Economic Dialogues, as appropriate;
* Inputs for ITU Tariff Policies Survey, as appropriate.

TimingAnnual progress reports will be presented to Study Group 1 in 2022, 2023 and 2024. Deliverables set in Section 3 could be sent for Study Group 1 for approval on readiness without waiting for the end of study period. Proposers/sponsorsITU Telecommunication Development Sector (ITU-D) Study Group 1 proposed the continuation of this Question as modified herein. Sources of input The major source of input will be the experiences of Member States and Sector Members on economic aspects on national telecommunications/ICT. Contributions from Member States and Sector Members will be essential to the successful study of the issue. Interviews, existing reports, materials from relevant ITU events, particularly, ITU Regional Economic Dialogues, and surveys should also be used to gather data and information for expected outputs of Question. Material from regional telecommunication organizations, telecommunication research centres, manufacturers and working groups should also be used, in order to avoid duplication of work. Contributions are expected from Member States, Sector Members, Associates and Academia, ITU-D study groups and from relevant ITU Radiocommunication Sector (ITU-R) and ITU Telecommunication Standardization Sector (ITU-T) study groups and working parties, in particular ITU-T Study Group 3 and ITU-R Working party 1B, and other stakeholders. Target audienceAll the target audiences mentioned below, with particular attention to the needs of developing countries[[7]](#footnote-7).

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| **Target audience** | **Developed countries** | **Developing countries** |
| Telecom policy-makers | Yes | Yes |
| Telecom regulators | Yes | Yes |
| Service providers/operators | Yes | Yes |
| Manufacturers | Yes | Yes |
| ITU-D programme | Yes | Yes |

Target audience – Who specifically will use the output All national telecom policy-makers, regulators, service providers and operators, especially those in developing countries, as well as regional and international organizations.Proposed methods for implementation of the resultsThe results of the Question are to be distributed through ITU-D interim, including through ITU regional offices,final reports and other relevant deliverables. 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 1 should they need it.Proposed methods of handling the Question or issueElectronic distribution of the reports and guidelines to all Member States, Sector Members and their respective national regulatory agencies (NRAs), and ITU regional offices. Distribution of the report and guidelines at the Global Symposium for Regulators (GSR), ITU Regional Economic Dialogues and relevant Telecommunication Development Bureau (BDT), Radiocommunication Bureau (BR) and Telecommunication Standardization Bureau (TSB) seminars. **How?** 1) Within a study group: * Question (over a multi-year study period) ☑

2) Within regular BDT activity:* Objectives 3 and 4 ☑
* Projects: regional initiatives □
* Expert consultants ☑

Coordination and collaboration The ITU-D study group dealing with this Question will need to coordinate with: * Relevant ITU-D study group Questions, particularly Question 1/1 and Question 3/1;
* Relevant ITU-T study groups, particularly Study Group 3 and its regional groups for Africa (SG3RG-AFR), Asia and Oceania (SG3RG-AO), Arab Region (SG3RG-ARB), Latin America and the Caribbean (SG3RG-LAC) and Eastern Europe, Central Asia and Transcaucasia (SG3RG-EECAT);
* Relevant ITU-R study groups and working parties, particularly Working party 1B;
* Relevant focal points in BDT and ITU regional offices;
* Experts and experienced organizations in this field.

