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| PLENARY MEETING | **Document WTDC-17/47-E** |
|  | **25 September 2017** |
|  | **Original: Spanish** |
| Mexico |
| Proposals for the work of the conference |
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| **Priority area:**Study group Questions**Summary:**Mexico submits for consideration by WTDC-17 various modifications to different study Questions.**Expected results:**Mexico invites all delegations at WTDC-17 to consider this document, which contains various modifications to Questions of both study groups (1 and 2) of the Telecommunication Development Sector.**References:**Questions 1/1, 3/1, 4/1, 5/1, 6/1, 7/1, 1/2, 7/2 |

STUDY GROUP 1

**MOD** MEX/47/1

QUESTION 1/1

Policy, regulatory, economic and technical aspects of the migration from existing networks
to broadband networks in developing countries

# 1 Statement of the situation or problem

Increased access to broadband is widely credited with improving development outcomes, fostering economic growth and increasing competitiveness. Broadband is a key input to achieving a people‑centred, inclusive and development-oriented information society.

Despite impressive gains in access to telecommunication/ICT infrastructure, services and applications, many developing countries, particularly least developed countries (LDCs), still lack sufficient access to broadband connectivity. ITU data from 2016 indicate that, even though mobile telephony has become commonplace, the digital divide is shifting too, with attention focusing on the 3.9 billion people – 53 per cent of the world’s population – who were still offline at the end of 2016. ITU’s Connect 2020 targets call for 60 per cent of the world’s population to be online by 2020 – equivalent to bringing another 1.2 billion people online over the next four years, but in the 48 UN-designated least developed countries (LDCs). It was forecast that the total number of mobile-broadband subscriptions will reach 3.6 billion by the end of 2016, compared with 3.2 billion at the end of 2015. It was also estimated that there would be 884 million fixed broadband subscriptions by the end of 2016, up 8 per cent on the previous year. ITU also estimates that the overall global Internet user gender gap has widened slightly, growing from 11% in 2013 to 12% in 2016.

ITU‑D, with active participation from Member States and Sector Members, should continue to endeavour to increase the availability of affordable broadband services during the 2018-2021 study period by carefully analysing the policy and technical issues related to broadband deployment, adoption and use. In particular, ITU members and BDT must identify, elevate and address the stated needs of the LDCs and others in improving broadband deployment and use. Members will benefit from analysing the regulatory, policy, technical and economic issues involved in deploying broadband access technologies, including integration of access network solutions with existing or future network infrastructure, as well as asymmetric measures to help foster competition on the telecommunication market.

Broadband access policies, implementation and applications should be studied together, so that developing countries can better evaluate their best options for sustainable broadband deployment. Combining these topics will eliminate fragmentation of these related issues and more accurately provide a clear roadmap of options for developing countries to close the existing gap in broadband service.

The proposed study Question and expected outputs reflect elements from study Questions from the previous study period 2014-2017, notably Question 1/1, "Policy, regulatory and technical aspects of the migration from existing networks to broadband networks in developing countries, including next-generation networks, m-services, OTT services and the implementation of IPv6".

During the 2014-2017 study period, under Question 1/1, the rapporteur group within Study Group 1 studied the policy, regulatory and technical aspects of the migration to broadband networks, including next-generation networks, m-services, OTT services and the implementation of IPv6. A study report was drafted containing relevant information and data that will be of use to Member States, and particularly the developing countries.

Affordable access to the Internet remains a key element for the economic and social development of society, and the establishment of Internet traffic exchange points at national, regional and international level therefore remains on the agenda of developing and least developed countries seeking to provide all their citizens with access to this service; this means that the acquirement of best practices and success stories would help in achieving goals 1 and 2 as set in Resolution 200 (Busan, 2014) of the Plenipotentiary Conference, on the Connect 2020 Agenda for global telecommunication/information and communication technology development.

Global implementation of IPv6 remains a challenge for all countries, and will be achieved in stages. A specific report is therefore proposed detailing the success stories in transitioning from IPv4 to IPv6 and possible methods for accelerating such transition faced with the significant increase in devices that will continue connecting to the Internet.

The Internet Engineering Task Force (IETF) develops Internet Protocols, including IPv4 and IPv6.

Many countries and international organizations are interested in this Question. The World Telecommunication Standardization Assembly (WTSA) (Hammamet, 2016) revised Resolution 64 (Rev. Dubai, 2012), on Internet Protocol address allocation and facilitating the transition to and deployment of IPv6. The ITU Council at its 2012 session, in Decision 572, decided that the 2013 World Telecommunication/ICT Policy Forum (WTPF-13) would address the issue of IP-based networks. The forum was held from 14 to 16 May 2013 in Geneva (the previous WTPF had been held from 21 to 24 April 2009 in Portugal, and had discussed convergence, Internet and the ITRs). WTPF is organized by ITU and aims to encourage discussion and seek consensus among the different stakeholders in the form of "opinions" reflecting a common vision which serves to guide policy in the ICT sector as well as regulatory and standardization activities throughout the world. WTPF‑13 issued six opinions (Document WTPF‑13/16), as follows:

– Opinion 1 (Geneva, 2013): Promoting Internet exchange points (IXPs) as a long-term solution to advance connectivity

– Opinion 2 (Geneva, 2013): Fostering an enabling environment for the greater growth and development of broadband connectivity

– Opinion 3 (Geneva, 2013): Supporting capacity building for the deployment of IPv6

– Opinion 4 (Geneva, 2013): In support of IPv6 adoption and transition from IPv4

– Opinion 5 (Geneva, 2013): Supporting multistakeholderism in Internet governance

– Opinion 6 (Geneva, 2013): On supporting operationalizing the enhanced cooperation process.

Many countries are also continuing to discuss at the highest policy level the adoption of laws and regulations on "net neutrality". This subject involves all the stakeholders, including political leaders, regulators, operators and providers. For this reason, the 2012 and 2013 Global Symposium for Regulators stated that regulators and policy makers should endeavour to apply measures to oversee the use of traffic management techniques to deter unfair discrimination between market players.

On 18 April 2013, ITU published a report on regulation, *Trends in Telecommunication Reform 2013: Transnational aspects of regulation in a networked society.* Chapter 2 of this report is devoted to the issue of net neutrality. As the report shows, the debate on net neutrality continues to be obscured by the lack of a generally agreed definition of the term among regulators themselves.

