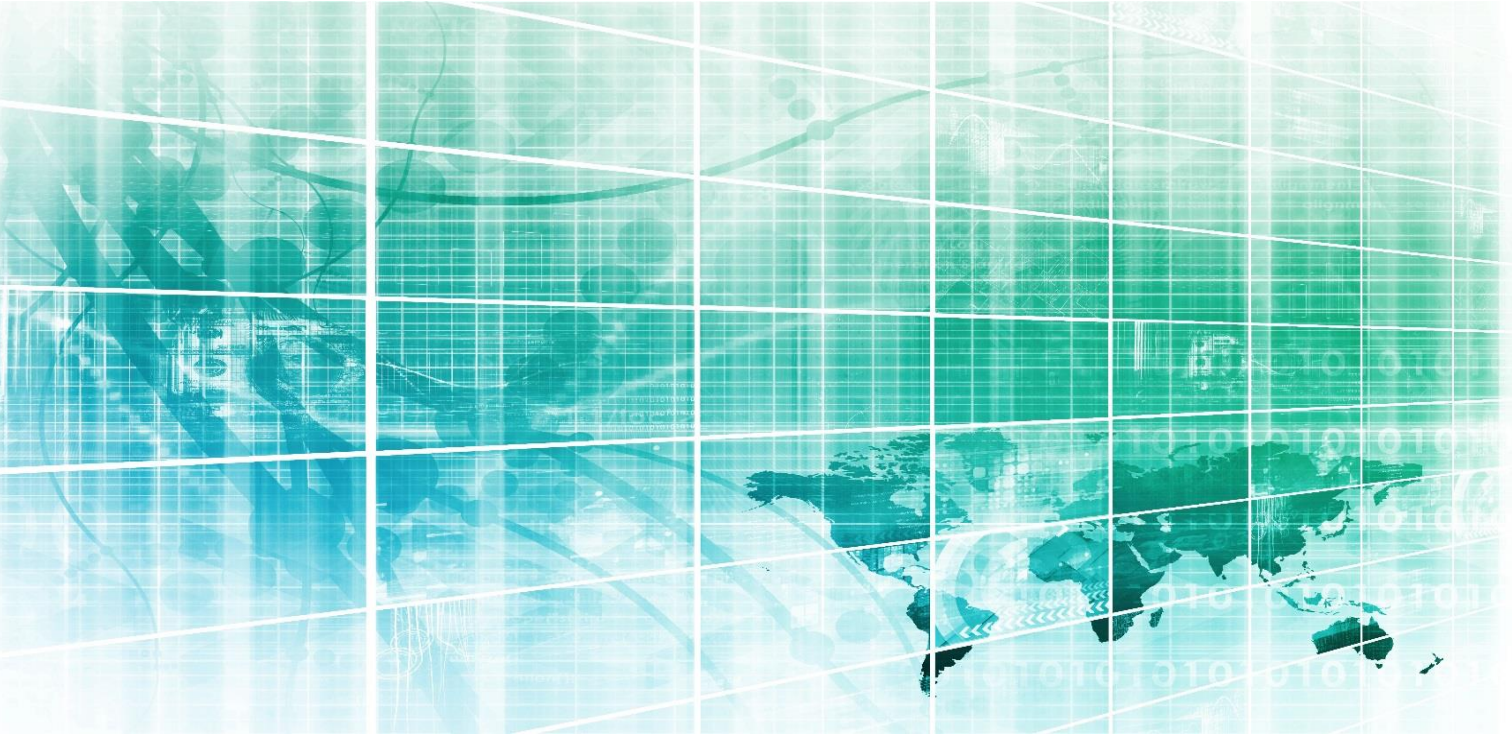
Standing Committee
for Economic and Commercial Cooperation
of the Organization of Islamic Cooperation (COMCEC)

COMCEC

Proceedings of the 9th Meeting of the COMCEC Transport and Communications Working Group

"Increasing Broadband Internet Penetration In the OIC Member Countries"



COMCEC COORDINATION OFFICE
April 2017

Standing Committee
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of the Organization of Islamic Cooperation (COMCEC)

PROCEEDINGS OF THE 9TH MEETING OF THE
COMCEC TRANSPORT AND COMMUNICATIONS WORKING GROUP
ON

"Increasing Broadband Internet Penetration In the OIC Member Countries"

(March 16th, 2017, Ankara, Turkey)

COMCEC COORDINATION OFFICE
April 2017

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TABLE OF CONTENTS

Introduction

The Ninth Meeting of the COMCEC Transport and Communications Working Group (TCWG) was held on March 16th, 2017 in Ankara, Turkey with the theme of "Increasing Broadband Internet Penetration in the OIC Member Countries". The Meeting was attended by the representatives of 12 Member States, which have notified their focal points for the TCWG namely; Egypt, Gabon, The Gambia, Guinea, Iraq, Jordan, Kazakhstan, Malaysia, Nigeria, Saudi Arabia, Tunisia and Turkey. Representatives from private sector (Orange, Türk Telekom, Turkcell, and Vodafone) and the COMCEC Coordination Office (CCO) have also attended the Meeting.[1]

The Working Group has considered the Research Report entitled "Increasing Broadband Internet Penetration in the OIC Member Countries" commissioned by the CCO which aimed at analyzing the state of affairs of broadband in the OIC Member States and providing policy recommendations for increasing broadband penetrationin this respect. The WG has also considered the "COMCEC Transport and Communications Outlook 2016" prepared by the CCO which provided a general overview of telecommunications sectors in the world and OIC Member States.

During the meeting, the participants from the Member States have shared their experiences and achievements as well as the challenges with respect to broadband penetration in their countries. Possible policy options to improve broadband penetration have also been discussed.

[1] The list of participants is attached as Annex 4.

1. Opening Remarks

The Meeting started with a recitation from the Holy Quran. At the outset, Mr. Mehmet Metin EKER, Director General of the COMCEC Coordination Office, briefly introduced the COMCEC and its activities.

Mr. EKER underlined that broadband is a critical infrastructure for fostering economic growth and citizen welfare. Mr. EKER also shared some figures related to broadband internet penetration in the world and in the OIC Member Countries.

Afterwards, Mr. Daud ISMAIL, Undersecretary of Ministry of Communications and Multimedia of Malaysia, was elected as the chair of the meeting. Mr. ISMAIL welcomed the participants and expressed his thanks to the participants for electing him as the chairperson.

2. Transport and Communications Outlook: Overview of Telecommunications in the World and OIC Member Countries

Mr. Burak KARAGÖL, Director at the COMCEC Coordination Office, made a presentation on the key findings of the communications section of COMCEC Transport and Communications Outlook 2016 report.

At the outset of his presentation, Mr. KARAGÖL underlined the importance of transport and communications as one of the six cooperation areas specified by the COMCEC Strategy. This followed by emphasizing the aim and expected outcomes for ICT within the scope of COMCEC Strategy.

Mr. KARAGÖL continued with mentioning hot topics in the field of ICT such as fiber infrastructure, spectrum management, digital skills, e-government, digital divide, e-commerce, cyber security and smart cities. He emphasized that these topics have become important in OIC member countries as well as in the world. He also presented total telecommunications industry revenues (2000-2014) and total IP traffic per month (2014-2020). It is obviously seen that revenues have been stable since 2007 and total IP traffic continues to increase.

Mr. KARAGÖL continued his presentation by demonstrating some important subscription data with regard to global ICT developments in the period of 2001-2016. While use of fixed telephony is declining in low, middle, and high income countries, mobile telephone penetration is rapidly increasing all over the world. Iran, Kazakhstan, and United Arab Emirates are the OIC countries with the highest fixed telephone penetration whereas Kuwait, Maldives, and United Arab Emirates are the OIC countries with the highest mobile telephone penetration.