BDT programme link ITU-D Objectives 3 and 4. Other relevant informationAs may become apparent within the lifetime of this Question.\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Annex 1 to the Q 4/1 Report. Additional topics of Q 4/1 ToR that could be considered at the preparation to WTDC-21**1. Economic aspects/implications of digital transformation (IoT, AI, Machine Learning, 5G and beyond, etc.);
2. Taxation approaches influence policies and methods of determining the costs of services in emerging national telecommunications/ICT markets;
3. The real economic value of usage of personal data (in possible collaboration with Q6/1 and Q3/2);
4. Impact on innovation, productivity and other National economic aspects of Digital financial inclusion.
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| **QUESTION 5/1****Telecommunications/ICTs for rural and remote areas** |
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| Statement of the situation or problemIn order to continue to contribute to achieving the objectives set by the Geneva Plan of Action of the World Summit on the Information Society (WSIS) in the era of digital transformation, and to promote attainment of the Sustainable Development Goals (SDGs) defined in September 2015, it is necessary to address the challenge of digital infrastructure development to make available consequent benefit of various e-services (e-education, e-health, e-government, e-agriculture, e-commerce, etc.) in the rural and remote areas of developing countries[[8]](#footnote-8)1 including LDCs, LLDCs and SIDSs where more than half of the population live and they need broadband connectivity in general including terrestrial and non-terrestrial high-speed and high-quality broadband network technologies that support the most common broadband applications required by citizens for the digital equity and attainment of the SDGs.The installation of cost-effective and sustainable digital infrastructure by deploying emerging technologies such as next generation high-speed mobile terrestrial and non-terrestrial networks and fixed broadband wire and wireless transmission systems suited for rural and remote areas is an important aspect calling for further studies, and specific outcomes need to be available for the vendor community to make available broadband internet connectivity for up-to-date e-services for quality life of inhabitants in rural and remote areas.Existing network systems are primarily designed for urban areas, where the necessary support infrastructure (adequate power, building/shelter, accessibility, skilled manpower to operate, etc.) for setting up a broadband telecommunication network is assumed to exist. Hence, current and future systems need to be more adequately adapted to specific rural requirements in order to be widely deployed.In particular, terrestrial and non terrestrial high-speed Internet and application is a new way to promote the balanced allocation of public resources. Internet has broken through the time and space constraints, and delivered high-quality education, medical care and other public resources to residents in rural and remote areas, and promoted the balanced allocation of public resources.Shortage of power, difficult terrain, lack of skilled manpower, access motor road and transportation, and difficulty of installation and maintenance of networks are some of the known challenges that developing countries planning to extend infrastructure to rural and isolated land locked areas and remote islands must tackle.More detailed studies addressing the challenges of deploying cost-effective and sustainable next generation broadband ICT infrastructure in rural and remote areas are expected to be undertaken within the study groups of the ITU Telecommunication Development Sector (ITU-D), taking into account the global perspective in the era of digital transformation and social innovation.Therefore, the WSIS target, "Connect villages with telecommunications/ICTs and establish community access points", should be promoted more intensively taking into account the sharing economy, by employing emerging advanced digital broadband technologies for various e-application services to stimulate social and economic activities for inhabitants’ quality life in rural and remote areas. Multipurpose community telecentres (MCT), public call offices (PCO), community access centres (CAC) and e-posts are still valid in terms of cost effectiveness for sharing of infrastructure and facilities by community residents, leading to the goal of provision of individual telecommunication access.It is also important to consider broadband demand creation and affordability programs for the adoption of broadband and e-services by the people in rural and remote areas. They need affordable broadband and devices for access to the internet. Government incentives, subsidies and other financing mechanisms are necessary. Work on the effective use of Universal Service Funds and best practices is also crucial.Question or issue for studyThere are still many challenges to spreading broadband digital infrastructure by satellite, next generation high-speed mobile, fixed broadband wired and wireless systems in rural and remote areas. Throughout the studies conducted in the past study periods, it has been clear from the experience of many countries that technologies and strategies for rural and remote areas are various and diversified from country to country. Also, the social, economic and technological situation in rural and remote areas is moving forward to new economy rapidly. Therefore, it is important to update the study of broadband digital connectivity for rural and remote areas and to adapt to the social innovation for rural inhabitants of developing countries including LDCs, LLDCs and SIDSs, in respect of the following items:* Techniques and sustainable solutions that can impact on the provision and availability of broadband digital infrastructure in rural and remote areas, with emphasis on those that employ the up-to-date technologies designed to lower infrastructure capital and operating costs, assist convergence between services and applications.
* Difficulties in creating or building broadband digital infrastructure in rural and remote areas.
* Difficulties facing broadband satellite, next generation mobile networks and fixed digital transmission systems for rural deployment in developing countries, and the requirements to be satisfied by such systems.
* Needs and policies, mechanisms and regulatory initiatives to reduce the digital divide between rural and urban areas by increasing broadband digital access.
* Quality of the services provided, and the cost effectiveness, degree of sustainability in different geographies and sustainability of the techniques and solutions.
* Broadband demand creation and affordability programs (including government incentives, subsidies) for the adoption of broadband, e-services and devices in rural and remote areas.
* Financing mechanisms including Universal Service Funds.
* Integration and implementation of new ICT technologies/services in rural and remote areas (especially in education, health and agriculture).
* Increasing availability of telecommunications/ICTs that provide enhanced digital connectivity at progressively lower costs, lower energy consumption and lower levels of GHG emissions.
* The influence of cultural, social and other factors in producing differing and often creative responses to meeting the demand for e-services from residents of rural and remote areas of developing countries including Least Developing Countries LDC), land locked developing countries (LLDCs) and Small Island Developing States (SIDSs).
* The terrestrial and non-terrestrial high-speed broadband and Internet application are bringing huge economic effects and social changes for the digital equity to rural areas around the world. Therefore, it is important to strengthen the research of driving effect of Internet application in the next research cycle as to the following points:

