



MINISTRY OF TRANSPORT, COMMUNICATIONS AND WORKS  
DEPARTMENT OF ELECTRONIC COMMUNICATIONS

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# **CYPRUS BROADBAND PLAN**

## **2016 - 2020**

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## 1. INTRODUCTION

The use of Information and Communication Technologies (ICT) is a catalyst to the increase of productivity and economical growth. It has direct impact on the increase of GDP (increasing broadband penetration by 10% implies GDP growth of 0.25 to 1.5%<sup>1</sup>), the creation of new high-value jobs, the modernization of the public sector, the increase of transparency, and the promotion of democracy and culture.

Since February 2012, a comprehensive plan (spanning the period 2012-2020) for the development of information society in Cyprus, the “Digital Strategy for Cyprus<sup>2</sup>”, has been in place in line with the objectives and actions proposed in the Digital Agenda for Europe<sup>3</sup>.

## 2. POLICY AND STRATEGIC OBJECTIVES

### 2.1. Digital Strategy for Cyprus

The use of ICT is high priority in the political agenda in Cyprus, as it is understood to play a key enabling role to promoting innovation and an inclusive society as well as achieving a smart and sustainable economy. The use of ICT in all vital sectors of the economy and society of Cyprus like education, health, tourism, transport and generally in the exercise of every business activity is of paramount importance to the development of Cyprus into a regional service centre and to the attraction of foreign investments.

The “Digital Strategy for Cyprus” is in line with the objectives and actions proposed in the Digital Agenda for Europe, one of the flagships of the strategy “Europe 2020”<sup>4</sup>, and in the new EU strategy of “Digital Single Market”<sup>5</sup> as well. The stated overall vision of the Digital Strategy for Cyprus is: “Information and communication technologies to support the development and the competitiveness of the economy, and citizen participation in the social, cultural and political domains”. The six general objectives of the Digital Strategy are: (1) Connect Cyprus, (2) Modernize public administration and provide public electronic services (3) Inclusion of all (including vulnerable groups) into digital Cyprus (4) Education and Learning, (5) Digital Entrepreneurship, and (6) ICT for the environment.

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<sup>1</sup>Impact of Broadband on the Economy - [http://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports\\_Impact-of-Broadband-on-the-Economy.pdf](http://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports_Impact-of-Broadband-on-the-Economy.pdf)

<sup>2</sup>The Digital Strategy for Cyprus is published in [www.digitalcyprus.gov.cy](http://www.digitalcyprus.gov.cy)

<sup>3</sup>Digital Agenda for Europe - [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245R\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245R(01)&from=EN)

<sup>4</sup>Europe 2020 - [http://ec.europa.eu/europe2020/index\\_el.htm](http://ec.europa.eu/europe2020/index_el.htm)

<sup>5</sup>Digital Single Market - <https://ec.europa.eu/digital-agenda/en/digital-single-market>

The Minister of Transport, Communications and Works (TCW) has the political responsibility for overall monitoring of the strategy. The Department of Electronic Communications (DEC), which is a department at the Ministry of Transport, Communications and Works, is the coordinating body and executive arm of the Minister regarding the formulation and implementation of this national strategy. In addition, the Council of Ministers approved the creation of the Digital Strategy Group, a small and flexible team, which is responsible for the continuous enrichment of the Digital Strategy with new actions, both from the private and public sectors.

## 2.2. Action Plan 2015-17

The Council of Ministers, by its Decision (no. 77.484 dated 3.9.2014), approved the Action Plan 2015-17<sup>6</sup>. It includes nineteen (19) projects (€107 million), which are the most important priorities of the Digital Strategy for the period 2015-17, and aims at achieving the following:

- (a) Modernization of Public Administration and provision of more public electronic services (e-government),
- (b) Development of the digital entrepreneurship,
- (c) Operation of e-health,
- (d) Enhancing the e-education,
- (e) Development of ultra-high speed broadband infrastructure (NGA networks),
- (f) Computerization of local government,
- (g) Enhance of digital literacy (e-skills), and,
- (h) Increasing the broadband penetration.

Regarding the financing of the projects, which are included in the Action Plan 2015-17, eleven (11) projects with an estimation of € 77 million (and other two (2) projects, estimated € 16 million, as runner-up) have been approved (in December 2014) to be financed by the European Union Structural and Investment Funds (ESIF) under the Operational Programme "Sustainable Development and Competitiveness 2014-2020"<sup>7</sup>, five (5) projects with an estimation € 14 million will be financed by purely national funds, and one (1) project will be self-financed by savings.