IP-based services are often offered by providers to users over an Internet connection, independent of the telecommunication network operator providing the Internet connection. These services are often referred to as "over-the-top (OTT)" services. Consumer demand for such services is rapidly growing as consumers want more of, and perceive large benefits from, these services. Consumers expect to be able to access legal content, applications and services and want information about their subscriptions. Such services create demand for broadband access and services but also are requiring network operators to seek new business models and arrangements, particularly in developing countries.

Also, the Question should focus on new issues that have arisen from the cross-sectoral nature of the telecommunication/ICT market in developing countries, where new applications, services and players bring a host of emerging regulatory matters. The study group should provide analysis of regulatory models and frameworks for cooperation among the various entities involved in the development, deployment and management of these new applications and services.

# 2 Question or issue for study

## 2.1 Policy and regulation

a) Policies and regulations that promote affordable broadband networks, services and applications, including ways to optimize spectrum use.

b) Effective and efficient ways to fund increased broadband access for rural and remote areas.

c) The regulatory and market conditions necessary to promote deployment of broadband networks and services, including the establishment of asymmetric regulation for operators with significant market power, local loop unbundling and organizational options for national regulatory authorities resulting from convergence, as well as coordination with related ministries and regulators due to the cross-cutting nature of the services such as mobile money transfer, m‑banking, m‑commerce and e‑commerce.

d) Success stories and lessons learned.

e) Ways to remove practical barriers to broadband infrastructure deployment, and best practices for improving cross-border connectivity and small island developing states' connectivity challenges.

f) Considering the fact that meeting demand for content requires improved access to broadband services, study the following:

– pattern and trends in broadband services in regard to, *inter alia*, broadband deployment, international traffic and applications, etc.;

– access-supporting applications primarily used for development, i.e. e‑government, e‑education, e‑health, etc., in an affordable manner, taking into consideration previous guidelines on the subject.

g) Commercial impact of new investments required to meet the growing demand for access to the Internet generally, and bandwidth and infrastructure requirements for delivering affordable broadband services to meet development needs.

h) Impacts of the provisioning of IP-based applications and services offered by content providers to users over a broadband Internet connection, independent of the telecommunication network operator providing the internet connection, often referred to as "over-the-top (OTT)" services, including impacts on regulation, competition, network infrastructure and business models.

## 2.2 Transition and implementation

a) Methods to implement broadband service, including the transition from narrowband networks and interconnection and interoperability features.

b) Operational and technical issues associated with deploying broadband networks, services and applications, including the transition from narrowband to broadband networks.

c) Ways to remove practical barriers to broadband infrastructure deployment.

d) Success stories and lessons learned.

e) Continued study of best practices for the establishment of national, regional and international IXPs.

f) Study of the policy and technological aspects of a) the transition from IPv4 to IPv6 and, separately, b) ways to manage access to networks, balancing network performance, competition and consumer benefits.

# 3 Expected output

Reports, best-practice guidelines, case studies and recommendations, as appropriate, that take into account the issues for study and the following expected outputs:

a) Broadband policy and regulation

i) Policies promoting incentives for broadband deployment through effective competition, public and private investment, inter-platform competition, and private‑public partnerships towards accomplishing universal access to broadband services.

ii) Examination of, and best practices for encouraging, regional policies and practices that promote and address cross-border connectivity and small island developing state connectivity.

iii) Best practices to develop technology-neutral and service-neutral policies.

iv) Methods to open markets to effective competition through transparent regulatory and taxation reforms.

v) Policies to encourage efficient and innovative mobile-broadband practices for new market entrants and consumers, including by allocating and assigning spectrum.

vi) Best practices for infrastructure sharing, local loop unbundling and access to networks to promote market entry, where appropriate.

vii) Capacity building in rural and/or underprivileged communities.

viii) Studies to examine new and innovative pricing methodologies for broadband services, trends in broadband services in regard to, *inter alia*, broadband deployment, international traffic and applications, and assessment of the current demand for broadband at global and regional level.

ix) Best practices and guidelines for stimulating investment in broadband that allows the delivery of services for development in an affordable manner.

x) Identification of policy tools to facilitate the availability to consumers at local and national levels of competitive IP-based services and applications, so called "over-the-top" (OTT) services.

xi) Identification of the range of alternative successful business arrangements that have been used to meet growing demand and other changes in the market.

xii) Study on success stories in the establishment of Internet traffic exchange points at national, regional and international level.

xiii) Evaluation of challenges and an overview of best practices and guidelines regarding legal frameworks and cooperation mechanisms among appropriate government entities seeking to facilitate, and avoid barriers to, the development and deployment of new services and applications, such as mobile money transfer, m‑banking, m‑commerce and e‑commerce.

b) Broadband transition and implementation

i) Best practices to finance broadband access to underserved and unserved communities, including universal service funds, coverage requirements and alternative means of financing broadband access.

ii) Guidelines for making the transition from narrowband to broadband networks, taking into account in particular the potential challenges, benefits and opportunities that developing countries may encounter when implementing broadband networks, services and associated applications.

c) Transition from IPv4 to IPv6

i) Compilation of the questions raised by, and requirements of, developing countries in their transition to IPv6.

ii) Consolidation and coordination of efforts to ensure the transition to IPv6.

iii) Survey of procedures, methods and time‑frames for the effective transition to IPv6, having regard to the experience of ITU Member States.

The final report may also contain best practices on transition to IPv6, which may address the following issues:

1) Transition to IPv6 for telecommunication operators:

1.1) stages in the transition, including best practices for top-level domain operators and application service providers in migration efforts;

1.2) transition for network backbones;

1.3) transition for access networks;

1.4) collecting best practices for routing;

1.5) network service;

1.6) quality-of-service issues;

1.7) issues of network security throughout the transition process.

2) Combined use of IPv6 and IPv4.

3) Participation required of the regulator.

# 4 Timing

Annual progress reports. This study is expected to last four years.

Within two years, a draft report on the subjects should be submitted to Study Group 1.

A final report and guidelines or Recommendation(s) are to be submitted to Study Group 1 within four years.

The rapporteur's group will work in collaboration with BDT to implement the lessons learned from study of the Question through training seminars.

The activities of the rapporteur's group will end within four years.