Mr. KARAGÖL continued his presentation by emphasizing the developments regarding broadband internet penetration. Fixed broadband penetration has been rapidly increasing in developed countries and approached to 30 percent by 2015. On the other hand, fixed broadband penetration is just about 11.2, 7.4 and 3.1 percent in world, developing countries and OIC member countries respectively. Lebanon (23%), Azerbaijan (20%) and Bahrain (19%) are the OIC countries with the highest fixed broadband penetration. In addition, mobile broadband penetration has been rapidly increasing in all countries.

He presented a graph about mobile network coverage and evolving technologies as of 2016. In this graph, it is seen that seven billion people (95% of the global population) live in an area that is covered by a mobile-cellular network. Mobile-broadband networks (3G or above) reach 84% of the global population but only 67% of the rural population. LTE networks have spread quickly over the last three years and reach almost 4 billion people today (53% of the global population), enhancing the quality of Internet use. Also, he presented a map which shows the world's offline population in 2016. According to this map, by end 2016, 3.9 billion people - 53% of the world's population were not using internet. In the Americas and the CIS (Commonwealth of Independent States) regions, about one third of the population is offline. While almost 75% of people in Africa are non-users, only 21% of Europeans are offline. In Asia and the Pacific and the Arab States, the percentage of the population that is not using the Internet is very similar, 58.1 and 58.4%, respectively.

Similar to fixed broadband internet penetration, there is a considerable gap between developed countries and others in terms of internet users per 100 people although this value is increasing for all country groups. Bahrain (93.5%), Qatar (93%), and United Arab Emirates (91%) are the OIC countries where number of internet users per 100 people was the highest as of 2015.

Finally, he mentioned some indexes in the field of ICT such as ICT Development Index, e-Government Development Index and The Network Readiness Index. The ITU ICT Development Index (IDI) is a unique benchmark of the level of ICT development in countries across the world. The IDI combines eleven indicators on ICT access, use and skills, capturing key aspects of ICT development in one measure that allows for comparisons across countries and over time. Bahrain has achieved best ranking as 29th in the OIC member countries within the scope of ICT Development Index in 175 countries. As a composite indicator, the e-Government Development Index (EGDI) is used to measure the readiness and capacity of national administrations to use ICT to deliver public services. In this respect, Bahrain has achieved best ranking as 24th in 193 countries. The networked readiness framework was launched by the World Economic Forum in 2001 and significantly extended in 2012. The Network Readiness Index (NRI) can help to assess countries' ability to capitalize on the digital revolution and their readiness to benefit from the emerging Fourth Industrial Revolution. In this index, UAE has achieved best ranking as 26th in OIC member countries within 139 countries.

Mr. KARAGÖL concluded his presentation by showing the ranking of the first 20 countries of the OIC for each index.

Question(s): The representative of Turkey raised a question on the ICT Development Index asking that what are the main elements of this index and how is it calculated?

Answer (s): There are twelwe indicators and the ICT Development Index combines all of these indicators and finds a value/rank for each country. ICT Access, ICT Use, Digital Skills can be given as examples of the indicators in question.

Question(s): The representative of Malaysia asked whether COMCEC has set up a threshold for member countries to achieve in terms of broadband penetration?

Answer (s): Mr. KARAGÖL responded that the OIC Member Countries has a big divergence with respect to the broadband development. For example, some OIC Member Countries such as Bahrain, Qatar and Azerbaijan are fairly advanced in terms of supply and penetration of broadband services. On the other hand, a number of countries such as Egypt, Tunisia and Turkey exhibit advanced service coverage of the population combined with low penetration. Therefore, it is somehow very hard to set uf a threshold which all these country shall achieve. Within this framework, national broadband strategies are becoming important instruments for each single country to determine their objectives and set up a threshold for itself to achieve with respect to the broadband penetration.

3. Conceptual Framework for Broadband Internet and Global Trends

Dr. Raul KATZ, President of Telecom Advisory Services LLC delivered a presentation outlining the conceptual framework for broadband Internet and described the current global trends in broadband development.

Dr. KATZ started his presentation by pointing out that broadband is a critical infrastructure for fostering economic growth and citizen welfare. Broadband yields significant positive externalities, such as productivity enhancement, promotion of innovation, and restructuring of production chains. Beyond the benefits linked to GDP growth, broadband contributes to job creation and enhancement of consumer surplus. The economic contribution of broadband increases with penetration: research evidence indicates that the higher broadband penetration is, the stronger its effect on economic growth.

Having provided evidence of broadband's positive social and economic contribution, Dr. KATZ moved to discuss the global supply trends. Worldwide internet adoption has reached 44%. The growth in broadband users is compounded by an exponential increase in traffic**.** Annual global Internet traffic currently amounts to 88.7 billion gigabytes per month, increasing at

30% per annum since 2010 and expected to grow at 22% in the future. The global telecommunications industry is facing the challenge of continuing to deploy network infrastructure that accommodates the exponential growth in data traffic. However, while pressured to increase capital spending for deploying ultrafast networks, broadband service providers are facing increased competition from Over The Top (OTT) platforms (such as Google, Facebook and Netflix) with the potential to capture a growing share of traditional telecommunications revenue streams. This limits the ability of carriers to continue to invest.

In this context, growing consolidation and portfolio rationalization represent approaches followed by broadband service providers to leverage economies of scale. The implications of these supply trends are numerous. First, if OTT competition is affecting the broadband industry sustainability, how can policies and regulation define a level-playing field across all companies serving the digital ecosystem? Secondly, if service provider consolidation is an important trend, how do we ensure sufficient competitive intensity in order to deliver consumer benefits? Finally, if service providers are under financial pressure, how do we create enough incentives to ensure deployment of new technologies?

Having outlined the broadband supply trends, Dr. KATZ moved to reviewing the demand side trends, focusing on the barriers that stand in the way to increase broadband penetration. The first obstacle is driven by supply limitations: citizens do not acquire broadband service simply because they lack service in the area where they live or work. This barrier is prevalent in rural and isolated areas. The second barrier measures the potential users that could acquire broadband service (since operators offer it in their territory), but do not due to limited affordability, lack of digital skills and/or lack of cultural relevance of Internet content. While the digital divide represents the sum of both supply and demand gaps, the critical success factors and policy initiatives aimed at addressing each of them are different.

The implications of broadband demand trends are abundant. First, the reasons for broadband non-adoption are not technological but driven by economic, sociological, and behavioral factors. Secondly, the responsibility for addressing them requires the intervention of several governments entities (ministries of education, labor and culture) in combination with the private sector (operators, equipment manufacturers) and civil society (foundations, NGOs). Thirdly, tackling the demand gap is more complex and requires more time than deploying networks.

Governments and private broadband service providers have recognized the presence of barriers to increasing broadband penetration. Several approaches can be put in place to address the supply gap. One approach focuses on alleviating some of the constraints of the rural broadband business case. Some governments deploy publicly owned backbone networks with the objective of reaching remote locations. Since traffic backhauling represents approximately 30% of the operating costs of running a broadband network, a government-owned network represents an opportunity of cutting transit costs to subsidize rural broadband network operations.

On the consumer side, limited affordability is a critical adoption obstacle. Beyond the competitive stimuli, the reduction of broadband service prices can be achieved through a number of targeted public policy initiatives, such as subsidized plans. Finally, addressing the digital literacy obstacle requires the implementation of programs that build an understanding of the service offerings, and develop user confidence through explaining the benefits of use.

Question(s): Whether there is a direct relation between GDP growth and the broadband internet penetration/speed of internet offered by telecom operators of a given country?

Answer (s): There are some researches indicating that every megabayt increase in speed of internet has somehow an impact on the GDP growt of a given country. It was underlined that at the micro level, the speed of intenet has a direct impact on the productivity of companies and people, which at the end contributes to the GDP growth.

Question(s): Are there any studies or assessments about the possible risks related to increasing of broadband penetration?