The Action Plan 2015-17 (and its projects) is directly related to the three investment priorities (as below) chosen in the above mentioned Operational Programme "Sustainable Development and Competitiveness 2014-2020":

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<sup>6</sup> Action Plan 2015-17 - [http://www.mcw.gov.cy//mcw/dec/digital\\_cyprus/ict.nsf/ict\\_04\\_gr/ict\\_04\\_gr?opendocument](http://www.mcw.gov.cy//mcw/dec/digital_cyprus/ict.nsf/ict_04_gr/ict_04_gr?opendocument)

<sup>7</sup> Operational Programme "Sustainable Development and Competitiveness 2014-2020" - <http://www.structuralfunds.org.cy/Programme-Competitiveness-and-Sustainable-Developm>

- (i) Cover the gap in ultra-high speed broadband infrastructure in order to facilitate digital entrepreneurship, e-government, and the creation of new jobs

Emphasis is placed to extending the deployment of high speed and ultra-high speed networks in order to support the adoption of emerging technologies and the development of broadband services within a digital economy. Actually, the aim is to increase the high speed access by households, enterprises, and institutions through the modernization of broadband infrastructure, especially in the area where Cyprus is lagging behind. Also, the aim is to deploy proper broadband networks within the public sector in order to increase the productivity and to facilitate the roll-out of the e-government services.

The co-financed project (section 5.1) involves the implementation of fibre optic network to the home (FTTH), up to the end user's socket, and / or the extension of the fibre optic network as closer as possible to the end user's premises, mostly in urban and sub-urban areas, to cover both enterprises and households, aiming at giving incentives to the Market (Operators) to deploy wide scale FTTH network.

- (ii) Increase the use of ICT by SMEs, particularly micro enterprises, mainly in their internal processes, as well as increasing e-commerce activities of businesses towards the enhancement of their competitiveness.

The focus of this priority is on the development of infrastructure, ICT products and services, and e-commerce activities in order to increase demand for ICT and promote digital entrepreneurship, which will eventually lead to enhancing the competitiveness of SMEs. Although the use of ICT by SMEs in their internal procedures is rather satisfactory, there is still significant potential on this, especially by micro enterprises. Great potential also exists in electronic commerce activities by SMEs.

The co-financed project involves the encourage of the use of software applications in cloud computing and also the promotion of e-commerce in Cyprus, aiming to support SMEs to exploit the potential and opportunities offered by the Internet and new technologies, by giving public grants to the relevant SMEs.

- (iii) Increase the provision of public services electronically and their uptake by businesses and citizens.

There is a need to promote ICT in the public sector based on current reforms in the public administration. The vision is to leverage ICT to strengthen and improve the quality and efficiency (modernization) of public administration, aiming at assuring a better quality of life for its citizens, at increasing demand for ICT, and in general at contributing to economic growth.

The main aims for e-Government project are to increase security and to improve citizens/businesses' trust and confidence towards electronic services, to increase satisfaction by reducing the administrative burden faced by citizens and businesses during their transactions with the public administration, to increase transparency, and to achieve an increase of the uptake of e-Government services by the public.

By this co-financed project, the Government of Cyprus is seeking better results in the following areas:

- the improvement of the quality of Health Care,
- the electronic management of education system and the use of ICT tools in teaching methods,
- the electronic management of court cases and access to relevant information, through the Internet, by both citizens and professionals,
- the electronic processing of procedures related to Town and House Planning (including eservices related to building permits),
- the ensuring of the validity of electronic transactions with the use of digital signature, and
- the further automating of the communication and the information exchange between the Government's services.

### **2.3. Strategic Objective: Connect Cyprus**

The first general objective of the Digital Strategy for Cyprus (section 2.1) is the creation of appropriate infrastructure and conditions. It is a prerequisite for the success of Digital Strategy for Cyprus. Within this general scope, the main specific objectives are to:

- (a) Promote a stable regulatory framework, so as to attract and encourage Market forces to invest in electronic communications infrastructure.
- (b) Ensure the roll-out and take-up of broadband for all, at increasing speeds, through both fixed and wireless technologies. The Government will give the opportunity to the Market to utilize all possible technologies based on technological neutrality.
- (c) Promote competition in electronic communications and reduce prices of broadband services/products. The affordability of broadband services is one of the main factors affecting Market penetration. It is generally accepted that where there is effective competition, prices fall as low as possible, while maintaining high levels of quality.
- (d) Connect the whole Cyprus with high and ultra-high speed networks, so that all undertakings, public institutions and individuals (including vulnerable people) have access to information society services in order to benefit from the use of ICT and bridge the digital divide.