1) the integration of rural Internet applications (especially smart applications for e-learning, e-health, e-agriculture, e-commerce) for rural and remote areas, into national strategies2) promotion of Internet applications such as rural e-commerce, online education and telemedicine, and fully release the important role of information technology in rural economic and social development.3) encouragement of the development of new Internet applications and digital solutions for the socio-economic development of rural and remote areas, and promotion of the innovation and digital transformation for rural community.* Opportunities for and challenges to access to services in locally relevant languages and for the people with specific needs.
* Description of evolving system requirements for rural network systems specifically addressing the identified challenges of rural deployment.

**Analysis of case studies**During the study carried out on each of these items, the following matters should also be studied and reflected in the outputs of the Question:* Environmental sustainability in deploying the infrastructure and necessary robustness of digital infrastructure
* Maintenance and operational aspects to provide a quality and continuous service
* Demand-side factors and practices to generate and increase the usage of affordable ICT/IoT devices and services for rural and remote areas
* Strategies on the integration of ICT in Education in rural areas
* Efforts to build digital literacy and ICT skill sets for the deployment of digital broadband service in rural and remote areas
* Relevant localization of content for rural and remote people
* Affordability of services/devices for rural users to adopt so as to fulfil their development needs
* Strategies to promote Small and Medium Enterprises (SMEs), profit and non-profit, in accordance with national regulations, to provide telecommunication/ICTs services in rural and remote areas for promoting innovation, achieving national economic growth, in order to reduce the digital divide between rural and urban areas.

In addressing the above studies, the work under way in response to other ITU-D Questions, and close coordination with relevant activities under those Questions should be taken into consideration, in particular Questions 1/1, 3/1 and 4/1 and Questions 2/2, 4/2 and 5/2, are highly relevant. Likewise, the studies shall take into account cases related to people with specific needs, indigenous communities, isolated and poorly served areas, LDCs, small island developing states (SIDS) and landlocked developing countries (LLDCs), and highlight their specific needs and other particular situations which need to be considered in developing broadband digital facilities for these areas.Expected outputThe 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 one or more Recommendations 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 enable them to organize seminars and workshops for sharing best practices on the deployment of digital broadband infrastructure in rural and underserved areas.TimingThe output will be generated on an annual basis. The output from the first year will be analysed and assessed in order to update the work plan for the next year, and so on.Proposers/sponsorsThe 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 inputContributions are expected from Member States, Sector Members, Academia and Associates, as well as inputs from relevant Telecommunication Development Bureau (BDT) programmes, particularly those that have successfully implemented telecommunication/ICT projects 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