# 5 Proposers/sponsors

Arab States; African Telecommunications Union; Asia-Pacific Telecommunity; Brazil; Regional Commonwealth in the field of Communications; India; United States.

# 6 Sources of input

The major source of input will be the experiences of those Member States and Sector Members that have deployed broadband networks and that have begun implementation of IPv6. Contributions from Member States and Sector Members will be essential to the successful study of the issue.

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.

Material from regional telecommunication organizations, telecommunication research centres, manufacturers and working groups should also be used, in order to avoid duplication of work.

Close cooperation with ITU‑T study groups, in particular Study Group 13 and the Global Standards Initiative (GSI‑NGN), other standards groups involved in the activities discussed in the study Question and other activities within ITU‑D will also be essential.

Contributions are expected from Member States, Sector Members and Associates, and from relevant ITU‑R, ITU‑T and ITU‑D study groups, and other stakeholders.

# 7 Target audience

| Target audience | Developed countries | Developing countries[[1]](#footnote-1)1 |
| --- | --- | --- |
| 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 |

a) Target audience

All national telecom policy‑makers, regulators, service providers and operators, especially those in developing countries, as well as manufacturers of broadband technologies.

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 1 should they need it.

# 8 Proposed methods of handling the Question or issue

a) 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 ☑

– 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?

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 policy, regulatory and technical aspects of the migration from existing networks to broadband networks.

# 9 Coordination and collaboration

The ITU‑D study group dealing with this Question will need to coordinate with:

– Relevant ITU‑T study groups, particularly Study Group 13

– Relevant focal points in BDT and ITU regional offices

– Coordinators of relevant project activities in BDT

– Standards-development organizations (SDOs)

– Experts and experienced organizations in this field.

# 10 BDT programme link

WTDC Resolution 77 (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.

# 11 Other relevant information

As may become apparent within the life of the Question.

**MOD** MEX/47/2

QUESTION 3/1

Access to cloud computing: Challenges
and opportunities for developing countries

# 1 Statement of the situation or problem

Cloud computing is a concept in the world of multimedia, and one towards which the world is now gradually moving, 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.

Cloud computing models are defined by five essential characteristics: demand, delivery over a broad network access, resource pooling, rapid elasticity, self and measured services.

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) and flexibility of use.

In view of the importance of the topic, cloud computing is dealt with by two study groups in the Telecommunication Standardization Sector. ITU‑T Study Group 13 on future networks, with focus on IMT-2020, cloud computing and trusted network infrastructures, is responsible for studies relating to the requirements, architectures, capabilities and APIs as well as softwareization and orchestration aspects of converged future networks (FN), specifically focusing on IMT-2020 non-radio related parts. The main areas covered by this study group include cloud computing and big data aspects: studies of the requirements, functional architectures and their capabilities, mechanisms and deployment models of cloud computing, covering inter- and intra-cloud computing as well as distributed cloud aspects.

In addition, the work carried out under this study Question should be associated with ITU‑T Study Group 20 on the Internet of Things (IoT) and smart cities and communities; Study Group 20 is responsible for studies relating to the Internet of Things (IoT) and its applications, and smart cities and communities (SC&C). This includes studies relating to big data aspects of IoT and SC&C, e‑services and smart services for SC&C.

Collaboration is therefore required between both Sectors in order to successfully deal with the challenges and opportunities facing the developing countries in terms of access to cloud computing.

# 2 Question or issue for study

a) Discuss infrastructure needs for supporting and enabling access to cloud services.

b) Examine future cloud-computing trends.

c) What are the features of networks that support effective access to cloud-computing services?

d) Building and developing a sufficient group of existing frameworks to support investment in infrastructure for cloud computing, taking into consideration relevant standards recognized or under study in the other two ITU Sectors.

e) Study in depth the creation of cost models for the adoption of cloud computing.

f) Continue to develop case studies of successful cloud-computing platforms used in developing countries.

g) Work in collaboration with ITU-T Study Groups 13 and 20 to identify better solutions to the challenges arising in regard to access to cloud computing.

# 3 Expected output

a) Yearly progress report on the above study items.

b) A progress report midway through the study cycle.

c) A final report for the Question that includes:

• 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-D programme on Capacity building.

• A handbook on infrastructure supporting cloud computing in developing countries. This handbook will be the result of study group collaboration between ITU‑T Study Group 13 and the rapporteur group dealing with this Question as part of ITU‑D Study Group 1.

• Draft Recommendation(s), as appropriate and if justified.

# 4 Timing

The interim report on this Question is expected by 2020. The final report is expected in 2021 at the end of the ITU‑D study period.

# 5 Proposers/sponsors

Arab States; African States.

# 6 Sources of input

a) Results of related technical progress in relevant ITU‑T study groups, in particular Study Group 13.

b) ITU publications on cloud-computing services.

c) Relevant reports of national and/or regional organizations in developing and developed countries.

d) Contributions on experiences with providing access to cloud-computing services in developed and developing countries.

e) Relevant inputs from service providers and manufacturers.

f) Relevant inputs from BDT programmes related to cloud computing.

# 7 Target audience

a) Target audience

| Target audience | Developed countries | Developing countries[[2]](#footnote-2)1 |
| --- | --- | --- |
| 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 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 migrate to cloud-computing services.

# 8 Proposed methods for handling the Question

The Question will be handled by a rapporteur group of ITU‑D Study Group 1.

# 9 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 Group 13;

– the relevant outputs from ITU‑D Questions;

– inputs from the relevant BDT programmes.

# 10 Relevant programme

The relevant programmes will be the programmes on Policy and regulatory environment, Capacity building, Cybersecurity, ICT applications and Telecommunication/ICT networks.

# 11 Other relevant information

As may become apparent within the life of the Question.

**MOD** MEX/47/3

QUESTION 4/1

Economic policies and methods of determining
the costs of services related to national telecommunication/
ICT networks, including next-generation networks

# 1 Statement of the situation or problem

As recognized in the Final Report on study Question 4/1 of the previous study period, the deployment of next-generation networks calls for changes to new accounting tools in order to strengthen and increase the benefits that use of such networks offer end users.

Similarly, the last study period focused on various topics such as new charging methods for services provided over NGN networks, infrastructure sharing models, consumer price evolution and impact on ICT service usage, methods of determining the cost of licences for the operation of networks and/or the provision of telecommunication services and regulatory accounting in an NGN environment.