- (e) Address cyber threats and generally strengthen security in the digital networks. Citizens should not adopt technology and practices that do not provide adequate level of security.
- (f) Enhance the international sub-marine cable network (development of new landing stations and launch of new submarine cables), connecting Cyprus with Europe, Middle East and Africa, aiming at achieving effective competition, necessary resilience (redundancy) and capacity, and to make Cyprus a telecommunications hub/gateway (e.g. datacenters, cloud services) serving populations in neighboring countries.

The Government, looking ahead to the future needs with high requirements on speed (bandwidth), such as high-definition video, telepresence, cloud computing, tele-medicine, e-learning, etc., has adopted the following national targets:

- (i) By 2020, all households and enterprises will have access (coverage) to the Internet with at least 30Mbps (high speed networks).
- (ii) By 2020, 50% or more of the households and enterprises will have subscription (take-up) to the Internet with at least 100Mbps (ultra – high speed networks), for which two parameters have to be satisfied, first the adequate coverage (supply side) and second the required take-up (demand side).

### 3. BROADBAND NETWORKS – CURRENT SITUATION

#### 3.1. Fixed Networks

##### In 2014

- (a) The fixed broadband coverage (% of households) was 100% (97% EU28 average), the NGA coverage was 80% (68% EU28 average)<sup>8</sup>, and the fixed broadband take-up (% of households) was 68% (70% EU28 average).
- (b) The incumbent access network (ADSL2+ and VDSL2) was the most common technology to provide broadband across the country (81% of fixed broadband subscriptions, as opposed to the EU average of 70%)<sup>9</sup>. The rest 19% of fixed broadband subscriptions were provided by a DOCSIS 3.0 network (cable operator) with a coverage of 48% of the households mainly in urban and sub-urban areas.

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<sup>8</sup> 2015 - Complete Implementation Report - <https://ec.europa.eu/digital-agenda/en/news/implementation-eu-regulatory-framework-electronic-communications-2015>

<sup>9</sup>2015 - Complete Implementation Report - <https://ec.europa.eu/digital-agenda/en/news/implementation-eu-regulatory-framework-electronic-communications-2015>

In addition, Operators have already deployed wide scale fiber backbone and backhaul networks, but their fiber access networks are still very limited in scope.

- (c) The percentage of fixed broadband subscriptions was<sup>10</sup>:
- |                    |         |     |                    |
|--------------------|---------|-----|--------------------|
| Equal or more than | 10Mbps  | 16% | (72% EU28 average) |
| Equal or more than | 30Mbps  | 4%  | (26% EU28 average) |
| Equal or more than | 100Mbps | 0%  | (9% EU28 average)  |

### In 2015

- (i) The fixed broadband coverage was 100% (97% EU28 average), the NGA coverage was 84% (71% EU28 average), and the fixed broadband take-up was 69% (72% EU28 average)<sup>11</sup>.
- (ii) The percentage of fixed broadband subscriptions (equal or more than 30 Mbps) was 4% (30% EU28 average).

It is obvious, that the take-up of high speed broadband remains very low, possibly because of its high subscription price (although prices are declining), the limited digital skills of the Cypriot population, and the rather few available electronic services and digital content.

### **3.2. Mobile Networks**

In October 2013, there was a re-farming of the 900MHz, 1800MHz and 2100MHz bands, regarding the license of the two existing mobile operators. According to the re-farming obligations, these Operators had to deploy UMTS network (up to 21Mbps), with geographical coverage of 70% by 2015. Also, they had to deploy Long Term Evolution (LTE) network (at least 30Mbps), with geographical coverage of 40% by 2018.

In February 2014, a new (third) licence was issued. The new mobile operator has the obligation to deploy UMTS and/or LTE network with a geographical coverage of 40% by February 2017 and of 65% by February 2019. Also, this new Operator has the obligation to provide the capability of accessing the Internet at speeds of at least 30Mbps by February 2019.

All the authorizations granted are service and technology neutral. Also, spectrum trading is allowed for all mobile bands.

<sup>10</sup>Digital Agenda Scoreboard Key Indicators (Broadband speeds and prices) - <http://digital-agenda-data.eu/charts/country-ranking-table-on-a-thematic-group-of-indicators#chart={'indicator-group':'bbquality','ref-area':'CY','time-period':'2015'}>

<sup>11</sup> Digital Economy and Society Index 2016 (progress by country) - <https://ec.europa.eu/digital-single-market/en/scoreboard/cyprus>



In 2014, the advanced UMTS (HSPA+ technology with speed up to 21Mbps) mobile broadband coverage was 99% of households (97% EU28 average) and the mobile broadband take up (subscriptions per 100 inhabitants) was 57% (72% EU28 average)<sup>12</sup>. In 2015, the mobile broadband take up was 66% (75% EU28 average)<sup>13</sup>. At the same time, mobile broadband prices are declining.