Answer (s): There are several risks that are important to consider while increasing the broadband penetration. The countries with high broadband penetration such as South Korea and USA have also some problems. In these countries, the rate of reading book per year, the abilty to write, and the quality of writing is declining. In addition, there may be some economic results when a country builds its econmy on the broadband internet. When internet fails, it will bring extensive negative results for the economy of the given country.. Cybersecurity and redundancy may also be the problem of a country whose economy mainly depends on broadband internet.

Question(s): What would be the relationship between OTTs and internet providers/network operators in the future in developed countries?

Answer (s): Europe has been taking the lead to consider charging the OTTs and regulate them similarly as the network operators. Data protection, privacy, taxation are some of the critical issues for the developed countries in terms of OTTs. However, the USA has a laisses-faire approach.

4. Evaluation of the Current Situation of Broadband Internet Penetration in OIC Member Countries

In his second presentation, Dr. Katz moved to review the current situation of broadband development in OIC member states.

Dr. Katz started his presentation by pointing out that, ever since its introduction in the early 1990s, broadband technology has undergone a dramatic diffusion within the countries of the Organization of Islamic Cooperation (OIC). As of the end of 2015, 14.95% of households in the OIC Member Countries were connected to broadband technology, while 29.41% of individuals had mobile broadband connectivity. In several OIC Member Countries (such as Azerbaijan, Lebanon, Malaysia, and Qatar), fixed broadband household penetration had exceeded 50%, while in others (Bahrain, Saudi Arabia, and UAE) mobile broadband penetration was higher than 70%. As a result, the universe of the OIC Member Countries is not homogeneous when it comes to the challenges faced regarding broadband development.

Three broadband development stages have been identified. First, some OIC Member Countries in the Middle East (Bahrain, Oman, Qatar, Saudi Arabia, and UAE) and Central Asia (Azerbaijan, Kazakhstan) tend to be fairly advanced in terms of supply and penetration of broadband services. On the other hand, a number of countries in North Africa (Egypt, Tunisia, and Morocco), Sub-Saharan Africa (Cote d'Ivoire), Middle East (Kuwait) and Asia (Brunei, Kyrgyzstan, Turkey, and Uzbekistan) exhibit advanced service coverage of the population combined with low penetration. Finally, a large group of African countries (Benin, Burkina Faso, Cameroon, Chad, Guinea, Senegal, Sierra Leone, Sudan, and Togo) are still at a limited stage of broadband development both in terms of supply and demand.

Advanced OIC Member Countries exhibiting high broadband service coverage and adoption are facing the challenge of building a forward-looking world-class infrastructure that will position them in a leading position. This entails deploying fiber optics in their last mile, completing their 4G wireless coverage and preparing to deploy 5G. Along these lines, governments need to consider policies that provide appropriate incentives to warrant next generation infrastructure deployment. They typically include a range of tax benefits and regulatory holidays for incumbent service providers.

Countries with advanced coverage but limited penetration face classical demand gap reduction challenges. It was highlighted that increased service adoption depends on lowering the total operating cost incurred by consumers for purchasing the technology. This can be achieved through service subsidies or modification of tax regimes, like exempting low-income population from paying import duties on terminals or VAT on service. Additionally, governments need to put in place a series of training programs oriented to foster digital literacy.

For countries that are still at the early development stages of broadband demand and supply, a combination of infrastructure deployment incentives and demand stimulation policies is required. Policy makers in these countries have to recognize that the competitive incentive will not be sufficient to generate the stimuli required to promote infrastructure investment. Along these lines, it might be necessary to rely on incumbents and provide them with the right incentives to deploy broadband networks. These should be put in place simultaneously with demand promotion mechanisms.

Having described the broadband supply and demand challenges, Dr. Katz moved to present the country case studies conducted during the preparation of the research report considered by the Working Group. Three countries were selected from the three groupings of OIC according to their level of broadband penetration namely, Saudi Arabia (advanced), Kazakhstan (intermediate) and Cote d'Ivoire (limited).

The development of fixed and mobile broadband in Saudi Arabia indicates a complementarity pattern, whereby fixed and mobile broadband are continuouly growing. While social networking is a very important broadband use, the technology is used for other applications as well, such as web browsing, and communications. From a supply standpoint, the broadband industry structure in Saudi Arabia is highly concentrated in fixed broadband and moderately consolidated in mobile. From a demand barrier perspective, affordability is not a primary obstacle to broadband adoption. The primary obstacles lie in lack of digital literacy for some segments of the population, and limited local digital content and applications availability.

As in the case of Saudi Arabia, adoption of fixed and mobile broadband in Kazakhstan indicates a complementarity pattern. From a supply standpoint, the broadband industry in Kazakhstan is also highly concentrated in fixed broadband but more balanced in mobile. Again, as in Saudi Arabia, affordability is not a primary obstacle to broadband adoption. However, Internet use data in Kazakhstan indicates the importance of local content. The primary challenge in this case is to raise digital awareness among the rural population.

Finally, in Cote d'Ivoire, contrary to the other two case studies, mobile broadband has become the primary technology to access the Internet, and fixed broadband has limited deployment. From a supply standpoint, the overall broadband industry in Cote d'Ivoire is slightly less concentrated than the other two case study countries. Finally, contrary to the other two case studies, in Cote d'Ivoire limited affordability appears to be a key broadband adoption barrier.

Dr. KATZ completed his presentation by summarizing the lessons learned for policy recommendations to develop broadband in the OIC Member Countries. He organized the recommendations in the supply and demand categories. From the supply side, policies should focus on facilitating the deployment of high capacity networks (fiber optics, 4G) and deploying broadband infrastructure in rural areas. On the demand side, policies/programs should aim at reducing service and device costs in order to achieve broadband affordability, training

broadband non-adopters in order to tackle the digital literacy challenge, and developing local content in order to improve cultural relevance of Internet content.

Question(s): It was expressed that there are some possible sollutions to increase demand for internet such as lowering prices, increasing awareness and decreasing taxes. On the other hand, what would be the optimum policy for a government to diminish the demand gap?

Answer (s): Regarding the lowering prices, it should be recognized that private sector could not move forward without subsidies, tax rate reduction and implementing social programs. And also, a number of instruments should be used by governments since competition may not be sufficient by itself in terms of reducting the prices..

Concerning the rising awareness, increasing digital literacy takes time. However, governments shall deal with this issue even though it takes long time in order to rise awareness and increase the demand for broadband internet. This issue can be an objective of the long-term plan or strategy of the countries.

Regarding the reduction of taxes, it may not be considered positively by governments since it would decrease their revenues. . However, if this dispensable revenue would be compensated by the revenue coming from the increasing adoption of the internet in the long term, then it would be better to cut taxes for increasing the broadband penetration.

Question(s): Is there any study that compares limited digital literacy and limited cultural relevance in order to determine their influence on the development of broadband internet of the country?

Answer (s): There is no evidence on this issue particularly because of the open-ended questions in the surveys conducted in this field. Neverthless, in order to measure the influence of these two items seperately, an effective education campaign may be conducted in an attempt to increase the digital literacy. Then the direct relationship between the digital literacy and broadband penetration can be measured. On the other side, in order to increase the cultural relevance in terms of broadband, e-government programs may have important impact in this regard.

5. Roundtable Discussions on Policy Recommendations for Increasing Broadband Penetration

The Session began with a policy debate for the possible policy actions to be taken to approximate member state policies in the field of broadband penetration. Delegate of Nigeria, Mr. Haru ALHASSAN, Director at Nigerian Communications Commission, moderated the session. Mr. Nihat AKBALIK, Expert at the COMCEC Coordination Office, made a presentation on the responses of the member countries to the Policy Questions circulated by the COMCEC Coordination Office in advance of the meeting.

After fruitful deliberations, the Working Gorup has come up with the following policy recommendations[2] to be submitted to the 33th Ministerial Session of the COMCEC for their adoption.