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| **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 |

Proposed methods of handling the QuestionWithin ITU-D Study Group 1.CoordinationThe ITU‑D study group dealing with this Question will need to coordinate with:– Focal points of the relevant Questions in BDT– Coordinators of relevant project and programme activities in BDT– Regional and scientific organizations with mandates covering the subject matter of the Question– Other relevant stakeholders (see Recommendation ITU-D 20).As may become apparent within the life of the Question.BDT programme linkWTDC Resolution 11 (Rev. Buenos Aires, 2017), Resolution 68 (Rev. Dubai, 2014) and Recommendation ITU-D 19.Links to BDT programmes aimed at fostering the development of telecommunication/ICT networks as well as relevant applications and services, including bridging the standardization gap.Other relevant informationAs may become apparent within the life of the Question. |

| **QUESTION 6/1****Consumer information, protection and rights: Laws, regulation, economic bases, consumer networks** |
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| **Discussion and proposal**This contribution is intended to reflect the current ongoing discussions regarding the future of study questions in the Terms of Reference of ITU-D Question 6/1. In this context, the Question would continue in the next study period 2022-2025, with a new scope and new items for study.The Rapporteur Group for Question 6/1 believes that the Question should continue. This is because this question pertains to consumer protection which remains an extremely relevant subject and a moving target given that firstly, telecom is a dynamic sector and technology and business models keep changing, giving rise to new consumer protection challenges, and secondly, Member states are at various stages of telecom penetration and adoption of new technologies and regulatory evolution, making the role of ITU as a forum for exchange of information, best practices and guidance, extremely valuableThe scope of the Question is at present quite comprehensive. However, it could be improved by modifying it to emphasise contemporary issues and by adding greater focus on consumer education and awareness measures. Going forward, this Question could also address the responsible use of new technologies such as IoTs, drones, robotics etc. and means to foster consumer trust in new technologies while protecting innovation through self-regulation and co-regulation etc. This is necessary to encourage continued uptake of new technologies in a manner that is safe, secure and respects consumer rights.The text of the new Terms of Reference for the new Question 6/1, based on the current text for the question, is proposed below.**------------------Begin of the Proposed Text------------------**Statement of the situation or problem* 1. In the context of increasing convergence and the advent of advanced communication technologies, consumer protection remains a highly relevant subject and a moving target. The Telecom/ICT sector is dynamic and technology and business models keep changing, giving rise to new consumer protection issues Further, Member states are at various stages of telecom penetration and adoption of new technologies, and policy/regulatory evolution, and accordingly face different challenges making exchange of information and best practices very important.
	2. The COVID-19 pandemic and widespread use of telecommunications/ICTs, underlines both the importance of digital connectivity, and also the need for sharing of best practices so as to harness the benefits of telecommunications/ICTs while protecting the interests of consumers.
	3. There is a need to promote the responsible use of telecommunications/ICTs as well as means to foster consumer trust in new technologies while protecting competition and innovation.
	4. Member States must prepare for improved collaborative regulation. Consumer protection is an important policy aspect of telecommunications/ICTs. Various models of policy and regulation including better self-regulation by service providers and co-regulation need to be explored.
	5. Consumer protection is necessary to foster consumer trust, which in turn would encourage the continued uptake of new technologies in a manner that is safe, secure and respects consumer rights. The protection of vulnerable users such as new users especially those from economically disadvantaged populations, women, children, the elderly and persons with disabilities must be given special attention.