Considering the previous study period, Question 4/1 should continue to consider that operators and service providers require access to telecommunication/ICT networks and services, including broadband infrastructure, in a converged manner.

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.

# 2 Question or issue for study

The Question will continue to examine the following main topics:

1) New charging methods (or models, if applicable) for services provided over NGN networks:

1.1) Methods for determining the costs of wholesale services (dedicated links, interconnection, passive infrastructure).

2) Different models for infrastructure sharing, including through commercially negotiated terms:

2.1) The impact of infrastructure sharing on investment cost, provision of telecommunication/ICT services, competition and prices to consumers: case studies with quantitative analysis

2.2 Local loop unbundling.

3) Consumer price evolution and impact on ICT service usage, innovation, investment and operator revenues:

3.1) New and innovative business models for services deployed in an NGN environment, including methods encouraging the adoption and use of ICT services

3.2) Trends in prices of telecommunication/ICT services, including international mobile roaming

3.3) Impact of price reduction on the adoption and use of ICT services, consumption, innovation, investment and operator and service provider revenues.

4) Methods of determining the cost of licences for the operation of networks and/or the provision of telecommunication services delivered to operators or service providers, including the costs of resources (e.g. frequencies and telephone numbering) made available to them in the country in a convergent environment:

4.1) Methods of determining licence fees: case studies and country experiences

4.2) Evolution of licence fees according to the market, including other fees (e.g. frequencies and telephone numbering)

4.3) Best practices for determining licence fees. The work related to this Question will identify:

• Key design issues

• Implementation details

• What kind of auditing is required for the model

• Possible unintended consequences.

NOTE – The frequency licence fee study will be done in cooperation with Resolution 9 (Rev. Dubai, 2014) to avoid study duplication.

5) Trends in the development of virtual mobile operators and their regulatory framework.

# 3 Expected output

Development of best practices for each of the following areas:

a) Promoting appropriate infrastructure sharing

b) Encouraging price/tariff reduction to consumers through competition

c) Stimulating access to and use of these services.

# 4 Timing

An interim report will be presented to Study Group 1 in 2020. It is proposed that this study should be completed in 2022, when a final report will be submitted.

# 5 Proposers/sponsors

ITU‑D Study Group 1 proposed the continuation of this Question as modified herein.

# 6 Sources of input

The major source of input will be the experiences of Member States and Sector Members on costing and pricing issues. Contributions from Member States and Sector Members will be essential to the successful study of the issue.

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.

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 and Associates, and from relevant ITU-R, ITU-T, in particular ITU-T Study Group 2, and ITU-D study groups, and other stakeholders.

# 7 Target audience

All the target audiences mentioned below, with particular attention to the needs of developing countries.

| Target audience | Developed countries | Developing countries[[3]](#footnote-3)1 |
| --- | --- | --- |
| Telecom policy-makers | Yes | Yes |
| Telecom regulators | Yes | Yes |
| Service providers/operators | Yes | Yes |
| Manufacturers | Yes | Yes |
| ITU‑D programme | Yes | Yes |

a) 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.

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 1 should they need it.

# 8 Proposed methods of handling the Question or issue

Electronic distribution of the report 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 Regulators' Symposium and relevant BDT, BR and TSB seminars.

How?

1) Within a study group: ☑

– Question (over a multi-year study period) ☑

2) Within regular BDT activity:

– Objective 2 ☑

– Projects: regional initiatives □

– Expert consultants ☑

# 9 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

– Relevant ITU-T study groups, particularly Study Group 3

– Relevant focal points in BDT and ITU regional offices

– Experts and experienced organizations in this field.

# 10 BDT programme link

ITU‑D Objective 2.

# 11 Other relevant information

Question4/1 will liaise closely with ITU‑T Study Group 3 and its regional groups for Africa (SG3RG-AFR), Asia and Oceania (SG3RG-AO), Arab States (SG3RG-ARB) and Latin America and the Caribbean (SG3RG-LAC), ITU‑D Study Groups 1 and 2 and other international and regional organizations concerned with issues relating to costs and tariffs for telecommunication services, and ITU‑D enabling environment programme.

As may become apparent within the lifetime of this Question.

**MOD** MEX/47/4

QUESTION 5/1

Deployment of broadband infrastructure and telecommunications/ICTs in rural and underserved areas

# 1 Statement of the situation or problem

In order to continue to contribute to achieving the objectives set by the World Summit on the Information Society (WSIS), and to promote attainment of the Sustainable Development Goals defined in September 2015, it is necessary to address the challenge of infrastructure development in the rural and remote areas of developing countries[[4]](#footnote-4)1, where more than half of the world population live.

The installation of cost-effective and sustainable basic telecommunication infrastructure in rural and remote areas is an important aspect calling for further studies, and specific outcomes need to be available for the vendor community to develop a suitable solution to meet the challenges in the rural and remote areas.

Most of the time, 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 telecommunication network is assumed to exist. Hence, current systems need to be more adequately adapted to specific rural requirements in order to be widely deployed.

 Shortage of power, difficult terrain, lack of skilled manpower, access and transportation, installation and maintenance of networks, are some of the known challenges that developing countries planning to extend ICTs to rural and isolated areas must tackle.

More detailed studies addressing the challenges of deploying cost-effective and sustainable ICT infrastructure in rural and remote areas are expected to be undertaken within the ITU‑D study groups, taking into account the global perspective.

Therefore, the WSIS target "Connect villages with telecommunications/ICT and establish community access points" should be promoted more intensively by employing emerging broadband technologies for various e‑application services to vitalize the social and economic activities of rural and remote areas. Multipurpose community telecasters (MET), public call offices (PCO), community access centres (CAC) and e‑posts are still valid in terms of cost effectiveness for sharing infrastructure and facilities by community residents, leading to the goal of provision of individual telecommunication access.

# 2 Question or issue for study

– Techniques and sustainable solutions that can impact on the provision of telecommunication/ICTs in rural and remote areas, with emphasis on those that employ the latest technologies designed to lower infrastructure capital and operating costs, assisting convergence between services and applications, taking into consideration reducing greenhouse gas emissions.

– Difficulties in creating or upgrading telecommunication infrastructure in rural areas.