In March 2015, thanks to a network sharing agreement, MTN and Primetel launched 4G network, geographically covering 30% (end of 2015) of the areas under the control of the Republic. By the end of 2015, also CYTA launched 4G network, geographically covering 30% (first quarter of 2016) of the areas under the control of the Republic.

#### **4. BROADBAND NETWORKS – PLANS AND RECOMMENDATIONS**

##### **4.1. Operators' Plans**

The conclusion from a relevant consultation (end of 2013), at the middle of a serious economic crisis, was that the Market was reluctant to invest in wide scale FTTH networks. All Operators agreed that the deployment of only one widespread FTTH network in Cyprus would be financially viable. Nevertheless, there was no agreement between the Operators for a jointly action plan.

The conclusion from a second consultation (end of 2015) was that:

- (a) The incumbent is planning to upgrade his network, by bonding/vectoring technology and FTTH technology, achieving almost 100% of the households with at least 30Mbps by 2018, and 70% of the households with at least 100Mbps by 2020.
- (b) The cable operator is planning to continue investing in the DOCSIS 3.0 technology (at least 100Mbps) in order to expand its coverage in a figure of 60% of the households by 2018, and a figure of 70% of the households by 2020. Also, they plan to upgrade their network to DOCSIS 3.1 in the near future.
- (c) In addition to the above geographical coverage obligations (section 3.2), all Operators are planning to increase their UMTS geographical coverage up to 90% by 2018, but in the near future they do not have any concrete plans to increase their LTE geographical coverage further to these obligations.

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<sup>12</sup>2015 - Complete Implementation Report - <https://ec.europa.eu/digital-agenda/en/news/implementation-eu-regulatory-framework-electronic-communications-2015>

<sup>13</sup> Digital Economy and Society Index 2016 (progress by country) - <https://ec.europa.eu/digital-single-market/en/scoreboard/cyprus>

#### 4.2. OCECPR's Study

A study "on the acceleration of broadband in Cyprus<sup>14</sup>" was carried out, in February 2016, by the Analysys Mason Ltd, for the Office of the Commissioner of Electronic Communications and Postal Regulation (OCECPR) and the European Bank for Reconstruction and Development (EBRD).

The purpose of the study was to propose regulatory and policy-level measures to accelerate development of Cyprus' broadband market based on in-depth analysis of the status of its electronic communications sector.

Under a market-led approach (only private investments), the study gives the following forecast, as a result of a viability modelling from Analysys Mason and the stated plans from Operators, by 2020:

- (a) Almost 100% of households will have access (coverage) to the Internet with at least 30Mbps.
- (b) 84% of households will have access (coverage) to the Internet with at least 100Mbps.
- (c) 45% of households will have subscription (take-up) to the Internet for NGA services (>30Mbps).
- (d) 25% of the NGA subscriptions (take-up) will be 100Mbps or more (this figure should be treated with particular caution due to the lack of data).

The study concludes that Operators in Cyprus are investing and they have plans to go further, and hence, there is no reason to destabilize this positive economic activity. Therefore, it suggests deferring any decision to (public) intervene on increasing coverage at this stage. In particular, the recommended course of action is to review the state of the local access market with regard to NGA infrastructure roll-out by the end of 2017 and take any requisite corrective action at that time. On the other hand, the high-speed broadband take-up is currently very low which is a barrier for the Operators to improve the business case which could promote further investment in coverage.

The study proposes a set of supportive policy measures to help drive demand:

- (i) SMEs:
  - Business support program providing tailored support to help small and medium-sized enterprises exploit the benefits of high-speed broadband,
  - Financial support (e.g. grants and/or low-cost loans) to ICT-focused enterprises that develop products requiring high-speed broadband,

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<sup>14</sup> OCECPR <http://www.ocecpr.org.cy/el/content/paroyysi-ton-apotelesmaton-tis-meletis-gia-tin-epispeysi-tis-anaptyxis-diktyon-epomenis>

- Connection voucher scheme to facilitate the take-up of high-speed broadband among organisations (e.g. standard connection fee and other additional costs that are necessary for an effective connection such as in-building wiring costs).
- (ii) Citizens:
- Digital inclusion programs to improve the digital skills as linked to other policy initiatives such as welfare support activities and educational policies,
  - Charities to help specific groups such as the elderly and disabled get online.
- (iii) Government:
- Implementation of e-government services,
  - Increase of awareness and trust in digital services,
  - Drive a more “online culture” in Cyprus.
- (iv) Promotion:
- Marketing and advertising campaign undertaken by the Government alongside with the Operators to promote high-speed broadband,
  - Effective use of the Digital Champion to promote digital skills and digital inclusion.
- (v) Affordability:
- No specific recommendation for a demand-related initiative on pricing (broadband prices will come down as competition increases in broadband market).

