Buenos Aires Action Plan

STUDY GROUP 1

QUESTION 1/1

Strategies and policies for the deployment of broadband in developing countries[1]

1 Statement of the situation or problem

In September 2015, the Member States of the United Nations (UN) and the UN General Assembly formally agreed on the Sustainable Development Goals (SDGs), and set out a global agenda for development based on economic prosperity, social inclusion and environmental sustainability, known as the '2030 Agenda for Sustainable Development'.

Broadband is a key input to achieving a people-centred, inclusive and development-oriented information society, including the objectives set by Action Line C7 of the Tunis Agenda for the Information Society and the World Summit on the Information Society (WSIS) and (through them) ITU's role in achieving the SDGs. To benefit from new technologies and services, developing countries need high-speed, high-quality broadband connectivity, not just low-speed broadband. However, in order for this to happen, key framework conditions need to be met. Figures for 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, especially in the 48 UN-designated least developed countries (LDCs). Additionally, in developing countries, LDCs and small island developing states (SIDS), a significant percentage of the population lives in less densely populated rural and remote areas where the capital costs of connecting homes and businesses using fixed-line connectivity can be prohibitive.

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 per cent in 2013 to 12 per cent in 2016. Pushing basic connectivity out beyond major urban centres to more remote areas continues to prove a major challenge. Even where people have access to the Internet, access has to be accompanied by a range of relevant services and content to help improve individuals' personal awareness, education and hygiene, as well as development outcomes in health and education at the national level.

The ITU Telecommunication Development Sector (ITU-D), with active participation from Member States and Sector Members, should endeavour to continue to increase the availability of affordable broadband services by carefully analysing the regulatory, policy, technical and

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

economic issues related to broadband deployment, adoption and use. In particular, ITU members and the Telecommunication Development Bureau (BDT) must identify, escalate and address the stated needs of LDCs, SIDS and others in improving broadband deployment and use. Members will benefit from analysing the technical issues involved in deploying broadband access technologies, including integration of access network solutions with existing or future network infrastructure, as well as asymmetric measures, as appropriate, for operators with significant market power (SMP), to help foster competition on the telecommunication market.

A focus on technical, policy, economic and regulatory aspects of broadband network deployment strategies and approaches will allow members to explore experiences, lessons learned and best practices to help enhance the implementation of national broadband plans and strategies, incentivize competition and investment, and increase broadband connectivity.

Seeking to provide a collaborative study of broadband access policies, implementation and applications, the World Telecommunication Development Conference (Dubai, 2014) (WTDC-14) resolved to begin studying new Question 1/1, entitled "Policy, regulatory and technical aspects of the migration from existing networks to broadband networks in developing countries, including next-generation networks, m-services, over-the-top (OTT) services and the implementation of IPv6". During the 2014-2017 study period, the Rapporteur Group on Question 1/1 prepared the report that can be found on the ITU website. The report includes country experiences and best-practice guidelines to promote affordable broadband networks, services and applications, including those that stimulate demand for broadband such as e-education, m-banking, m-commerce, mobile money transfer and OTT services. It also includes ways to promote broadband deployment through effective competition, public and private investment, inter-platform competition, broadband stimulus, and universal service funds. Examples of experiences and policies facilitating the transition from narrowband to high-speed, high-quality broadband networks, including from IPv4 to IPv6 through the deployment of IPv6, are also featured.

Surveys highlighted the members' satisfaction with the work conducted to date, and proposed some alternative ways forward. Regarding the future of Question 1/1, the results of the surveys carried out by the ITU-D study groups on the current work and the future of Question 1/1 indicate that this Question should continue, but should concentrate on migration to broadband networks.

The work should also take account of the need to build resilient, sustainable infrastructure consistent with WSIS Action Line C2 (Information and communication infrastructure) and the SDGs.

In order to combine all resources and expertise so as to develop coherent policies and strategies that integrate all the issues related to the deployment of broadband in developing countries and access to broadband connectivity, revised Question 1/1 subsumes Question 2/1 on the study of broadband access technologies, excluding OTT and m-services aspects, which are to be addressed under another revised Question.