A. Policy Recommendations for all OIC Member Countries

Policy Recommendation I: Preparing national broadband strategies with the involvement of the all relevant stakeholders

Policy Recommendation II: Enhancing digital literacy by embedding programs in the formal education system and encouraging non-formal initiatives targeting specific segments of the population

B. Policy Recommendations for the OIC Member Countries with Different Stage of Broadband Development

1. OIC Member Countries at advanced stage[3] of broadband development

Policy Recommendation I: Achieving high-speed Internet coverage in rural and isolated areas through regulatory holidays[4] and direct subsidies with the purpose of improving the broadband investment business case

Policy Recommendation II: Enactment of financial incentives to operators for deploying 4G

2. OIC Member Countries at an intermediate stage[5] of broadband development

Policy Recommendation I: Reducing cost of broadband services through targeted public policy initiatives

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2 The Room Document is attached as Annex 3.

3 OIC Member Countries at advanced stage refers to the countries which have high coverage and adoption of broadband internet.

4 Regulatory holiday refers to the absence of some regulatory obligation to provide access, at least for a predefined period of time.

5 OIC Member Countries at intermediate stage generally have advanced coverage but limited broadband penetration.

Policy Recommendation II: Lowering the cultural and linguistic barriers through development of local platforms, content, and applications.

3. OIC Member Countries at initial stage[6] of broadband development

Policy Recommendation I: Offering a low-priced broadband service for consumers by state-owned and government subsidized telecommunications operators

Policy Recommendation II: Offering a low-priced or free broadband service targeted for disadvantaged segments of the population

6. The Way Forward: Utilizing the COMCEC Project Cycle Management (PCM)

Mr. Burak KARAGÖL, Director at the COMCEC Coordination Office made a presentation on the COMCEC Project Funding for transport and communications projects introduced by the COMCEC Strategy. In the beginning, Mr. KARAGÖL informed the participants about where the COMCEC Project Funding stands in the COMCEC Strategy. Mr. KARAGÖL described the basic qualifications of the COMCEC Project Funding as "simple and clearly defined procedures and financial framework", and stressed that CCO provided continuous support to the member countries during the all stages of the COMCEC Project Funding Mechanism. Regarding the financial framework, he emphasized that the funds are grant in nature and would be provided by the CCO.

Then he briefly explained the COMCEC Project Funding, by underlining the potential project owners. Mr. KARAGÖL mentioned that relevant ministries and other public institutions of the Member Countries and the OIC Institutions operating in the field of economic and commercial cooperation could submit projects. He also emphasized that to be able to submit their project proposals, member countries have to be registered to respective working group.

In his presentation, Mr. KARAGÖL stressed three key actors and their responsibilities under the COMCEC Project Funding; Project Owner (Project Submission and Implementation); the CCO (Program Management) and the Development Bank of Turkey (Project Monitoring and Financing). In addition, he also highlighted the basic steps and roles of these key actors throughout the project application process.

Mr. KARAGÖL continued his presentation, by explaining the "Project Selection Criteria" namely, compliance with Strategy's Principles, and targeting strategic objectives of the Strategy, focusing on output areas and pursuing multilateral cooperation among the OIC

[6] OIC Member Countries at initial stage refers to the countries which need to increase both supply and demand for broadband services. For those countries, a combination of infrastructure deployment incentives and demand stimulation policies are required to increase broadband penetration.

Member Countries. He stressed that project proposals should be compliant with the sectoral themes for the fourth call stated in the Program Implementation Guidelines. He underlined the importance of the multilateralism for project appraisal and stated that project proposals should focus on common problems of at least two member countries and also should offer joint solutions for these problems.

He also briefly informed the participants on 2014, 2015 and 2016 Projects. In this respect, He explained that member countries and OIC institutions had shown great interest and 209 project proposals were submitted by member countries and OIC institutions in three-year period (2013-2015). Furthermore, Mr. KARAGÖL stated that 57 project proposals received under the fourth project call and 15 of them will be funded in 2017. He also mentioned that 1 project in the field of transport and comnmunications will be funded in 2017.

Lastly Mr. KARAGÖL informed the participants on the common characteristics of successful project proposals. He enumerated the key success factors as follows;

- Sufficient and informative project summary,
- Sound project activities and relevant details about them,
- Qualified human resources in line with Program Implementation Guidelines requirements,
- Detailed and well-designed work plan,
- Realistic cost estimations in the budget and sufficient explanations for them,
- Project Owner's cooperation and communication with CCO and
- Active participation to the relevant Working Group.

7. Presentations of the Member States

a. Malaysia

Mr. Bukhari YAHYA, Manager, Ministry of Communication and Multimedia of Malaysia, made a presentation on his country's experiences in increasing broadband penetration. Mr. YAHYA mentioned about Malaysian Communications and Multimedia Commission (MCMC) and its role and fuction in increasing broadband penetration.

Giving the brief overview of Malaysia's telecommunication industry, Mr. YAHYA stated that while the 3G cellular coverage is 92 percent in Malaysia, the rate of LTE is 68 percent and household broadband penetration is almost 80 percent. He also said that currently 43.9 million people are cellular subscriptions, 28 million people are mobile broadband subscriptions and 2.7 million people are fixed broadband subscriptions.

Furthermore, Mr. YAHYA touched upon the strategy outlined for the development of Information, Communications and Multimedia Services (ICMS) in Malaysia. He said that ICMS

is composed of identified eight key service areas, eight types of infrastructure and six growth areas as focus points for developments.

Regarding the National Broadband Implementation Strategy, he highlighted the High Speed Broadband Project, Fiber Optic Backhaul Project and Langkawi Island Tower Fiberization Project and their positive impacts on the various aspects such as improved broadband access and improved government services.

Additionally, Mr. YAHYA underlined some important initiatives of his country to increase broadband penetration in terms of supply side. Development of International Network Project, Community Broadband Centre Project and Malaysia Netbook & Wifi Kommuniti (WK) are important ones among the others. He stated the Community Broadband Centre initiative aims to increase the socio economic of the underserved group/area by providing access in underservedgroup/area.

Lastly, Mr. YAHYA expressed that broadband coverage in Malaysia is expected to be 95 percent in 2020.

b. Nigeria

Mr. Haru ALHASSAN, Director, Nigerian Communications Commission, made a presentation on his country's National Broadband Plan.

Mr. ALHASSAN stated that the Federal Government of Nigeria (FGN) has joined the league of ITU member states - The Nigerian National Broadband Plan (NBP) provides roadmap and timeline to deliver a five-fold increase in broadband penetration within a five-year period). The said Plan aimed to provide available, accessible and affordable broadband services to all citizens and transform the economy to a digital knowledge-based for national development.

Concerning the challenges faced by the NBP, Mr. ALHASSAN stated that although there is a broadband fiber infrastructure in the country, it has not sufficiently covered the entire nation. Currently in Nigeria, more than 10 terabytes of telecommunications capacity exists, but the challenge is the deployment of fiber infrastructure across the country (to the hinterland) that will effectively distribute this capacity to the all regions. Furthermore, Mr. ALHASSAN expressed that Nigerian Communications Commission (NCC) developed a strategic vision including, among others, eight (8) pillars in order to address the NBP challenges and ensure the attainment of 30% broadband penetration by 2018.

After sharing some important figures on the current broadband penetration in Nigeria, Mr. ALHASSAN mentioned about the economic and social benefits arising from deployment of broadband. Concerning the economic benefits, he said that according to the National Bureau of Statistics (NBS), in the second quarter of 2016, the telecommunications sector contributed N1,580 billion to GDP. Regarding the social benefits, job creations, efficient business and government processes, participatory governance, and advance social interactions are some of the benefits of the broadband penetration in Nigeria.

c. Turkey

Mr. Gündüz Şengül, Deputy General Manager at the Ministry of Transport, Maritime Affairs and Communications, delivered a presentation on Broadband Activities in Turkey.