Question or issue for study* 1. The Question will continue to cover the topics in the scope of possible revision of the Question 6/1 Final Report for ITU-D study period 2018-2021, and new topics targeted at new deliverables for ITU-D study period 2022-2025, as appropriate.
	2. Studies under the Question will focus on the below mentioned issues:
		1. Telecommunications/ICT Policy and regulation being adopted for consumer protection by NRAs and other national, regional and international organizations to enable digital transformation while balancing the interests of all stakeholders including consumers and service providers. This would include institutional and regulatory mechanisms to promote cross-sectoral and cross-border collaboration along with revisiting policy and regulatory approaches, such as co-regulation and self-regulation. In particular it would include:

(i) Best practices and tools to protect consumers from unsolicited commercial communications, online fraud and the misuse of personal data as an integral part of telecommunications/ICT policy.ii) information sharing about policy frameworks to protect consumers, promote competition and innovation, to enhance customer care, with the advent of new and emerging telecommunications/ICT technologies such as the Internet of Things (IoT), and ensure that the frameworks facilitate online communications and transactions. * + 1. Organizational methods and strategies being developed by public consumer-protection agencies with regard to institutional/legal and regulatory mechanisms to tackle new challenges arising from rapid uptake of new telecommunications/ICT services including setting up of institutions, such as consumer education centres, dedicated consumer complaint-handling centres or commissions, and dedicated consumer complaint resolution mechanisms to protect consumers effectively.
		2. Best Practices to ensure that policy and regulation for consumer protection to include those that are:

(i) Based on consultation and collaboration balancing the expectations, ideas and expertise of all market stakeholders and players, including academia, industry, civil society, consumer associations, data scientists, end users, and relevant government agencies from different sectors.(ii) Evidence-based as evidence is critical for creating a sound understanding of the issues at stake and identifying the options going forward as well as assessing their impact. iii) Outcome-based in order to address the most pressing issues, such as market barriers and enabling synergies. Policy and regulation responses to new telecommunications/ICT technologies should be grounded in the impact on consumers, societies, market players (iv) Incentive-based, rewarding players who uphold consumer protection* + 1. Institutional and policy/regulatory mechanisms/means put in place by member states and regulators, so that operators/service providers publish transparent, comparable, adequate, up-to-date information on, *inter alia*, tariffs, expenses and terms of service including protection of personal information and contract termination, and accessing and updating telecommunications/ICT services, in order to keep consumers informed and to develop clear and simple offers, as well as best practices for consumer education. This includes:

(i) Availability of tools certified by NRAs to test the actual speed of users’ connection and best practices about consumer protection measures related to non-conformity between actual performance of the Internet access and the performance indicated by the Internet service provider. (ii) Transparency requirements about traffic management and zero-rating practices of Internet service providers.(iii) Transparency about main forms of third-party payments such as direct carrier billing, premium rate services, mobile payment etc. and consumer protection measures in place about third party charges in telecom bills.* + 1. Mechanisms/means implemented by the policymakers and regulators themselves to keep consumers and users informed about the basic features, quality, security, measures to protect personal information, and rates of the various services being offered by the operators, enabling them to know and exercise their rights, to use the services properly, and to make informed decisions when contracting services.
		2. Special legal, economic and financial measures adopted by national authorities in the interests of protection of specific categories of users (new users especially from economically disadvantaged communities, the elderly, persons with disabilities, women and children) including mechanisms to promote the creation of useful information and practical tools to be used for promoting digital literacy to better enable consumer protection, including surrounding the use of new technologies.
		3. Mechanisms/means implemented by the policymakers and regulators and operators/service providers to guarantee the incentive to self-regulation or co-regulation within a corporate ethic that promotes the confidence of all the actors involved, especially the consumer.
		4. Means that may be adopted to foster effective consumer protection cooperation and information exchange among policymakers and regulators.