2 Question or issue for study

a) Policies and regulations that promote increased high-speed, high-quality broadband network connectivity in developing countries.

b) Effective and efficient ways to fund increased broadband access for the unserved and underserved.

c) Ways to remove practical and regulatory barriers to broadband infrastructure deployment and investment, and best practices for improving cross-border connectivity and SIDS' connectivity challenges.

d) 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.

e) 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.

f) Methods to implement affordable and sustainable broadband networks, including the transition from narrowband to high-speed, high-quality networks and interconnection and interoperability features.

g) Demand-side factors and practices to generate and increase the usage of ICT devices and services.

h) Factors influencing the effective deployment of wireline and wireless, including satellite, broadband access technologies, including backhaul considerations.

i) Methodologies for migration planning and implementation of broadband technologies, taking into account existing networks, as appropriate.

j) Trends in the various broadband access technologies and deployment and regulatory considerations.

k) National digital policies, strategies and plans which seek to ensure that broadband is available to as wide a community of users as possible.

l) Flexible, transparent approaches to promoting robust competition in the provision of network access.

m) Co-investment and the co-location and shared use of infrastructure, including through active infrastructure sharing.

n) Licensing approaches and business models for covering remote and rural areas that more effectively integrate the use of terrestrial, satellite, backhaul and submarine telecommunication infrastructure.

o) Holistic universal access and service strategies and financing mechanisms, including universal service funds, for both network expansion and connectivity for public

institutions and the community, as well as demand stimulation measures, such as end-user subsidies.

p) Policy and technological aspects of the transition from IPv4 to IPv6.

q) Ways to manage access to networks, balancing network performance, competition and consumer benefits.

r) Available procedures, methods and time-frames for the effective transition to IPv6.

s) Guidelines for the adoption of, and migration strategies for, network functions virtualization (NFV) and software-defined networking (SDN).

t) The benefits and challenges to governments, operators and regulators of developing virtualized infrastructure, including costs associated with the adoption of NFV.

u) Case studies of successful NFV platforms and SDN deployment in developed and developing countries, including methods of choosing the infrastructure (data centre and servers) for different virtualized network features.

3 Expected output

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

a) Strategies/national experiences/guidelines to stimulate investment in broadband networks, including private, public and public-private partnerships, financing mechanisms, universal service funding mechanisms and other ways of bridging the digital divide.

b) National experiences to promote broadband network deployment through effective competition, public and private investment, inter-platform competition and public-private partnerships, and identification of the range of alternative successful business arrangements that have been used to meet growing demand and other changes in the market.

c) Methods of broadband infrastructure deployment, including backhaul and backbone, and national experiences for improving cross-border connectivity and connectivity for SIDS.

d) Strategies/national experiences/guidelines to promote public-private partnerships for investment, and business models for the deployment of broadband networks, including policy and licensing approaches, financial incentives and frameworks to promote the deployment of broadband infrastructure to improve connectivity and access in the use of ICTs for all.

e) Guidelines for making the transition from narrowband to high-speed, high-quality broadband networks (including transition to IMT-2020 networks), taking into account interconnection and interoperability features.

f) Case studies associated with operational and technical issues of deploying broadband networks, including backhaul considerations.

g) Examples of removing practical and regulatory barriers to broadband infrastructure deployment.

h) Options for the deployment of broadband access networks in developing countries, based on ITU Radiocommunication Sector (ITU-R) and ITU Telecommunication Standardization Sector (ITU-T) Recommendations and relevant regulatory considerations.

i) National experiences for co-investment, co-location, local loop unbundling and infrastructure sharing to promote market entry, where appropriate.

j) Regulatory challenges and policies to leverage the rise of new technologies in the digital economy and society, including universal service funds, coverage requirements and alternative means of financing broadband access.

k) Overview of national experiences in the transition from IPv4 to IPv6.

l) Methods of consolidating and coordinating efforts to facilitate the transition to IPv6.

m) Analysis of the factors affecting the adoption of features of virtual network functions in telecommunication company environments.

n) Technical approaches and national experiences on virtual network functions and SDN to facilitate infrastructure roll-out in developing countries.

o) Study on national experiences in the establishment of Internet traffic exchange points at national, regional and international level.

p) Developing a national migration plan from IPv4 to IPv6, including a capacity-building plan, an awareness plan, knowledge sharing and a readiness assessment.

4 Timing

Annual progress reports to Study Group 1.

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

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

5 Proposers/sponsors

There was consensus at WTDC (Buenos Aires, 2017) that broadband deployment issues are of extreme importance to all countries, particularly developing countries, and work needs to be continued on this subject under a revised Question in the next study period 2018-2021.

6 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.

7 Target audience

Target audience	Developed countries	Developing countries
Telecom policy-makers	Yes	Yes
Telecom regulators	Yes	Yes
Service providers/operators	Yes	Yes
Manufacturers	Yes	Yes
Consumers/end users	Yes	Yes
Standards-development organizations, including consortia	Yes	Yes

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 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.

9 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.

10 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 standardization gap.

11 Other relevant information

As may become apparent within the life of the Question.

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