– Difficulties facing fixed and mobile networks for rural deployments in developing nations, and the requirements to be satisfied by such systems.

– Needs and policies, mechanisms and regulatory initiatives to reduce the digital divide by increasing broadband access.

– Quality of the services provided, and the cost effectiveness, degree of sustainability in different geographies and sustainability of the techniques and solutions.

– Business models for sustainable deployment of networks and services in rural and remote areas, taking into consideration priorities based on economic and social indicators.

– Increasing availability of telecommunications/ICTs that provide enhanced connectivity at progressively lower costs, lower energy consumption and lower greenhouse gas emissions.

– Experience gained in previous ITU-D study cycles in many parts of the developing world, implementing and refining major rural telecommunication programmes, as more countries respond to particular situations and in-country demand using "best practices" as outlined in the work of ITU‑D.

– The influence of cultural, social and other factors in producing differing and often creative responses to meeting the demand for multimedia services from residents of rural and remote areas of developing and least developed countries.

– Progress being steadily made on human resources development/management issues which are fundamental to establishing sustainable telecommunication infrastructure.

During the study carried out on each of the 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 telecom infrastructure;

– maintenance and operational aspects to provide a quality and continuous service;

– demand-side factors and practices to generate and increase the usage of ICT devices and services;

– efforts to build ICT skill sets for the deployment of broadband services;

– relevant localization of content;

– affordability of services/devices for rural users to adopt so as to fulfil their development needs;

– strategies to maintain and encourage the training of technical staff in order to guarantee the reliability of the telecommunication infrastructure;

– promotion of small, non-profit community operators through radio spectrum planning and licensing.

In dealing with the above studies, the work under way in response to other Questions being dealt with in ITU‑D, and close coordination with relevant activities under those Questions, in particular Questions 1/1, 2/1, 4/1 and Questions 2/2, 4/2 and 5/2, are highly relevant. In the same way, the studies shall take into account cases related to indigenous communities, isolated and poorly served areas, least developed countries (LDCs), small island developing states (SIDS) and landlocked developing countries (LLDCs), and highlight their particular needs and other particular situations which need to be considered in developing telecommunication/ICT facilities for these areas.

# 3 Expected output

The output will be a report on the results of the work conducted for each item studied, together with one or more recommendations at appropriate times, either during the course of or at the conclusion of the cycle.

Consolidation and dissemination of information by organizing seminars and workshops allowing the sharing of best practices on the deployment of broadband infrastructure in rural and underserved areas.

# 4 Timing

The output will be generated on a yearly 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.

# 5 Proposers/sponsors

The Question was originally approved by WTDC-94, and subsequently revised by WTDC-98, WTDC-02, WTDC-06, WTDC‑10 and WTDC‑14. Brazil, India and Japan.

# 6 Sources of input

Contributions are expected from Member States, Sector Members and Associates, as well as inputs from relevant 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 and experiences is encouraged for additional sources of inputs.

# 7 Target audience

| Target audience | Developed countries | Developing countries[[5]](#footnote-5)1 |
| --- | --- | --- |
| 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

Depending on the nature of the output, upper- to middle‑level managers in operators and regulators in developing countries, including relevant rural authorities, are the predominant users of the output. The study outcomes will ensure adequate attention of vendors to focus on their development efforts to meet the needs of developing countries.

b) Proposed methods for implementation of the results

To be decided during the study period.

# 8 Proposed methods of handling the Question

Within Study Group 1.

# 9 Coordination

The 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 this Question.

# 10 BDT programme link

WTDC Resolution 11 (Rev. Dubai, 2014), 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.

# 11 Other relevant information

As may become apparent within the life of this Question.

**MOD** MEX/47/5

QUESTION 6/1

Consumer information, protection and rights:
Laws, regulation, economic bases, consumer networks

# 1 Statement of the situation or problem

Faced with the rapid evolution of technologies and the appearance on the market of ever more sophisticated equipment, consumers who are not telecommunication/ICT experts can find themselves at a loss. Consequently, consumer information and consumer rights have become a priority and the issue of consumer protection has become a constant concern, yet neither regulators, operators or service providers nor equipment manufacturers have defined or provided a specific legal basis for the legal consumer-protection instruments that need to be implemented that guarantee universal access to quality telecommunication/ICT services at low cost.

Given the pace of change in telecommunications/ICTs, bodies responsible for consumer protection (regulators, public and private agencies) should regularly amend their regulatory frameworks on the basis of the right balance between the interests of operators/service providers and those of users in areas such as subscription agreements, protection of intellectual property rights and management of digital rights, without detriment to innovative models of e‑commerce.

One of the key challenges for regulators is to establish a culture of security that promotes trust in telecommunication/ICT applications and services, one in which there is effective enforcement of privacy and consumer protection. Therefore, it is essential to implement laws, policies and regulatory practices, and to develop transparent, effective consumer protection mechanisms in order to build such trust and security.

Likewise, for these regulations to limit and prevent fraudulent, deceptive, unfair commercial practices, it is necessary to promote education and adequate dissemination of telecommunication/ICT services for all consumers to enable them to make informed choices and benefit from adequate protection and compensation mechanisms when problems arise.

Therefore, it is important for all the parties involved in consumer protection (regulators, consumer-protection bodies, policy-makers and the private sector) to participate in education and awareness-raising for consumers, including persons with disabilities, women and children.

Intersectoral competition with the emergence of services resulting from the convergence of technologies, services and platforms makes it even more essential to enhance transborder cooperation, and for regulators and policy-makers to improve their competences and the tools intended to protect consumers.

Considering the above, it is important to bear in mind that the Final Report on the latest study period includes a status review of consumer rights relating to telecommunication services, and existing consumer protection challenges, including technology innovation, market competition, changing business models, regulator resources and capacities, and the needs of specific groups such as persons with disabilities, women and children, as well as the consumer rights framework and the economic aspects of consumer protection..

Member States and Sector Members will continue to benefit from a report and, where applicable, recommendations on the various resources, strategies and tools available to improve enforcement of their national and regional laws, rules and regulations governing consumer information, protection and rights, from the perspective of laws, regulations, economic bases and consumer-protection networks/organizations.