Expected outputa) A report to Member States and Sector Members, consumer-protection organizations, operators and service providers, setting out guidelines and best practices that could be produced to help these actors to find the tools needed to create a robust culture of consumer protection as regards information, awareness-raising, inclusion of consumers' fundamental rights in laws and national, regional or international regulatory texts, and consumer protection in the provision of all telecommunication/ICT services. b) Organization of regional seminars on consumer protection: consumer information, protection and rights, laws, economic and financial bases, consumer networks.TimingAn annual progress report is expected at each study group meeting. Other deliverables, including annual deliverables, workshops and the revision of the report of the previous study period, could be sent for study group’s approval on readiness, as appropriate.Proposers/sponsors TBD. Sources of input 1) Collection of related contributions and data from Member States and ITU-D Sector Members, and those organizations and groups listed in below. 2) Updates and outputs of ITU-R and ITU-T study groups; relevant Recommendations and reports related to consumer protection.3) Collection of information on the impact on developing countries of new technologies, busines models and ongoing digital transformation 4) Outputs of WTDC Resolution 9 (Rev. Buenos Aires, 2017), including relevant Recommendations, guidelines and reports.Target audience

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| **Target audience**  | **Developed countries** | **Developing countries** |
| Telecom policy-makers  | Yes | Yes |
| Telecom regulators  | Yes | Yes |
| Service providers/operators  | Yes | Yes |
| Broadcasting operators  | Yes | Yes |
| ITU-D programme  | Yes | Yes |

Target audience – Who specifically will use the outputBeneficiaries of the output are expected to be consumers, telecommunication/ICT operators and regulators worldwide.Proposed methods for implementation of the resultsActivities include conducting observing and sharing best practices, and developing comprehensive reports serving the target audience’s interests.Proposed methods of handling the Question or issue**How?*** 1. Within a study group:
* Question (over a multi-year study period) ☑
	1. Within regular BDT activity (indicate which programmes, activities, projects, etc., will be involved in the work of the study Question):
* Programmes □
* Projects □
* Expert consultants □
* Regional offices □
	1. In other ways – describe (e.g. regional, within other organizations with expertise, jointly with other organizations, etc.) □

Why? To be defined in the workplan. Coordination and collaboration The ITU-D study group dealing with this Question should coordinate closely with:* Other ITU-R and ITU-T study groups dealing with similar issues, and in particular other relevant ITU-D groups, for example the ITU-D Working Group on Gender Issues and child online protection
* Relevant international and regional organizations, as appropriate
* The Director of the Telecommunication Development Bureau (BDT) shall, through the appropriate BDT staff (e.g., regional directors, focal points) provide information to rapporteurs on all relevant ITU projects in different regions. This information should be provided to the meetings of the rapporteurs when the work of the programmes and regional offices is in the planning stages and when it is completed.

It is worth mentioning that it is beneficial to the membership that collaboration be incentivised with other Questions and Sectors in the investigation of other networks and service platforms which can be combined with broadcasting to implement new experiences in content delivery, for instance, in ITU-D Questions 1/1, 3/1 and 4/1; ITU-R SG1, SG5 and SG6; and ITU-T SG9 and SG16, each of the groups in their mandates and within their scopes of work.BDT programme link Links to BDT programmes aimed at fostering the development of telecommunication/ICT networks as well as relevant applications and services, including bridging the digital divideOther relevant information As may become apparent within the life of the Question.**------------------End of the Proposed Text------------------** |