Also, the study proposes regulatory and policy measures aiming at facilitating private investments and helping drive competition:

- (1) Wholesale access regulation to fibre infrastructure and duct networks.
- (2) New spectrum assignments (800MHz and 2.6GHz bands) and coverage obligations in providing cost-effective 30Mbps access in rural areas.
- (3) International capacity prices monitoring to show whether the pricing of international capacity is having a detrimental impact on broadband take-up.
- (4) Content markets review and examination whether certain regulatory remedies on the allocation of content rights should be imposed.
- (5) Initiatives to encourage the development of Cyprus as an international hub for digital services.

Finally, the study recommends that the competent authorities (initially) pursue a market-led approach to deploying infrastructure and, in parallel, (immediately) develop schemes to increase broadband take-up and (as soon as practicable) implement regulatory/policy measures.

### 4.3. Conclusions and Recommendations

According to the above Market views and plans and relevant OCECPR's study:

- (a) It is evident that the broadband networks will be in place to enable Cyprus to meet the national targets regarding the access (coverage), thanks to private investments both in fixed and mobile networks.
- (b) A framework of regulations and policies has to be adopted which will be supportive to investing in the expansion and upgrade of the broadband networks.
- (c) Price reductions will materialize through competitive pressure and through the increase of the customer base. Networks economics are in play and therefore the more the customers that are connected to the network the lower the average per customer cost.
- (d) The recommended course of action is to allow market players to develop their own networks. What needs to be promoted is the demand in order to ensure that customers subscribe to the higher speeds which will be available. It is therefore of crucial importance for the achievement of the national targets to proceed expediently with the implementation of measures which will boost the demand by providing the right incentives, regulatory certainty, and by the development of more e-government, e-health, and e-education services.
- (e) However, there is serious concern that all the actions that will be undertaken by the State to boost demand should not be enough to achieve the 50% required penetration (take-up) to the Internet with at least 100 Mbps due to the current supply conditions regarding the international capacity cost.

## 5. GOVERNMENT'S ACTIONS

### 5.1. Fixed Networks

The Government, recognizing the significant role of FTTH networks and the huge benefits that will offer to the Cyprus economy making the country among others an attractive destination of investments and simultaneously achieving the second national target (section 2.3), encourages the Market to invest in ultra-high speed broadband networks, particularly in FTTH infrastructure, the most future-proof technology.

However, in 2013, the Operators expressed their intention not to invest in wide scale FTTH networks in the next few years (section 4.1). Following that, the Government included in the Operational Programme (Sustainable Development and Competitiveness 2014 – 2020), co-funded by the ESIF (section 2.2(i)), which was adopted in December 2014, the amount of about 22 million euro, aiming at

encouraging the Operators to deploy wide scale FTTH network, in the context of “EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks”<sup>15</sup>.

Two (2) years later, according to the OCECPR’s study (section 4.2), the assessment of the Market does not justify a public intervention in the deployment of networks (supply side), since the network coverage is proving to be adequate thanks to private investments. However, having in mind that one of the main national target is the connectivity at higher speeds, the Government is considering to use the above mentioned co-financed funds for boosting the demand (section 6.2) and increasing the take-up, in short term (1-2 years) for high speed broadband connectivity (>30 Mbps) and in long term (3-5 years) for ultra-high speed broadband connectivity (>100 Mbps). The final decisions will be taken within 2016.

## **5.2. Wireless Networks**

The Government promotes the effective and efficient use of spectrum for the deployment and operation of wireless electronic networks that provide high quality and high speed broadband services, contributing to the achievement of the specific objectives (section 2.3). The aim is to take advantage of these technologies to provide broadband coverage, especially to remote areas where wired technologies are not cost effective, to give flexibility (mobility), and to further promote competition in the electronic communications sector.

Continuous studies are being conducted at a European level, in order to find additional spectrum for the needs of wireless electronic communications networks. The Republic of Cyprus is closely following these decisions which aim at licensing an environment in which mobile service providers may be able to respond effectively to market demands for new services for the benefit of consumers.

Regarding the 800 MHz band (790-862 MHz), the European Commission has granted Cyprus a derogation from the deadline of Article 6(4) of Decision n° 243/2012/EU (RSPP) until the spectrum issues encountered by the Republic of Cyprus in this band due to interferences (analogue TV broadcasting) from the areas not under the control of the Republic are resolved or until 31 December 2015, whichever occurs first. Although, the spectrum problems encountered in the 800 MHz band have not been totally resolved, and after the conduct of a relevant public consultation (September/October 2015), the Department of Electronic Communications initiated the contest procedure (January 2016) in order to authorize the 800 MHz band. These new authorizations will have the obligation of 50%

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<sup>15</sup> EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks - <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:en:PDF>

geographical coverage by 2018, and of 75% geographical coverage by 2020 and also the obligation to provide connections with at least 30 Mbps.