# 2 Question or issue for study

a) Organizational methods and strategies developed by public consumer-protection agencies with regard to legislation/regulations and regulatory activities.

b) Mechanisms/means put in place by regulators, so that operators/service providers publish transparent, comparable, adequate, up-to-date information on prices, tariffs and expenses related to contract termination, accessing and updating telecommunications services, and others, in order to keep consumers informed.

c) Mechanisms/means implemented by the regulators themselves to provide users with useful information on telecommunications, enabling them to know and exercise their rights, to use their services properly, and to make informed decisions when contracting them.

d) The role of international, regional and national organizations for the protection of telecommunication/ICT consumers' rights.

e) Any economic and financial measures adopted by national authorities in the interests of consumers of telecommunication/ICT services, in particular specific categories of users (persons with disabilities, women and children).

f) Challenges in relation to the provision of new convergent services (transparency of service offers, fluidity of markets, quality and availability of services, value‑added services, after-sales services, procedures for dealing with consumers' complaints or concerns, and so on) relating to consumer protection, as well as the policies, regulations and rules established by national regulatory agencies (NRAs) to protect consumers against possible abuses by operators/providers of these convergent services.

g) Mechanisms and tools making it possible to provide users and audiences with sensitive information regarding civil protection.

h) Mechanisms to promote the creation of useful information and practical tools to be used for promoting digital literacy, especially among specific groups such as women and children.

i) Mechanisms and tools promoted by regulatory bodies to monitor the performance of end-user mobile network services, to assess the quality of the service received by consumers.

j) Corporate best practices in favour of the consumers of telecommunication services.

k) Studies relating to standards for the protection of telecommunication/ICT service consumers and users.

l) Identify solutions that guarantee and protect the rights of telecommunication/ICT service consumers and users, especially in terms of quality, security and pricing mechanisms, in collaboration with the ITU-T study groups.

# 3 Expected output

a) A report and/or recommendations to Member States and Sector Members, consumer-protection organizations, operators and service providers, setting out guidelines and best practices that will need to be produced to help these actors to find the tools needed for a better 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.

# 4 Timing

An interim report will be presented to Study Group 1 in 2019. It is proposed that this study should be completed in 2021, when a final report will be submitted, along with any recommendations that may be adopted during the study period.

# 5 Proposers/sponsors

ITU‑D Study Group 1 proposed the continuation of this Question as modified herein.

# 6 Sources of input

a) Contributions from Member States, Sector Members and interested regional and international organizations, such as the United Nations and its specialized agencies, OECD and recognized consumer associations

b) Surveys/interviews

c) Regulatory information available through BDT

d) Websites of national telecommunication/ICT regulatory authorities for worldwide, regional and national governmental bodies responsible for consumer protection, and recognized consumer associations

e) Relevant work currently being undertaken in ITU‑T and ITU‑R

f) Other relevant sources.

# 7 Target audience

All the target audiences identified below, with particular attention to the needs of developing countries.

| Target audience | Developed countries | Developing countries[[6]](#footnote-6)1 |
| --- | --- | --- |
| Telecom policy-makers | Yes | Yes |
| Telecom regulators | Yes | Yes |
| Telecommunication/ICT consumer-protection organizations | Yes | Yes |
| Service providers/operators | Yes | Yes |
| Manufacturers | Yes | Yes |
| ITU‑D programme  | Yes | Yes |

a) Target audience – Who specifically will use the output

National telecom policy‑makers, regulators, service providers and operators, as well as recognized international, regional and national bodies for the protection of telecommunication/ICT consumers.

b) Proposed methods for implementation of the results

– Electronic distribution of the report and guidelines to all Member States, Sector Members and their respective NRAs, and ITU regional offices

– Distribution of the report and guidelines at the Global Regulators' Symposium and relevant BDT, BR and TSB seminars.

# 8 Proposed methods of handling the Question or issue

a) How?

1) Within a study group: ☑

– Question (over a multi-year study period) □

2) Within regular BDT activity:

– Objective 2 ☑

– Projects: Regional initiatives □

– Expert consultants □

3) In other ways – describe (e.g. regional, within other
organizations, jointly with other organizations, etc.) □

Together with recognized international, regional and national bodies for the protection of telecommunication/ICT consumers.

b) Why within a study group?

A study group provides the best vehicle for the widest participation by developing countries both in the work of the Question and in shaping the outcome documents (i.e. best-practice guidelines).

# 9 Coordination and collaboration

This Question should be coordinated with ITU‑D Objective 2 and with Questions relating to persons with disabilities, persons with specific needs and telecommunication/ICT services proposed for study during the 2014‑2018 study period in the study groups.

# 10 BDT programme link

ITU‑D Objective 2.

# 11 Other relevant information

As may become apparent within the lifetime of this Question.

**MOD** MEX/47/6

QUESTION 7/1

Access to telecommunication/ICT services
by persons with disabilities and with specific needs

# 1 Statement of the situation or problem

The 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 elder 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 the urban infrastructure more accessible to this group of people and improving the health and rehabilitation services provided to them. Moreover, the principles of equal opportunity and non-discrimination are common policies of Member States.

With respect to telecommunications, at the World Telecommunication Development Conference (Hyderabad, 2010) Member States resolved, by Resolution 20 (Rev. Hyderabad, 2010), that access to modern telecommunication/information and communication technology facilities, services and related applications must be provided on a non‑discriminatory basis.

The United Nations General Assembly High-Level Meeting on the overall review of the implementation of the outcomes of WSIS acknowledged the need to address the specific information and communications technology 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, the United Nations General Assembly 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.

In addition, Resolution 175 (Rev. Busan, 2014), of the Plenipotentiary Conference on telecommunication/information and communication technology 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 services, and encourages the development of applications enabling the use of such services on an equal basis with others.

Lastly, attention should be drawn to Resolution 70 (Rev. Hammamet, 2016) of the World Telecommunication Standardization Assembly, on telecommunication/information and communication technology accessibility for persons with disabilities and persons with specific needs, which resolves that Telecommunication Standardization Sector study groups should consider aspects of universal design, non-discriminatory standards, service regulations and measures for all persons, especially persons with disabilities.

It is also important to draw attention to the Model ICT Accessibility Policy Report, released by ITU in collaboration with G3ict in November 2014, which 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 information and communication technologies for persons with disabilities in a constantly changing technological environment.