| **QUESTION 7/1****Telecommunications/ICT accessibility to enable inclusive communication** |
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| Statement of the situation or problemThe World Health Organization (WHO) estimates that one billion persons in the world live with some type of disability. According to WHO, about 80 per cent of persons with disabilities live in low-income countries. Disability appears in different forms and degrees, regarding physical, sensitive or mental aspects Also, increasing life expectancy results in elderly persons having reduced capabilities. Thus, it is likely that the number of persons with disabilities will continue to rise.The inclusion in society of persons with disabilities is a policy of Member States.The objective of such policy is to bring about the necessary conditions for persons with disabilities to enjoy the same opportunities in life as the rest of the population. The disabilities policy has evolved, making urban infrastructure accessible and improving health and rehabilitation services for persons with disabilities. Moreover, the principles of equal opportunity and non-discrimination are common policies of Member States.On 13 December 2006, UNGA approved the Convention on the Rights of Persons with Disabilities (CRPD), which came into force on 3 May 2008.The CRPD establishes basic principles, and also a State's obligations to ensure equal access to telecommunications/ICTs, including Internet, by persons with disabilities.The World Summit on the Information Society (WSIS) acknowledged that special attention should be given to the needs of elderly persons and persons with disabilities.The United Nations General Assembly (UNGA) High-Level Meeting on the overall review of the implementation of the WSIS outcomes acknowledged the need to address the specific ICT challenges facing children, youth, persons with disabilities, older persons, indigenous peoples, refugees and internally displaced persons, migrants and remote and rural communities.On 13 December 2006, UNGA approved the Convention on the Rights of Persons with Disabilities (CRPD), which came into force on 3 May 2008.The CRPD establishes basic principles, and also a State's obligations to ensure equal access to telecommunications/ICTs, including Internet, by persons with disabilities.Resolution 175 (Rev. Dubai, 2018) of the Plenipotentiary Conference, on telecommunication/ICT accessibility for persons with disabilities and persons with specific needs, calls for the introduction of mechanisms to enhance the accessibility, compatibility and usability of telecommunication/ICT services, and encourages the development of applications enabling the use of such services by persons with disabilities and persons with specific needs on an equal basis with others.Resolution 70 (Rev. Hammamet, 2016) of the World Telecommunication Standardization Assembly, on telecommunication/ICT accessibility for persons with disabilities and persons with specific needs, resolves that the ITU Telecommunication Standardization Sector (ITU-T) study groups should consider aspects of universal design, non-discriminatory standards, service regulations and measures for all persons, especially persons with disabilities.The ITU-G3ict Model ICT Accessibility Policy Report highlights a series of elements relevant to the development of policies on public access to ICTs, mobile communications, TV and video programmes, web access and public procurement. The report also recognizes the need for flexible legislative frameworks that foster equitable access to telecommunications/ICTs for persons with disabilities in a constantly changing technological environment.During the COVID-19 pandemic, the issue of digital inclusion and telecommunication/ICT accessibility has gained significant momentum around the world. It becomes very important to mainstream the ICT through the implementation of policies, regulations and communication strategies (including education, employment and health) for the socio-economic development of all people, including persons with disabilities. Accessibility principles should be implemented at the design stage of ICT applications and services to bridge the digital divide.Question or issue for study1. national ICT accessibility policies, legal frameworks, directives, guidelines, strategies and technological solutions to improve the accessibility, compatibility and usability of telecommunication/ICT services and applications
2. accessible telecommunication/ICT applications and services
3. new and emerging technologies for inclusive and open society, and accessibility of such technologies
4. аccessibility of e-government and other socially relevant digital services
5. accessible software and/or associated assistive devices
6. education and training for persons with disabilities and other persons with specific needs in the use of telecommunications/ICTs, and education and training of experts to assist persons with disabilities to use telecommunications/ICTs (audio descriptors, sign language interpreters, operators of specialized equipment, etc.).
7. use of accessible telecommunications/ICTs applications and services to promote the employment of persons with disabilities, to ensure inclusive and open society
8. telecommunication operators’ contribution to accessible digital solutions
9. use of relay services for e-education, emergency services and for various other services (banking etc).
10. accessibility standards of assistive equipment and telecommunication/ICT services and applications with close collaboration with ITU-T
11. national experience in collecting information and statistics addressing ITU Members activities on telecommunication/ICTs accessibility
12. mechanisms to involve persons with disabilities in the process of elaborating legal/regulatory provisions, public policy and standards related to telecommunication/ICTs accessibility