Through the above contest procedure, the band 2600 MHz (2500 – 2690 MHz) will be authorised as well. The use of the 2600 MHz band is expected to increase the capability of accessing the Internet at speeds of 100 Mbps (carrier aggregation), contributing to the achievement of the second national target.

Part of the 700 MHz band is currently used for Digital Terrestrial TV (DTT) by the commercial network operator Velister, which has all of its multiplexers (five) deployed in this band. The Public Sector Broadcaster, CyBC, operates a multiplexer in a lower band. Cyprus does not dispose of any available channel for DTT below the 700 MHz band, and this currently excludes any discussion for a future second digital dividend, in light of the difficulties it faces in securing channels in the regional ITU negotiations. Nevertheless, Cyprus has started a coordination procedure with its neighbouring countries, based on the GE06 agreement, to ensure DTT channels below 700 MHz band.

The 1452 – 1492 MHz band and 3400 – 3800 MHz band will be authorized according to the market demand.

### **5.3. International Connectivity**

Due to the geographical location of Cyprus and the fact that it is an island country, remote from Europe, a major component of broadband services is the required international capacity to connect Cyprus with the major hubs. Therefore the role of international connectivity is a key aspect for Cyprus.

However, international connectivity is an issue that has been the object of several antitrust complains. In addition, it is supported that unless some sort of corrective actions are taken, either by measures that will substantially increase the supply (competition) or by some sort of regulation of international capacity circuits, it is unlikely that Market forces will deliver the required reduction in price to enable the provision of cost effective retail connections at 100 Mbps resulting in attracting investments and high-tech industries.

### **5.4. Proposals under EFSI**

A proposal for the deployment of fast and ultra-fast broadband networks, fixed and mobile, in remote villages and rural areas, where due to their low population density commercial network roll-outs are not financially viable, will be submitted for financial support (e.g. guarantees, project bonds, loans) in the framework of the European Fund for Strategic Investments (EFSI), known as Juncker Plan. The

objective of this project is to assist any telecom Operator decides to cover (by fixed and/or mobile network) these rural and remote areas with high and ultra-high speed, by utilizing financial instruments that will be provided under EFSI, in order to bridge the digital divide. A relevant technical assistance will be required from the European Investment Advisory Hub (EIAH) under the European Investment Bank (EIB).

A proposal for carrying out a study funded by the EIB for the assessment of the status of the international sub-marine cable network, connecting Cyprus with Europe, Middle East and Africa, will be submitted in the framework of the European Fund for Strategic Investments (EFSI), known as Juncker Plan. This study will explore the following sectors:

- (a) The need of any enhancement of the existing sub-marine cable network, as an EU strategic goal, having in mind the developments in the energy sector with the exploitation of natural gas and the opportunity of Cyprus to be an important telecommunications hub location (e.g. data centers and cloud computing services) serving all the neighboring countries in a stable environment for technology investments.
- (b) The need of securing EU funds in order to bridge the digital divide between Cyprus and the rest of EU countries, since the international connectivity is reflected to the subscription price for the broadband in Cyprus which is the most expensive in the EU, helping to avoid the creation of two categories of citizens within the EU, namely the citizens of continental Europe and the remote areas of the EU.
- (c) The need of development of any regulatory framework.

## **6. MEASURES TO FACILITATE INVESTMENTS**

### **6.1. Regulatory Framework**

The Office of the Commissioner of Electronic Communications and Postal Regulation (OCECPR) and the Department of Electronic Communications (DEC) of the Ministry of Transport, Communications and Works have fully adopted the EU directives, decisions and regulations and the new amendments of the electronic communications framework.

OCECPR is responsible for the main tasks assigned to national regulatory authorities under the regulatory framework. DEC is the competent authority for spectrum management.

The current regulatory framework is conducive to NGA investment through a combination of symmetric and asymmetric regulatory measures:

(a) The Symmetric Regulatory Obligations include:

- (i) Co-locations, including ducts and masts,
- (ii) Rights of way, and
- (iii) In-building wiring,

supported by tools such as Network infrastructure and related facilities GIS mapping and Broadband network and service coverage map per operator.

(b) The Asymmetric Regulatory Obligations cover the following:

- (i) Sub/local Loop Unbundling (with a symmetric obligation regarding Access Network Frequency Plan) on the copper access network,
- (ii) Bit stream Access (including an obligation for multicasting),
- (iii) Leased lines (including backhaul from International Submarine cable termination stations),
- (iv) Virtual access<sup>16</sup> (FTTH, vectoring),
- (v) Regulation of wholesale broadband access price in the presence of regulatory measures concerning equivalence of input, technical and economic replicability<sup>17</sup>.

