Supporting Broadband Growth in an Interregional Level: The Case of Greece-Italy Partnership

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Abstract

Broadband is a key element of the developments that are taking place in the electronic communications markets and the European Commission has been particularly active in promoting broadband developments. This paper presents the objectives and the methodology of a project for supporting the broadband growth in an Interregional Level between regions of Italy and Greece. Main target of the project is the technology and knowhow transfer (relative to broadband) to SMEs (Small and Medium Enterprises) and the demonstration of broadband advantages and benefits.

1. Introduction

Broadband is a key element of the developments that are taking place in the electronic communications markets. Therefore, one of the main objectives in many countries is the support of broadband growth. The success of this objective is more crucial in rural and underserved areas. Such areas are the following prefectures of Greece: Preveza (in Epirus), Lefkada (in Ionian Islands) and Ilia (in Western Greece). The same situation is encountered in some Italian regions such as Lecce (in Puglia).

The European Commission has been particularly active in promoting broadband developments. The EC adopted an initiative supporting the Lisbon 2010 goals, i2010, where broadband take-up is considered an important factor for the emerging digital economy and competitiveness. The current situation concerning broadband penetration is presented in Figure 1 (data valid for December 2007).

According to these data, EU27 average stands at 20.0%. Denmark and Finland led the European in broadband penetration rate, with more than 31 subscribers per 100 inhabitants (also leader in the EC countries), while Greece (with broadband penetration at 9.1%) is far behind. Italy has a broadband penetration rate up to 17.1%, which lies just below the EU27average broadband penetration rate. It is important to mention that even though Italy has a broadband penetration rate close to EU27 average and much higher than Greece, some regions of Italy, such as Lecce, present low broadband penetration rates.

The reasons for the limited growth of broadband access networks' development in Greece, as opposed to other countries (Marcus (2005)) are manifold:

Firstly, the potential market of broadband services in Greece is small. Recent studies (GRNET (2005), Observatory (2005), ebusiness forum (2005)) which concern both small and medium-sized enterprises (SME) in Greece or Greek households, have shown low penetration percentages in personal computers (PC) and Internet possession.

Secondly, the country's remote areas are the least developed ones and the ones facing the most intense technological exclusion. Long local loops are needed for these areas, due to the country's geographic properties (as compared to much shorter distances required in urban areas).