At the outset, Mr. ŞENGÜL said that Turkey has an effective monitoring and evaluation mechanism with regard to broadband internet penetration. According to statistics, the independent regulatory authority of Turkey has licensed 438 fixed and mobile telecommunications operators.

Mr. ŞENGÜL added that Turkey has over 62 million broadband subscribers, which correspond to 78% of country's population. Around 52 millions of them are mobile broadband subscribers, which correspond to 64,8 percent of country's population. The rest of them are fixed broadband subscribers which corresponds to 13,2 percent of country's population.

Afterwards, he said that Turkey aims to improve fiber based high-speed broadband infrastructure across the country to generate a more competitive market structure and to increase the broadband usage. Accordingly, Mr. ŞENGÜL provided the details about the broadband infrastructure investments of the major operators in Turkey.

Mr. ŞENGÜL also provided some information about demand side projects project. The Fatih Project started in 2011 and it was completed in 2016. In this project, Interactive LCD Panel Boards and printers were bought for schools. Another project is Mobile Navigation Devices for Visually Impaired Citizens. In this Project, 10.000 mobile devices were delivered in 40 cities up to now and next year 5.000 mobile devices will be delivered.

Furthermore, Mr. ŞENGÜL expressed that Turkish national broadband strategy is being prepared. Turkey's main aim is to reach 2023 broadband targets some of which are given below:

- Increasing home-pass rate to to%100 (Now home-pass rate is %31),
- Incerasing broadband internet usage rate to 80% for the people between 16 and 74 ages. (Now %61,2),
- Taking measures to improve the infrastructure to carry mobile broadband,
- Being a regional center and transit point with strong internet exchange infrastructure.

He also expressed that Turkey can share their experiences in the following areas with any willing country:

- Developing effective broadband policies.
- Improving e-government service capacity.
- Implementing Broadband Supply and Demand Projects,
- 5G and research ans development,
- Making regulations for improving broadband.

d. Gambia

Mr. Assan JAMMEH, Planner, Ministry of Information and Communication of The Gambia, made a presentation on his counnry's experiences in the field of broadband penetration.

Mr. JAMMEH stated that the Fibre Optic Cable, ACE Submarine Cable and the Serrekunda Internet Exchange Point are the key infrastructure to increase broadband penetration in the country. He touched upon the key policies in the Gambia, which gives direction to the ICT sector as a whole and specifically to broadband penetration. Within this framework, he mentioned the National Information and Communication Infrastructure Policy, which guides ICT program/project implementations and aims at enhancing broadband penetration in the country.

On the status of the broadband penetration, Mr. JAMMEH mentioned that broadband penetration in the country is below the African average. He enumareted main inhibiting factors as follows:

- Literacy – more than half of the population are illiterate
- Accessibility – network coverage is restricted to areas where corporate customers are available.
- Affordability – broadband services are expensive compared to the average earning of the Gambian people
- Low usage of ICT by both the public and private – there are almost no applications to help stimulate demand.

Lastly, Mr. JAMMEH identified the following areas as possible intervention areas;

- Funding for the formulation and development of a comprehensive broadband plan for the Gambia.
- Technical cooperation to enhance the capacity of Gambians in ICTs.
- Funding for investment to encourage local content development in the Gambia.
- Funding for the development of an effective real-time monitoring and evaluationframework for the broadband penetration in the country.
- Support for the newly developed E-Gambia Strategy.

a. Iraq

Mr. Baseem KHALAF, Manager, Ministry of Communication of Iraq, made a presentation on his country's experiences regarding the broadband penetration.

Mr. KHALAF mentioned that there is a need to expand broadband infrastructure to meet the increasing demand for broadband services. Furthermore, Mr. KHALAF touched upon the current internet networks and the challenges they faced in terms of developing internet networks. He expressed that new optical fibers are under construction since 2016 for increasing national broadband penetration in Iraq.

8. Private Sector Perspective on Broadband Internet Penetration

a. ORANGE: "Orange Experiences In Broadband Internet Penetration in the OIC African Group Member Countries"

Mr. Mongi MARZOUG, VP Internet and Sustainable Energy Governance, delivered a presentation on the Orange Experiences in Broadband Internet Penetration in the OIC African Group Member Countries. At the outset, he outlined the importance of the broadband internet and its transformative power for the economic and social life of societies.

He mentioned that the digital transformation of the society (Government, Citizens and Business) represents an essential engine for social development, economic growth and job creation. In this respect Broadband Internet infrastructure is pivotal to achieve the digital transition and to allow an array of new and innovative services. Open, fast, reliable, secure and trustworthy connectivity is an essential pillar of digital economy. Mobile technology will continue to play a dominant role in internet connectivity expansion, in particular in Africa and emerging countries where the potential of fixed internet will remain low (at least in the medium term).

Having mentioned the main recommendations of ITU Broadband Commission for Digital Development, Mr. MARZOUG outlined the cost-effective solutions for broadband deployment. Regarding the Orange Strategy Essentials 2020, he said that as a digital, efficient and responsible company, Orange will facilitate the development of digital practices by championing superfast broadband's extension in all the geographies operated, upgrading networks and focusing investment where customers need it most. He continued by ennumerating the essentials as followings;

- Reinventing the customer relationship,
- Building an employer model,
- Supporting the transformation of corporate customers,
- Diversifying by capitalizing on company's assets.

Concerning the broadband mobile internet issue in Africa, Mr. MARZOUG expressed that the average traffic per smartphone is expected to increase by six times by 2021 and 45% of the smartphones subscribers will be using 4G network in Africa. He also expressed that Orange is a leading operator in Africa and Middle-East operating in 21 countries, with 116 millions customers and 20 000 employees.

Furthermore, Mr. MARZOUG highlighted the investments of Orange in Africa and Middle-East. He said that Orange continually increases its investments in the said geographies in order to foster connectivity and to enhance benefits from digital technology. He also highlighted that in order to improve access to international cables, Orange has initiated the Africa Coast to Europe (ACE) submarine cable project with a consortium of 16 operators and financial support from

the World Bank and the European Investment Bank and 20,000 km have already been deployed.

b. TÜRK TELEKOM: "Increasing Fixed Broadband Internet Penetration in Turkey"

Mrs. Beyhan Aygün AKYÜZ, manager at Türk Telekom Company, delivered a presentation titled "Increasing Fixed Broadband Internet Penetration from Türk Telekom Perspective". She started her presentation by giving brief information about Türk Telekom. She summarized the development of Türk Telekom over the years and gave information about the services provided. She also mentioned that Türk Telekom offered services such as TV, mobile, broadband, cloud services and corporate data services etc. for their customers. These services offered together and separately according to user needs to support the increase of penetration.

Mrs. AKYÜZ outlined that there is a significant increase in usage of content and applications. She emphasized that in order to increase demand, it is also important to provide/develop services such as applications and value added services like education or game platforms. She also mentioned that Türk Telekom has more than 40 mobile applications and 200 value-added services and added that they continue to develop platforms such as education, music game etc. for the sake of increase utilization.

Furthermore, Mrs. AKYÜZ stated that Türk Telekom continued to invest in fiber infrastructures and it has reached to 13.9 home pass with 228 thousand km fiber infrastructure. She continued that according to the report prepared by COMCEC, Turkey is classified among the countries with advanced service coverage of the population combined with low penetration. Most of the households have not taken advantage of the level of service that they can already access, leading to a significant demand gap. In addition to this, more than 70% of users prefer the offers between 10-30 Mbps speeds and very few of them request speeds above 16 Mbps in Turkey. In this context, Mrs. AKYÜZ emphasized that building high-speed infrastructure is not enough in itself unless there is a sufficient demand.