Additionally, there is a framework in place for the installation of radiocommunication stations (masts and antennas) in order to facilitate the rollout of wireless networks. This framework avoids duplications, ensures that the licensing procedures of installing and operating radio stations (between public authorities) are transparent and efficient, and protects public health. Nevertheless, continuous improvements are welcome so that the respective local authorities manage to issue the relevant permits within the prescribed periods (e.g. 6 weeks for building permit).

## 6.2. Demand Stimulation

The aim of the Digital Strategy for Cyprus is to develop the digital citizen. In fact every citizen, every business, every public organization in Cyprus should be digital. This is a big challenge, since Cyprus lags behind on the demand side: 26% of the population has never used the Internet and only 43% possess at least basic levels of digital skills (DESI 2016). Also, low levels of trust seem to be holding back the development of its digital economy (e.g. online banking and online shopping are much lower than the EU average).

Also, it is obvious that the take-up of high speed broadband connections (>30 Mbps) is very low and measures are needed to facilitate the migration of Internet users to higher speeds. The Operators will continue to invest as long as they are confident that the Market will grow. The increased demand and

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<sup>16</sup> In public consultation until 15 April 2016

<sup>17</sup> In public consultation until 15 April 2016



need for services will pave the way for more bandwidth hungry services and subsequently more investments in faster and more advanced services.

One of the higher priorities of the Government is the development of more public electronic services. This is expected to facilitate investments in both fixed and wireless technologies. To this direction, the projects included in the Operational Programme "Sustainable Development and Competitiveness 2014-2020", as mentioned in section 2.2, will multiply the Market target creating prospects for wider use of infrastructure in Cyprus.

In addition, it has to make sure that citizens and enterprises understand the benefits of being digital (digital culture). In particular, Cyprus needs to engage its citizens to use the Internet and also needs to address its severe digital skills gap since these factors can be important barriers to the country's economic development. Also, Cyprus' businesses need to better exploit the opportunities offered by on-line commerce and cloud-based applications resulting in efficiency and productivity gains.

In the framework of the Action Plan 2015-17 (section 2.2) and of other Initiatives as well, the Government promotes measures, which many of them are in progress, to stimulate demand for broadband services:

- (a) Digitalization of the Government and development of appropriate infrastructure and networks.
- (b) Development of more modern public electronic services (including services by local authorities) and by the same time lifting any existing barriers that prevent certain public services to be offered electronically in an efficient manner.
- (c) Purchase of qualified certificates for e-signature and e-authentication which will be used by the citizens to access public electronic services.
- (d) Development of e-health services which include:
  - (i) Creation of Integrated Information Health System to all hospitals and health centers with a consolidated data center,
  - (ii) Provision of access to a private doctor in a database and the electronic patient file,
  - (iii) Tele-education of health professionals,
  - (iv) Tele-rehabilitation patients, and
  - (v) Tele-medical applications between public and private hospitals.
- (e) Development of e-education services which include:
  - (i) Implementation of e-learning programs which include both live virtual classrooms and access to recorded lessons, and

- (ii) Development of e-infrastructure projects for all Primary and Secondary institutions and all Universities as well.
- (f) Organization of awareness campaigns, seminars and workshops to promote digital society, and to inform citizens and businesses about the benefits of using ICT and the Internet, and to built-up the necessary trust.
- (g) Implementation of training programmes (national coalition and other initiatives) for the digital literacy of the workforce and the unemployed people, and for the enrollment of all citizens in lifelong learning programs with special attention to vulnerable groups (people with disabilities, elderly people, etc).
- (h) Establishment of Public-Private-Partnerships (PPPs) to offer the means to targeted groups to access and use the Internet.
- (i) Programmes to finance SMEs in order to proceed to the digitalization, the adopting of cloud services technologies, and the creation of websites and e-shops.
- (j) Public financial support (vouchers) for the upgrade of the in-building cabling at customer premises (households and SMEs) where the existing one is unsuitable to support high and ultra-high speed connection. This measure will give incentives to the customers to migrate to higher speeds and also give incentives to the Operators to invest in ultra-high speeds networks.
- (k) Programmes to finance the wireless broadband in the rural Cyprus.
- (l) Market driven programme (co-designed and funded by the market stakeholders) aiming at achieving widespread use by SME's of innovative services which will lead to improve operational efficiency and which will be based on high speed broadband subscriptions.
- (m) Installation of Wi-Fi in public premises for the citizen's needs.