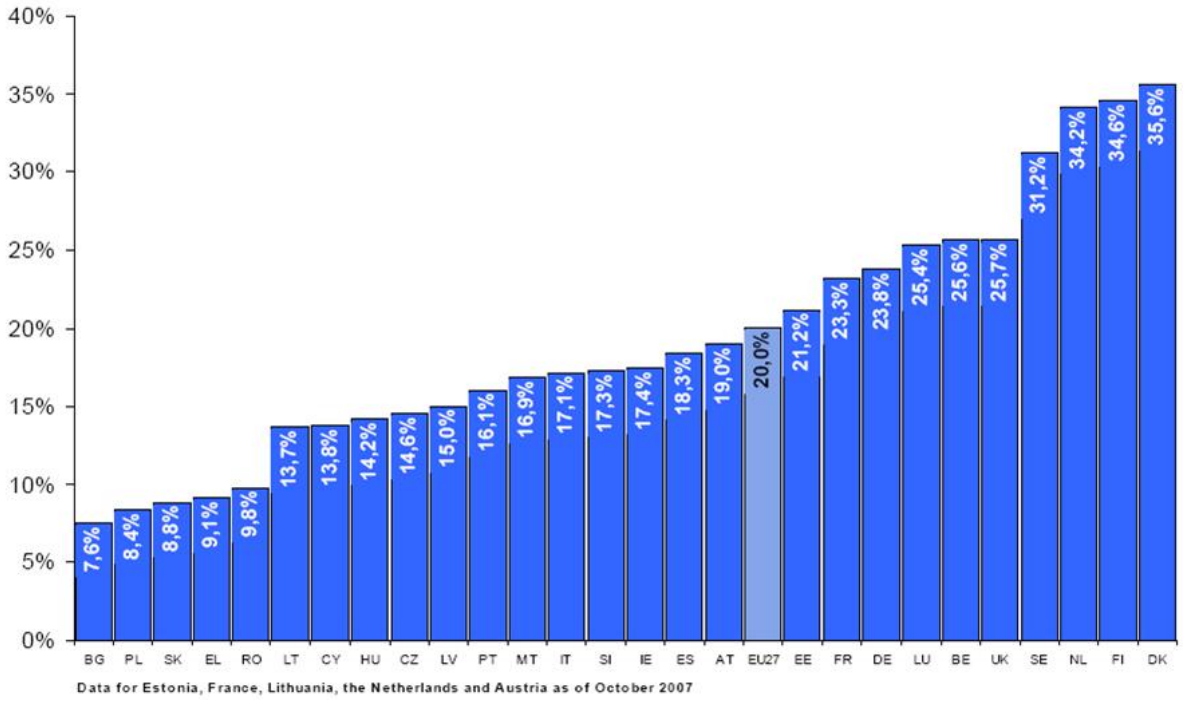

Figure 1: *Broadband subscribers per 100 inhabitants in January 2008 (COCOM (2008))*

The limited terrestrial infrastructure (backbone and access) nowadays in Greece, owned in their vast majority by a single (up to recently, public) vendor (OTE - the Hellenic Organization for Telecommunications), consists an important obstacle in competition development.

The main focus of this paper is to present the objectives and the methodology of a project for supporting broadband growth in an Interregional Level between regions of Italy and Greece. Main target of the project is the technology and knowhow transfer (relative to broadband) to SMEs (Small and Medium Enterprises) and the demonstration of broadband advantages and benefits. In addition, strategies for broadband promotion between Greece and Italy will be investigated. These strategies will be based on similar experiences from transnational cooperation for broadband promotion.

This paper is structured as follows: Section 2 presents the Greece – Italy project, which supports this work. The current broadband status for Greece and Italy is presented in the third section. The fourth section (i.e. “Identifying Best Practice”) presents the calculation of the best practice and good practice index and discusses the results. The last section (i.e. “Conclusions and Future Work”) summarizes the results of the paper and presents the next steps in the context of the project for supporting the broadband growth in an Interregional Level between regions of Italy and Greece.

2. Description of the project

The main objective of the project titled “Broadband: Promotion, Demonstration, Strategy, Best Practices”-InterREG III, is the exchange of experiences and knowhow between the collaborating countries, Greece and Italy, on issues related to broadband.

In particular, the objectives of this activity is the transfer of technology and knowhow, mainly to small-medium enterprises (SMEs) as well as broadband promotion through the establishment of public Wi-Fi hot spots, for the creation of demonstrative wireless networks around the installation points and the broadband connection of these wireless networks to the Internet. From this development all citizens and enterprises, within the scope of the networks, could benefit by enjoying broadband speeds and using broadband services.

Furthermore, to the direction of broadband promotion, a portal will be developed, which will mainly aim at promoting broadband and providing broadband content. In particular, the portal will focus on promoting the demand and the use of broadband services and infrastructures, while it will also provide broadband content that will present cultural and touristic elements of the regions that participate in the project.

In addition, among the objectives of this action, is the examination of models and strategies that could be adopted for the further promotion of broadband in the collaborating countries. To this direction, the project will investigate international and interregional data related to broadband so at to extract conclusions for the factors and indices that importantly affect broadband penetration, both for households and enterprises, while it will also assess international experiences that relate to strategies, main factors and best practices related to the spreading of broadband services.

Finally, the project will examine models for the growth and exploitation of broadband infrastructures. In particular, the examination will take into account state of the art practices in the development of optical broadband networks as well as international models and technologies for the growth of such infrastructures. Emphasis will be put in the neutrality of these infrastructures, in the adaptation of open standards and in forecasting collocation for the connection and use by multiple providers, so as to boost competition. Furthermore, the participating regions will draw up a Business Plan for the exploitation of broadband infrastructures, related to the adaptation, use and provision of broadband services.

3. Greece-Italy current broadband status

This section presents briefly the broadband status in both Greece and Italy. This status investigates the following indices in order to describe the broadband status in both countries:

- Broadband market
- Broadband penetration
- Increase in broadband penetration rate
- Broadband technologies used
- ECTA regulatory scorecard

The Greek broadband market is still relatively underdeveloped, both in terms of size and competitive dynamics (Point-Topic (2007-1)). The Greek incumbent OTE has largely been blamed for stalling ADSL deployment since 2001. Starting at 2006 the Greek national regulator (EETT) tries to set Greece's broadband market on the path to fair network access and more competition by (a) transposing the EU framework for Electronic Communications into Greek law and (b) announcing new regulations on Local Loop Unbundling. However, according to ECTA Regulatory Scorecard (ECTA, 2006)), Greece fall behind in enforcing measures to open broadband markets. According to the latest ECTA Regulatory Scorecard (ECTA, 2008), Greek NRA lacks the powers needed for proper enforcement of the Framework for example with effective penalty powers. Greece is one of the countries (such as Austria and Germany) where the maximum fines only represent a small fraction of the turnover of dominant companies. Furthermore, in Greece one of the main problems is the ineffective implementation of measures to open broadband markets such as LLU.