Expected output1. guidelines and recommendations to assist ITU Members as well as all stakeholders on telecommunications/ICTs accessible to build an inclusive and inclusive society;
2. raising awareness among ITU Members, decision-makers, persons with disabilities and persons with specific needs, and any other stakeholders on best practices in telecommunication/ICTs accessibility;
3. highlight ITU products and services available to the members to empower national stakeholders in ensuring telecommunication/ICTs accessibility;
4. mechanisms for the use of telecommunications/ICTs to promote the employment of persons with disabilities, including telework;
5. methodologies that make it possible to compile telecommunication/ICT statistics focused on users with disabilities, in order to monitor the impact of the implementation of ICT accessibility policies, practices and technological solutions;
6. final report for Member States and Sector Members, operators, service providers and any other interested parties, providing guidance and best practices for the development and implementation of policies, regulatory frameworks and strategies for accessible telecommunication/ICTs for persons with disabilities and persons with specific needs;
7. telecommunication/ICT accessibility training to stakeholders, especially policy-makers, on how to engage all national and/or regional stakeholders and share good practices and success stories on this implementation of ICT accessibility policies, regulatory frameworks and services.

TimingThese activities should be included in the programme of activities of ITU-D Study Group 1 for the 2022-2025 study period, as a standalone Question.Proposers/sponsors**Sources of input**The following stakeholders are encouraged to supply information for the Question: Member States, Sector Members, relevant international and regional organizations, public and private institutions and civil-society organizations involved in the design of policies and advocacy for the development of technological solutions to reduce barriers in telecommunication/ICTs accessibility to ensure inclusive and open society.Target audience

|  |  |  |
| --- | --- | --- |
| **Target audience** | **Developed countries** | **Developing countries** |
| Telecom policy-makers | Interested | Very interested |
| Telecom regulators | Interested | Very interested |
| Service providers/operators | Interested | Very interested |
| Manufacturers | Interested | Interested |

Target audienceThe result of the study will serve Member States, and particularly administrations of developing countries and LDCs, in designing policies and executing strategies and actions for the implementation of technological solutions that improve accessibility to telecommunications/ICTs for persons with disabilities. Moreover, it will enable Sector Members and service providers located in those countries to design and apply proven and successful commercial practices to meet the needs of persons with disabilities and facilitate their access to telecommunications/ICTs.Proposed methods for implementation of the resultsAuthorities from Member States could consider designing policies and strategies to implement the most suitable technological solutions in the light of the characteristics of their populations and countries. In this respect, there could be short-term, medium-term and long-term action plans so as to permit implementation in phases.The report should also be useful for administrations of Member States, Sector Members and service providers to encourage the adoption of commercial practices geared to meeting the needs of persons with disabilities and persons with specific needs.Proposed methods of handling the Question or issueHow?1. Within a study group:
* Question (over a multi-year study period) ☑
1. Within regular BDT activity (indicate which programmes, activities, projects, etc., will be involved in the work of the study Question)
* Programmes: Digital inclusion ☑
* Projects ☑
* Expert consultants □
* Regional offices □
1. In other ways – describe (e.g. regional, within other organizations with expertise, jointly with other organizations, etc.): To be defined in the work plan. □

**Why?**The Question will be addressed within ITU-D Study Group 1, in close cooperation with ITU-T Study Group 16 (Question 26/16).Coordination and collaborationCoordination is recommended with relevant international and regional organizations, with service providers that have adopted best practices to meet the needs of persons with disabilities and persons with specific needs and facilitate their access to telecommunications/ICTs as well with with other stakeholders involved in the telecommunication/ICTs accessibility in close collaboration with persons with disabilities and persons with specific needs.BDT programme linkTo be defined in the workplan.Other relevant information– |

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1. ITU Statistics (<http://www.itu.int/ict/statistics>) [↑](#footnote-ref-1)
2. The State of Broadband 2019 Broadband as a Foundation for Sustainable Development, <https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.20-2019-PDF-E.pdf> [↑](#footnote-ref-2)
3. <https://reg4covid.itu.int/?page_id=59> [↑](#footnote-ref-3)
4. These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-4)
5. These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-5)
6. Topics of Section 2.3 will not be included in Question 4/1 Report but will be the topics for joint deliverables with other ITU-D Questions [↑](#footnote-ref-6)
7. These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-7)
8. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-8)