In view of the foregoing, it is important to take into consideration the work and studies carried out by the Telecommunication Standardization Sector study groups, in particular Study Group 6 on multimedia coding, systems and applications, and the Radiocommunication Sector study groups, in particular Study Group 6 on the broadcasting service.

## 1.1 Accessibility standards

Accessibility standards are essential in order to make it possible for equipment and services to be usable by the broadest range of persons, interoperable and provide the required quality services. ITU‑T has prepared several Recommendations and documents that provide information on a wide range of accessibility standards.

It is also important to consider stakeholder participation where persons with disabilities should be involved in the process of elaborating legal/regulatory provisions, public policy and standards.

# 2 Question or issue for study

– Analyse policies and strategies to promote, develop and implement the most advanced technological solutions to enable equal access to telecommunications/ICTs by persons with disabilities to that enjoyed by the rest of the population.

– Identify mechanisms that make it possible to introduce national legal frameworks, directives and guidelines to improve the accessibility, compatibility and usability of telecommunication/ICT services.

– Analyse policies, mechanisms, services and programmes that are conducive to ensuring that telecommunication services can be used and taken advantage of by persons with disabilities.

– Identify methodologies that make it possible to compile telecommunication/ICT statistics focused on users with disabilities.

– Identify suitable promotion and dissemination mechanisms to promote the use of telecommunication/ICT services by persons with disabilities.

# 3 Expected output

It is proposed that the Question for study should result in a report that includes mechanisms, directives and guidelines that will encourage Member States, especially developing and least developed countries (LDCs), to establish policies, legal frameworks and strategies that promote the implementation of services and solutions which provide access to telecommunications/ICTs by persons with disabilities and with specific needs, and for people with difficulties mastering reading and writing. Furthermore, the report will help Member States and Sector Members identify commercial and governmental best practices relating to telecommunications/ICT that should apply in relation to persons with disabilities.

The report should contain the regulatory policies necessary for ensuring accessibility to telecommunications/ICT for persons with disabilities, including, but not limited to:

a) the principles to be applied by service providers and equipment manufacturers (i.e. equal access, accessibility/compatible devices);

b) a recommendation on the desirable access to telecommunications/ICT;

c) suggested schemes for the implementation of policies and strategies;

d) an economic cost evaluation and a comparison of the available technological solutions;

e) a recommendation on commercial best practices applied by service providers for overcoming the difficulties faced by persons with disabilities in accessing telecommunications/ICT;

f) recommendations on governmental best practices applied by the governments of Member States to promote and guarantee access to telecommunication/ICT services by persons with disabilities.

# 4 Timing

These activities should be included in the programme of activities of ITU‑D Study Group 1 for the period 2017-2020, as a new Question.

4.1 Mid-term report is expected by 2019.

4.2 Final report is expected by 2020.

# 5 Proposers/sponsors

Mexico/CITEL

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# 6 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 alleviate the difficulties faced by persons with disabilities in accessing telecommunications/ICT.

# 7 Target audience

| Target audience | Developed countries | Developing countries[[7]](#footnote-7)1 |
| --- | --- | --- |
| Telecom policy-makers | Interested | Very interested |
| Telecom regulators | Interested | Very interested |
| Service providers/operators | Interested | Very interested |
| Manufacturers | Interested | Interested |

a) Target audience

The result of the study will serve Member States, and particularly administrations of developing countries and LDCs, to design policies and to execute strategies and actions for implementing technological solutions that improve accessibility to telecommunications/ICT by 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/ICT.

b) Proposed methods for implementation of the results

Authorities 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 applicable to meet the needs of persons with disabilities and with specific needs.

# 8 Proposed methods of handling the Question or issue

a) 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)

– Programme: digital inclusion ☑

– Projects □

– Expert consultants □

– Regional offices □

3) In other ways – describe (e.g. regional, within other
organizations with expertise, jointly with other
organizations, etc.) To be defined in the work plan. □

b) Why?

The Question will be addressed within ITU-D Study Group 1, in close cooperation with ITU‑T Study Group 16 (Question 26/16).

# 9 Coordination and collaboration

Coordination is recommended with relevant international organizations, and with service providers that have adopted best practices to meet the needs of persons with disabilities and facilitate their access to telecommunications/ICT.

# 10 BDT programme link

To be defined in the work plan.

# 11 Other relevant information

-

STUDY GROUP 2

**MOD** MEX/47/7

QUESTION 1/2

Creating the smart society: development and implementation of ICT Applications for Society

# 1 Statement of the situation or problem

All areas of society – culture, education, health, transport and trade – will depend for their development on the advances made through 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; 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, in accordance with the World Summit on the Information Society, ICT applications can support sustainable development in public administration, business, education and training, health, the environment, agriculture and science within the framework of national cyberstrategies.

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. ITU therefore deems it a priority to supports its membership in achieving those goals, in close collaboration with other associates.

Delivering the promise of the smart society relies on three technological pillars – connectivity, smart devices and software – and on sustainable development principles.

Connectivity encompasses and includes existing and traditional networks as well as new technologies. Connectivity is a key enabler and component of machine-to-machine (M2M), the Internet of Things (IoT) and resulting applications and services such as e‑government, traffic management and road safety.

IoT constitutes a major advance that promises to change the way people live, work, learn, move around, entertain and provide care by having access to more and better information in real time and better learning opportunities. Moreover, IoT technologies can be used to tackle global development challenges. It is estimated that presently 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 implement IoT initiatives, highlighting and enabling new business models and workflow processes.

Smart devices are the things that are connected that create smart societies. 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, connected devices so that they can deliver significant advancements in sustainability and economic and social developments. This is especially important in developing countries.

Software development connects and enables the first two pillars that, all working together, support new services that would never have been possible before. These new services are transforming everything from energy efficiency to environmental improvements, road safety, food and water safety, manufacturing and basic government services.

It will be possible for the work carried out under this study Question to be founded on Plenipotentiary Conference Resolution 139 (Rev. Busan, 2014), on the use of telecommunications/information and communication technologies to bridge the digital divide and build an inclusive information society, Resolution 197 (Rev. Busan, 2014), on facilitating the Internet of Things to prepare for a globally connected world, WTSA Resolution 44 (Rev. Hammamet, 2016), on bridging the standardization gap between developing and developed countries, Resolution 98 (Hammamet, 2016), on enhancing the standardization of Internet of Things and smart cities and communities for global development, and Resolution ITU-R 66 of the Radiocommunication Assembly, on studies related to wireless systems and applications for the development of the Internet of Things.