Additionally, Mrs. AKYÜZ stated that Türk Telekom continued to work in all areas to increase the supply and demand and conveyed the important projects to increase the broadband penetration and contribute to digital literacy and device usage skills. Some of the projects are: Tariff & services for disadvantaged groups, Internet houses project, eliminating barriers in communication project, free internet for dormitories, fatih project, Wimax project, ulak project, fiberkenTT prroject, 5G project and milat project.

Mrs. AKYÜZ also summarized the problems in terms of supply and demand faced by the operators. Concerning the supply she steted that both the creation of new generation networks and the transformation of existing networks into new generation networks and the updating of these living networks according to current technologies are very costly for operators. Operators all over the world are experiencing significant difficulties in achieving the return and sustainability of their investments. Sufficient level of demand is also a key element

to encourage the investments. Returning investment especially in rural areas and cities with low-density population is a challenge while the cost deployment of broadband is increasing. The investment to be made in these non-profitable areas will be very costly. So these socioeconomically underdeveloped regions or rural areas should be supported by universal service fund in terms of increasing supply and demand. Besides, the establishment of the electronic communication infrastructure inside buildings and cable thefts increases the costs of the operators. OTTs, which are not subject to any obligation in recent years, also put pressure on operators and they affect market share and income asymmetrically.

Concerning the demand side she outlined that low income level affects the broadband penetration directly and/or indirectly. The low income levels and limited affordability have an impact on low device ownership rate as well. It can be also said that education level and internet usage rates have positive correlation. So it is necessary to raise awareness and give importance to digital literacy and device usage skills in order to increase demand for broadband. The low digital literacy, limited device penetration, and lack of relevant local content are the other important reasons for the demand gap. Most of the content that is used over the internet is created abroad and it is most likely that most people do not find this information relevant or useful. So, development of Turkish digital content and applications will be helpful to increase demand for internet. It is seen that e-applications platform is not used at the desired level. However, in recent years, the increase in e-applications projects has been heavily influencing the actors in the sector. So dissemination of e-applications will also increase the demand for broadband. Security concerns such as illegal use of personal information of individuals also prevent people from using internet/online platforms. Creating secure platforms and building user trust will have positive impact.

She concluded her presentation by mentioning about some suggestions in order to increase broadband penetration:

- Simplifying and reducing financial obligations and taxation in the sector,
- Conducting ex-ante and ex-post regulatory impact analysis,
- Leaving the market primarily to its own dynamics and intervening only if necessary
- Predictable regulation environment to support the sustainability of infrastructure investments
- Incentives/ usage of universal fund for the investment of rural areas or the areas with the low rate of return of investment
- Facilitating access to broadband services for people with disabilities, low income or social support needs,
- Development of Turkish content and applications, providing safe internet applications
- Prioritizing Machine to Machine (M2M), Internet of Things (IoT) and Internet of Everything (IoE) services,
- Dissemination of e-government, e-education, e-health applications, providing a shared economic transition through social media platforms,

- Establishment of a cyber-security strategy, providing education/trainings/programs for digital literacy

c. TURKCELL: "Increasing Broadband Penetration: Best Practices and Challenges"

Mr. Umut KİRMİT, Regulation Strategies and Economics Manager, TURKCELL, made a presentation on the "Increasing Broadband Penetration: Best Practices and Challenges". In the beginning of his presentation he showed some maps in order to highlight the unprecedented development of broadband internet since the beginning od 2000s over the world. He also illustrated the relationship between broadband development and its economic growth.

Mr. KİRMİT underlined that according the reports of World Bank and OECD, 10-point increase in broadband penetration in a developing country would provide more than 1-point increase in its economic growth. Increase in ICT employment growth has a direct contribution to the total employment. He also underlined that telecom operators are the major actors in the internet industry in terms of generating income and promoting investments in this field.

Regarding the broadband industry in Turkey, Mr. KİRMİT expressed that Turkey has around 20 milion mobile and more than 10 million fixed broadband subscribers, with copper, cable and fiber network. The internet penetration is around 45 percent, which shows a suitable environment for policy makers.

Concerning the sphere of activity of TURKCELL Group in Turkey, Mr. KİRMİT underlined that TURKCELL has more than 33 milion mobile subscribers, around 2 milion fixed subcsribers, more than 1 milion TV subscribers. In addition, TURKCELL is the largest OTT platform in Turkey with an instant messaging platform BIP, a music platform fizy, and personal cloud services.

Mr. KİRMİT, lastly enlisted the lessons learned as the follows;

- More investment shall be made in fiber for the triplay-fourplay business such as 4G/5G transmission, enterprise services and global OTT services.
- When alternative operators invest, incumbet operator is encouraged more to invest.
- New investment models should be created to reduce high investment costs like PPPs,
- Increasing efficiency in copper network by ex-ante regulation,
- Making market more competitive,
- Encouraging cost-based wholesale prices.

d. VODAFONE: "Vodafone's International Experiences in Broadband Internet Penetration"

Mr. A. Ogün SARI, Public Policy Senior Manager at VODAFONE, made a presentation on the "Vodafone's International Experiences in Broadband Internet Penetration". At the outset, Vodafone has mobile networks in 26 countries (including JVs and associates) and fixed services in 17 of these countries.

Mr. SARI continued his presentation by highlighting the activities of Vodafone in terms of enhancing broadband penetration. He mentioned that Vodafone provides cable, fibre and copper networks to enable TV, broadband and voice services by deploying its own fibre, reting from incumbent operators or via acquisitions. Mr. SARI also touched upon their activities in Egypt and Turkey as the members of the OIC.

Afterwards, Mr. SARI expressed that global examples show that digital future will shape the lives and economies of connected countries for generations to come. He said that there are three pillars to be considered while proceeding to the digital future. These pillars are sustainable investments, promoting competition and effective regulation of passive infrastructure.

Morever, Mr. SARI stated that Gigabit networks will take place and it will enable new applications to work for entertainment, health and smart phones. Direct and indirect benefits of a Gigabit Society can be grouped into six categories that will ultimately impact the GDP of a country in a positive manner namely; better healthcare, better education, increased security, positive social impact, positive impacts on the environmesnt and increased employment. He enumerated the recommendations of Vodafone during this transmission as follows;

- Supporting international competitiveness and regional development,
- Having digital single market strategy,
- Deploying high-capacity fibre,
- Having fibre backhaul as a greater facilitator of 5G roll-out,
- Achieving 1 gigabit (1000 Mbps) speeds for everyone,
- Implementing pro-competitive policies against monopolization,
- Having comprehensive vision for demand-side.

Furthermore, Mr. SARI stated that FTTH[7] is the only technology that can deliver the same quality consistently to every connected customer. 5G cannot be achieved without a pro-FTTH policy. Fibre plays a key role in mobile gigabit connections. Core networks are always made of fibre, and the advent of 5G networks will push fibre further and deeper into mobile access networks.

7 Fiber to the x (FTTX) is a generic term for any broadband network architecture using optical fiber to provide all or part of the local loop used for last mile telecommunications.

At the end of his presentation, Mr. SARI listed the the possible policy measures to be considered when preparing an overall strategy to boost broadband investments as followings;

- Having a clear framework and national broadband plan,
- Encouraging sharing and re-use of infrastructure,
- Being open to all types of financing approaches – private, public, infra-funds,
- Promoting innovation and encourage future proof technologies and standards.

He underlined that with these policy&regulatory measures, OIC Member Countries we can achieve COMCEC's vision in rems of digitalization of the member countries.

9. Closing Remarks

The Meeting ended with closing remarks of Mr. Metin EKER. He thanked all the representatives for their attendance and precious contributions. He underlined that the policy debate session was highly beneficial since it was agreed upon important policy recommendations.Mr. EKER informed the participants that the 10th Meeting of the COMCEC Transport and Communications Working Group would be held on on October 18-19th, 2017 in Ankara with the theme of "Improving Transnational Transport Corridors in OIC Member States: Concepts and Cases". He stated that a research report will also be prepared on this theme and will be shared with the focal points and other participants in advance of the meeting.