## **7. INVESTMENT STRATEGIES- PUBLIC AND ALTERNATIVE SOURCES OF BROADBAND FUNDING**

The existing electronic communications networks in Cyprus have been fully implemented by private sector using only private investments (market-led approach).

For the further development of electronic communications networks capable of delivering future proof connectivity and/or extensive mobility in line with the national broadband targets of 2020, the competent authorities consider factors affecting viability of investments by examining various issues, like the affordability of services and the expected socio-economic benefits of the NGA roll-out in the different domains and territories.

In this framework, the Government already secured in the EU Structural and Investment Funds (ESIF) under the ERDF program an amount of about EUR 22 million (section 5.1).

Also, the Government already secured in the EU ESIF under the EARDF program an amount of EUR 600.000 for the development of wireless spots in rural areas with free access to the Internet aiming at the digital inclusion of the local citizens.

Further to the above, the Government is currently trying to secure financial support (guarantees, project bonds, loans, or grants) in the context of the EFSI (Juncker Plan) to ensure 100% coverage of 30 Mbps networks and to increase coverage of 100 Mbps networks in rural and remote areas (section 5.4). Also, the Government is currently trying to secure funds for carrying out a study for the international connectivity part in the context of the EFSI as well (section 5.4).

## **8. ASSESSMENT TOOLS MECHANISM**

### **8.1. Mapping**

OCECPR will create (by the first semester of 2016) an inventory of electronic communications facilities and of suitable passive infrastructure, with the aid of a GIS system (mapping tool), which will include the following:

- (a) Infrastructure archive,
- (b) Map of broadband coverage,
- (c) Map of the portfolio of the available broadband products, and,
- (d) Map of the use of the available broadband products.

The above tool is planned to evolve into an electronic Single Information Point by incorporating the procedure for the granting of rights of way which is currently manual. The above tools will enhance transparency, thereby further facilitating investments.

### **8.2. Monitoring Mechanism**

According to the Digital Strategy for Cyprus two annual reports are prepared:

- (a) The annual Progress Report by the end of each year: This report includes the progress of the actions of the Digital Strategy for Cyprus, including the evaluation of the progress in the broadband targets. The purpose of this report is to identify areas where more efforts are needed and, where appropriate, necessary corrective measures should be taken. The progress report is approved by the Minister of Transport, Communications and Works and is submitted to the Council of Ministers for information. It is published to the Digital Cyprus web site: [www.digitalcyprus.gov.cy](http://www.digitalcyprus.gov.cy).

- (b) The annual Action Plan at the beginning of the year: This report includes the actions of the Digital Strategy to be implemented in the next three years accompanying with relevant priority timetable, budget and competent authority for each action. The action plan is submitted to the Council of Minister for approval and it is published to the Digital Cyprus web site [www.digitalcyprus.gov.cy](http://www.digitalcyprus.gov.cy).

OCECPR determines the tools for monitoring broadband (BB) coverage in order to evaluate whether the Operators are investing as expected and also for monitoring take-up with emphasis on NGA networks. The status (coverage and take-up) at the end of 2015 will be used as the baseline. The monitoring will involve:

- (i) Coverage per technology (ADSL, VDSL, FTTH, Cable, LTE) per administrative area (municipality, community),
- (ii) Fixed BB take-up per administrative area,
- (iii) BB mobile subscriptions, and,
- (iv) % of fixed BB subscribers per BB speed bracket.

At the end of 2017, OCECPR will assess the impact of the investment in network infrastructure and in stimulating demand, with respect to consumer welfare, and will form part of a recommendation to the Minister of Transport, Communications and Works for the way forward.

Also, the Government assesses the results and indicators of the Scoreboard of the Digital Agenda for Europe and the indicators of the Digital Economy and Society Index (DESI)<sup>18</sup>, and based on that, it reconsiders its actions.

## **9. INSTITUTIONAL SET-UP**

The Minister of Transport, Communications and Works has the political responsibility on information society issues and the Department of Electronic Communications (DEC) is the executive arm, of the Minister, to develop and implement the national strategy for the promotion of information society. Also, the Digital Strategy Group is responsible for the continuous enrichment of the Digital Strategy with new ideas and projects, both from the private and public sectors.

DEC has the overall coordination responsibility regarding the Digital Agenda for Europe (DAE) and the Digital Single Market (DSM). The particular responsibilities for the implementation of specific actions

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<sup>18</sup> Digital Economy and Society Index (DESI) - <https://ec.europa.eu/digital-agenda/en/desi>

of the DAE and DSM pillars are in the competence of many other relevant government services and agencies.

OCECPR (“the Regulator”) is an independent authority which regulates the electronic communications and postal services in Cyprus, and has the overall coordination responsibility to develop and implement the national strategy for the Cyber security. It is also a member of the Digital Strategy Group mentioned above.

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