# 2 Question or issue for study

1) Discussion of and assistance in raising awareness of methods of improving connectivity to support the smart society, including connectivity to support smart grids, smart cities and ICT applications in public administration, transport, business, education and training health, the environment, agriculture and science.

2) Examination of best practices for fostering and enabling deployment and use of smart devices, including mobile devices, the importance of the application of such devices.

3) Survey of methods and examples of how software, both open-source and/or proprietary, enables connectivity of smart devices, thereby supporting smart services, cities and communities.

4) Definition of a measurement and performance benchmark for quality-of-life indicators in smart cities, and possible regulation and communication mechanisms that can be followed for good urban governance.

5) Sharing of experiences and best practices in building smart cities and ICT applications in society.

6) Promotion of capacity-building and the acquisition of knowledge on ICTs for adoption of the skills required for development of a smart society.

7) Promotion of the creation of regulatory , legal and policy frameworks that foster the economy, investment, innovation and development of the smart society, allowing full integration of ICTs in public administration, transport, business, education and training, health, the environment, agriculture and science.

8) Encouragement of cooperation between developing and developed countries in order to bridge the digital and knowledge divide through technical and financial assistance, research programmes and technology transfer, enabling access to ICT applications in countries and regions where it has not yet been possible.

# 3 Expected output

The output expected from this Question will include:

a) Guidelines to allow the regulatory, legal and policy frameworks to facilitate the development of ICT applications in society, fostering social and economic development and growth.

b) Case studies on the application of IoT, M2M communications and ICT applications in building smart cities and communities, 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 smart cities and communities.

e) Organization of workshops, courses and seminars for the development of capacities allowing improved uptake of ICT applications and IoT.

f) Annual progress reports and detailed final report containing 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.

# 4 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.

# 5 Proposers/sponsors

The Question was approved for the first time by WTDC-17, on the basis of Questions 1/2 and 2/2.

# 6 Sources of input

a) Progress on study of the Questions relevant to this issue in ITU‑T and ITU‑R study groups.

b) Contributions from Member States, Sector Members, Associates other United Nations agencies, regional groups, and 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.

# 7 Target audience

| Target audience | Developed countries | Developing countries[[8]](#footnote-8)1 |
| --- | --- | --- |
| 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 |

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 and service providers.

b) Proposed methods for the implementation of the results

In guidelines for implementing BDT regional initiatives.

# 8 Proposed methods of handling the Question or issue

Within Study Group 2.

# 9 Coordination and collaboration

– The relevant BDT unit dealing with these issues

– Relevant work in progress in the other two ITU Sectors.

# 10 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.

# 11 Other relevant information

To be identified later during the life of this new Question.

**MOD** MEX/47/8

QUESTION 7/2

Strategies and policies concerning
human exposure to electromagnetic fields

# 1 Statement of the situation or problem

The deployment of different sources of electromagnetic fields to cater for the telecommunication and ICT needs of urban and rural communities has developed very rapidly over the past ten years. This has been due to strong competition, ongoing traffic growth, quality-of-service requirements, network coverage extension and the introduction of new technologies.

It has prompted concern on the possible effects of prolonged exposure to emissions on people's health.

This concern on the part of populations is growing, aggravated by the feeling that they are not being kept informed in regard to the process for deploying installations comprising radio stations generating electromagnetic fields, as a consequence of rapid technological development in the field of telecommunications; this has generated many complaints received by operators and government bodies responsible for radiocommunications/ICTs.

Thus, since the continued development of radiocommunications requires trust on the part of populations, the work carried out in ITU‑R Study Group 1 Working Party 1C and in ITU‑T Study Group 5 under Resolution 72 of the World Telecommunication Standardization Assembly, on measurement concerns related to human exposure to electromagnetic fields, as well as Resolution 176 (Rev. Busan, 2014) of the Plenipotentiary Conference, on human exposure to and measurement of electromagnetic fields, should be complemented by studies on the different regulatory and communication mechanisms developed by countries to increase the awareness of and information to populations and facilitate the deployment and operation of radiocommunication systems.

# 2 Question or issue for study

The following subjects should be studied:

a) Compilation and analysis of the regulatory policies concerning human exposure to electromagnetic fields that are being considered or implemented for authorizing the installation of radiocommunication sites and powerline telecommunication systems.

b) Description of the strategies or methods for raising the awareness of populations and increasing information to populations regarding the effects of electromagnetic fields due to radiocommunication systems.

c) Proposed guidelines and best practices on this matter.

d) Challenges and opportunities of developing technical regulations on the limits for maximum exposure to non-ionizing electromagnetic radiation from radio base stations and specific absorption rate levels in wireless devices.

# 3 Expected outcome

a) A report to the membership presenting guidelines to assist Member States in resolving similar problems faced by regulatory bodies.

b) Workshops and seminars for the purpose of sharing experiences on the establishment of limits for maximum exposure to non-ionizing electromagnetic radiation from radio base stations.

# 4 Timing

A provisional report is to be presented to the study group in 2020. It is proposed that the study be completed in 2021, at which date a final report containing guidelines will be submitted.

# 5 Proposers/sponsors

Member States.

# 6 Sources of input

– Member States, Sector Members

– Regional organizations

– ITU Sectors

– World Health Organization

– International Commission on Non-Ionizing Radiation Protection (ICNIRP)

– Institute of Electrical and Electronics Engineers (IEEE)

– BDT focal points.

# 7 Target audience

a) Target audience – Who specifically will use the input?

| Target audience | Developed countries | Developing countries[[9]](#footnote-9)1 |
| --- | --- | --- |
| 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.

# 8 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 ICT for climate change, and ITU‑T Study Groups 5 and 7.

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.

# 9 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

– Working Group on Emergency Telecommunications (WGET)

– Relevant international, regional and scientific organizations with mandates relevant to this Question.

# 10 BDT programme link

Objective 5, Output 5.1

# 11 Other relevant information

To be defined in the work plan.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 1These 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-2)
3. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-3)
4. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-4)
5. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-5)
6. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-6)
7. 1 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)
9. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-9)