Finally, he brought the participants'attention that 32nd COMCEC Ministerial Session decided on "Improving Transnational Transport Corridors among the OIC Member Countries" as the theme for the Exchange of Views Session at the 33rd Session of the COMCEC. Therefore, 10th of the COMCEC Transport and Communications Working Group is of particular importance to come up with concrete policy recommendations which will be submitted to the 33rd COMCEC Ministerial Session.

Annex 1: Agenda of the Meeting

9TH MEETING OF THE COMCEC TRANSPORT AND COMMUNICATIONS WORKING GROUP

(March 16th, 2017, Crowne Plaza Hotel Ankara, Turkey)

"Increasing Broadband Internet Penetration in the OIC Member Countries"

AGENDA

Opening Remarks

1. Transport and Communications Outlook: Overview of Telecommunications in the World and OIC Member Countries
2. The Conceptual Framework for Broadband Internet and Global Trends
3. The Current Situation of Broadband Internet Penetration in the OIC Member States and Selected Case Studies
4. Roundtable Discussion on the Policy Recommendations to Increase Broadband Internet Penetration in the OIC Member Countries
5. Member States' Presentations
6. Private Sector/International Organizations Perspectives
7. Utilizing the COMCEC Project Funding

Closing Remarks

Annex 2: Program of the Meeting

COMCEC

9TH MEETING OF THE COMCEC TRANSPORT AND COMMUNICATIONS WORKING GROUP
(March 16th, 2017, Crowne Plaza Hotel, Ankara)

"Increasing Broadband Internet Penetration in the OIC Member Countries"

PROGRAM

08.30-09.00 Registration

09.00-09.05 Recitation from Holy Qur'an

09.05-09.15 Opening Remarks

09.15-09.40 Transport and Communications Outlook: Overview of Telecommunications in the World and OIC Member Countries

- Presentation: Mr. Burak KARAGÖL
  Director,
  COMCEC Coordination Office

09.40-09.50 - Discussion

09.50-10.25 Conceptual Framework for Broadband Internet and Global Trends

- Presentation: Dr. Raul KATZ
  President,
  Telecom Advisory Services LLC

10.25-10.50 - Discussion

10.50-11.05 Coffee Break

11.05-11.45 The Current Situation of Broadband Internet Penetration in the OIC Member States and Selected Case Studies

- Presentation: Dr. Raul KATZ
  President,
  Telecom Advisory Services LLC

11.45-12.25 - Discussion

12.25-14.00 Lunch

14.00-14.15 Roundtable Session on Policy Recommendations to Increase Broadband Internet Penetration in the OIC Member Countries

There will be a policy roundtable under this agenda item. The main inputs of the roundtable will be the findings of the analytic study and the member states' responses to the policy questions circulated by the COMCEC Coordination Office. At the beginning of the session, CCO will make a short presentation on the responses of the Member Countries to the policy questions as well as the Room Document.

- Presentation: "Responses of the Member Countries to the Policy Questions on Increase Broadband Internet Penetration in the OIC Member Countries"
  Mr. Nihat AKBALIK
  Expert,
  COMCEC Coordination Office

14.15-15.30 - Policy Discussion

15.30-15.45 Utilizing the COMCEC Project Funding

- Presentation: Mr. Burak KARAGÖL
  Director,
  COMCEC Coordination Office

15.45-15.55 - Discussion

15.55-16.10 Coffee Break

16.10-17.10 Member States' Presentations

- Presentation(s)

17.10-17.25 - Discussion

17.25-18.05 Private Sector/International Organizations Perspectives

17.25-17.35 - Presentation: "Orange's Experiences in Broadband Internet Penetration in the OIC African Group Member Countries"
Mr. Mongi MARZOUG
Director for Internet Governance and Digital Development
ORANGE

17.35-17.45 - Presentation: "Increasing Fixed Broadband Internet Penetration in Turkey"
Ms. Beyhan Aygün AKYÜZ
Manager,
TÜRK TELEKOM

17.45-17.55 - Presentation: "Increasing Broadband Penetration: Best Practices and Challenges"
Mr. Umut KİRMİT
Regulation Strategies and Economics Manager,
TURKCELL

17.55-18.05 - Presentation: "Vodafone's International Experiences in Broadband Internet Penetration"
Mr. A. Ogün SARI
Public Policy Senior Manager,
VODAFONE

18.05-18.20 - Discussion

18.20-18.30 Closing Remarks and Family Photo

Annex 3: The Policy Recommendations

THE POLICY RECOMMENDATIONS HIGHLIGHTED BY THE 9TH MEETING OF THE COMCEC TRANSPORT AND COMMUNICATIONS WORKING GROUP

Distinguished Members of the COMCEC Transport and Communications Working Group,

The COMCEC Transport and Communications Working Group (TCWG) successfully held its 9th Meeting on March 16th, 2017 in Ankara, Turkey with the theme of "Increasing Broadband Internet Penetration in OIC Member Countries". During the Meeting, TCWG made deliberations concerning policy approximation among the Member Countries in the field of broadband penetration. The Room Document, prepared in accordance with the main findings of the research report conducted for the 9th Meeting of TCWG and the answers of the Member Countries to the policy questions, were the main input for the discussions. During the Meeting, the participants discussed the policy recommendations given below.

C. Policy Recommendations for all OIC Member Countries

Policy Recommendation I: Preparing national broadband strategies with the involvement of the all relevant stakeholders

Rationale:

National broadband strategies are important policy documents which basically determine the goals for increasing broadband coverage and penetration for the respective countries (differentiating between consumers, businesses and government services), and define technology, competition, and investment models. Within this perspective, national broadband strategies aim at ensuring fast and high-quality broadband access at affordable prices for all segments of the society as well as strengthening sectoral competition. In addition, national broadband strategies facilitate the development of data collection mechanisms as well as monitoring and evaluation of the achieved progress.

Policy Recommendation II: Enhancing digital literacy by embedding programs in the formal education system and encouraging non-formal initiatives targeting specific segments of the population

Rationale:

Digital literacy [8] is crucially important to reap the full benefits of information and communication technologies. Individuals with sufficient level of digital literacy demand broadband internet services and can create additional value by utilizing them. Digital literacy can be enhanced by embedding programs in the formal education system , and by encouraging non-formal training initiatives targeting specific segments of the society (elderly, rural poor, etc.). Digital literacy programs embedded in the formal education system should be large scale, centralized and focus on improving skills on using devices and services. On the other hand, non-formal programs can be initiated by offering online training, building local access centers in areas with limited ICT adoption, implementing programs in public schools or cultural centers together with local authorities, and deploying trainers to rural areas.

D. Policy Recommendations for the OIC Member Countries with Different Stage of Broadband Development

4. OIC Member Countries at advanced stage[9] of broadband development

Policy Recommendation I: Achieving high-speed Internet coverage in rural and isolated areas through regulatory holidays[10] and direct subsidies with the purpose of improving the broadband investment business case

Rationale:

High-speed broadband service is already provided in urban and suburban areas of the advanced countries. Achieving high-speed coverage in rural and isolated areas remains an important challenge before the advanced countries. By alleviating some business case constraints, approaches combining regulatory holidays and direct subsidies aim at addressing this issue. In order to enhance deployment of next generation networks in rural areas, the member countries can encourage the operators through regulatory holidays, which exempt them from the obligation of sharing their network with competitors in rural areas. Furthermore, subsidies, as co-financing mechanisms, can also be utilized in deploying broadband infrastructure in areas with limited return on investment.

[8] Digital literacy is defined as the "ability to use digital technology, communication tools or networks to locate, evaluate, use and create information" (Hauge and Prier, 2010).
[9] OIC Member Countries at advanced stage refers to the countries which have high coverage and adoption of broadband internet.
[10] Regulatory holiday refers to the absence of some regulatory obligation to provide access, at least for a predefined period of time.

Policy Recommendation II: Enactment of financial incentives to operators for deploying 4G
Rationale:

Concerning broadband penetration, full deployment of 3G has been fulfilled in most of advanced and intermediate OIC Member Countries. At this point, 4G technology has been deployed in 41 OIC countries although coverage rates remain significantly low, benefitting primarily urban populations. Many operators are reluctant to proceed towards fully deploying 4G before achieving a reasonable rate of return on the prior generation. Therefore, in order to accelerate 4G deployment, governments can consider enacting financial incentives for operators. In this respect, tax exemption for the provision of network equipment can be utilized. Furthermore, governments can reduce spectrum licensing costs.

5. OIC Member Countries at an intermediate stage[11] of broadband development

Policy Recommendation I: Reducing cost of broadband services through targeted public policy initiatives
Rationale:

Increasing demand is one of the biggest challenges faced by the OIC Member States with intermediate broadband deployment. In order to reduce access prices for end-users, governments can either reduce taxes on service and devices or provide subsidies. These could be done in the form of a plain voucher or a tax refund for qualifying segments of the population (e.g. students). The second option is to negotiate an agreement between the government and private sector broadband providers to offer reduced prices for certain groups. The third option comprises offering free internet access through Wi-Fi services located in public areas, such as squares, libraries, and transportation hubs.

Policy Recommendation II: Lowering the cultural and linguistic barriers through development of user-friendly local platforms, content, and applications.
Rationale:

Cultural and linguistic barriers have a negative impact on the demand for broadband Internet services. Also, the lack of content in local languages and cultural irrelevance represent a major barrier for adoption of Internet. It is apparent that cultural and linguistic relevance encourages people to make more use of internet. In response to this challenge, governments together with the private sector should promote the development of local digital content, user-friendly platforms and applications and thus increase the internet penetration.

[11] OIC Member Countries at intermediate stage generally have advanced coverage but limited broadband penetration.

6. OIC Member Countries at initial stage[12] of broadband development

Policy Recommendation I: Offering a low-priced broadband service for consumers by state-owned and government subsidized telecommunications operators

Rationale:

Generally, the countries at initial phase of broadband development are the ones which have not completely privatized their telecommunications industry. The lack of competition directly affects the affordability of broadband services. Within this framework, since affordability remains one of the biggest problems faced by the OIC Member Countries at initial stage of broadband development, state-owned broadband providers can assume responsibility, as a public service entity, for providing affordable broadband access services for end users. This may also encourage private operators to decrease their prices.

Policy Recommendation II: Offering a low-priced or free broadband service targeted for disadvantaged segments of the population

Rationale:

Disadvantaged socio-demographic groups have limited capacity to afford the acquisition of broadband services. Governments can develop sound policies for creating an appropriate environment where disadvantaged groups could afford broadband services. Governments can also offer free internet access in the public institutions such as schools, libraries or health clinics. For this purpose, governments can encourage private operators to offer a low-priced broadband service for disadvantaged segments of the population. This can be achieved in the context of the formulation of a national broadband plan. Alternatively, it could be achieved as part of an agreement between the government regulator and a private incumbent operator as a condition for allowing the latter to pursue a particular initiative (e.g. a merger or an acquisition).

[12] OIC Member Countries at initial stage refers to the countries which need to increase both supply and demand for broadband services. For those countries, a combination of infrastructure deployment incentives and demand stimulation policies are required to increase broadband penetration.

Annex 4: List of Participants

LIST OF PARTICIPANTS
9th MEETING OF THE TRANSPORT AND COMMUNICATION WORKING GROUP
16 March 2017, Ankara

A. MEMBER COUNTRIES OF THE OIC

THE ARAB REPUBLIC OF EGYPT
- Mr. AMR RIFAI
  Counsellor, Embassy of Egypt in Ankara

REPUBLIC OF GABON
- Mr. IFOUNGA THIBAULT
  Chief of Protocol, Embassy of Gabon in Ankara

THE REPUBLIC OF THE GAMBIA
- Mr. ASSAN JAMMEH
  Planner, Ministry of Information and Communication

REPUBLIC OF GUINEA
- Mr. AHMADOU KOUMI BARRY
  General Director of BSD, Ministry of Transport

REPUBLIC OF IRAQ
- Mr. SAFAA ALWAN
  Engineer, Iraq Railways
- Mr. BASEEM KHALAF ALSHARAA
  Manager, Ministry of Communication

THE HASHEMITE KINGDOM OF JORDAN
- Mr. EMAD MASALMEH
  First Secretary, Embassy of Jordan in Ankara

REPUBLIC OF KAZAKHSTAN
- Ms. ANAR SATKANOVA
  Chief expert, Ministry for Investment and Development of the Republic of Kazakhstan

MALAYSIA
- Mr. DAUD ISMAIL
  Undersecretary, Ministry of Communication and Multimedia
- Mr. BUKHARI YAHYA
  Manager, Ministry of Communication and Multimedia

THE FEDERAL REPUBLIC OF NIGERIA
- Mr. HARU ALHASSAN
  Director, Nigerian Communications Commission

THE KINGDOM OF SAUDI ARABIA
- Mr. MAJED ALARGOUBI
  Undersecretary, Ministry of Transport

REPUBLIC OF TUNISIA
- Mr. KAMEL SAADAOUI
  Director General of Telecom Department, Ministry of ict and Digital Economy
- Mr. JAWHER FERJAOUI
  Ceo, Tunisian Internet Agency

REPUBLIC OF TURKEY
- Mr. GÜNDÜZ ŞENGÜL
  Deputy General Director, Ministry of Transport Maritime Affairs and Communications
- Mr. ORHAN KEMAL ARDIÇ
  Head of Department, Ministry of Transport Maritime Affairs and Communications
- Mr. SERDAR ÖZEN
  Ass. Prof, HAVELSAN
- Mr. MUSA BELEK
  Senior Expert, Ministry of Transport Maritime Affairs and Communications
- Mr. BEYHAN USLU
  Senior Expert, Information and Communication Technologies Agency
- Ms. EDA BURCU BULUT
  Expert, Ministry of Transport Maritime Affairs and Communications
- Mr. MEHMET DOĞAN
  Engineer, Ministry of Transport Maritime Affairs and Communications
- Mr. ENES TALHA BALYEMEZ
  Assistant Expert, Information and Communication Technologies Agency
- Mr. MUHAMMET DARICI
  Assistant Expert, Ministry of Transport Maritime Affairs and Communications

B. THE OIC SUBSIDIARY ORGANS

STATISTICAL, ECONOMIC, SOCIAL RESEARCH AND TRAINING CENTER FOR ISLAMIC COUNTRIES(SESRIC)
- Mr. CİHAT BATTALOĞLU
  Resarch Assistant

C. INVITED INSTITUTIONS

CONSULTANT
- Mr. RAUL KATZ
  Consultant

ORANGE FT GROUP
- Mr. MONGI MARZOUG
  VP Internet and Sustainable Energy Governance

TURK TELECOM

- Ms. BEYHAN AYGÜN AKYÜZ
  Manager
- Ms. ELİF GÜVEN
  Expert

TURKCELL

- Mr. UMUT KİRMİT
  Türkcell

VODAFONE

- Mr. A. OGÜN SARI
  Manager
- Ms. GÖZDE EREN
  Manager

D. COMCEC COORDINATION OFFICE

- Mr. M. METİN EKER
  Director General, Head of COMCEC Coordination Office
- Mr. SELÇUK KOÇ
  Head of Department
- Mr. BURAK KARAGÖL
  Head of Department
- Mr. İSMAIL ÇAĞRI ÖZCAN
  Expert
- Mr. MEHMET YAŞAR ŞAF
  Expert
- Mr. EMRULLAH KAYA
  Expert
- Mr. NİHAT AKBALIK
  Expert
- Mr. FAZIL ALATA
  Expert