The Italian broadband market is based on DSL and Fibre-To-The-Home (FTTH) and there are no major cable operators or cable infrastructure. It is noteworthy to refer that Italy is one of the most advanced countries in Europe in developing Fibre-To-The-Building (FTTB) technology and services (Point-Topic (2007-2)). Especially in highly dense areas where a large number of apartment blocks were built with direct fibre access to the building, FTTH service becomes highly desirable and results in the significant growth in the Italian market and also an upcoming trend in Europe. A positive fact concerning Italian broadband market is that Italian regimes are considered one of the most effective in implementing the broadband ladder of investment. Italian strategies concerning enforcement and sanctioning powers are considered as best practices (ECTA, 2008). Another very positive fact

concerning Italian broadband market is that Italy has established clear principles and transparency measures for accounting separation.

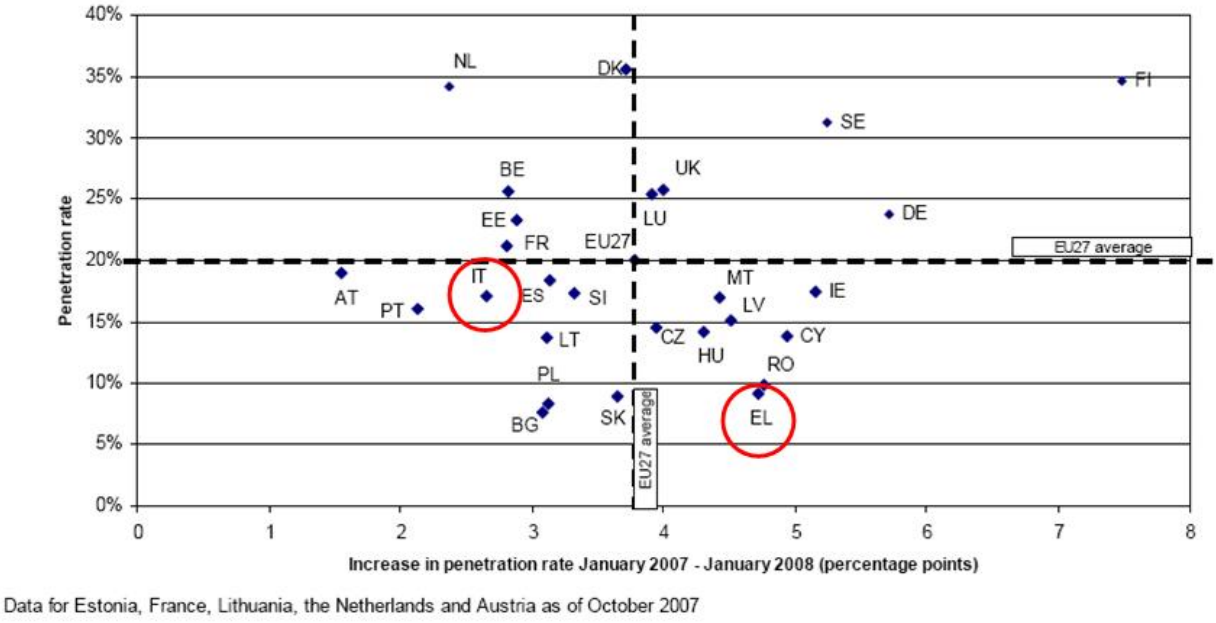

Figure 2: *Penetration rate and speed of progress in January 2008 (Source: COCOM (2008))*

However, both counties present lower broadband penetration rates that EU27 level which is 20.0%. According to the latest available data provided by the Communications Committee (CoCom) (*COCOM (2008)*), Greece is among the last EU members in the broadband penetration ranking and it presents a broadband penetration rate (which is the number of broadband lines per 100 population.) of 9.1%. Italy's penetration rate is 17.1%.

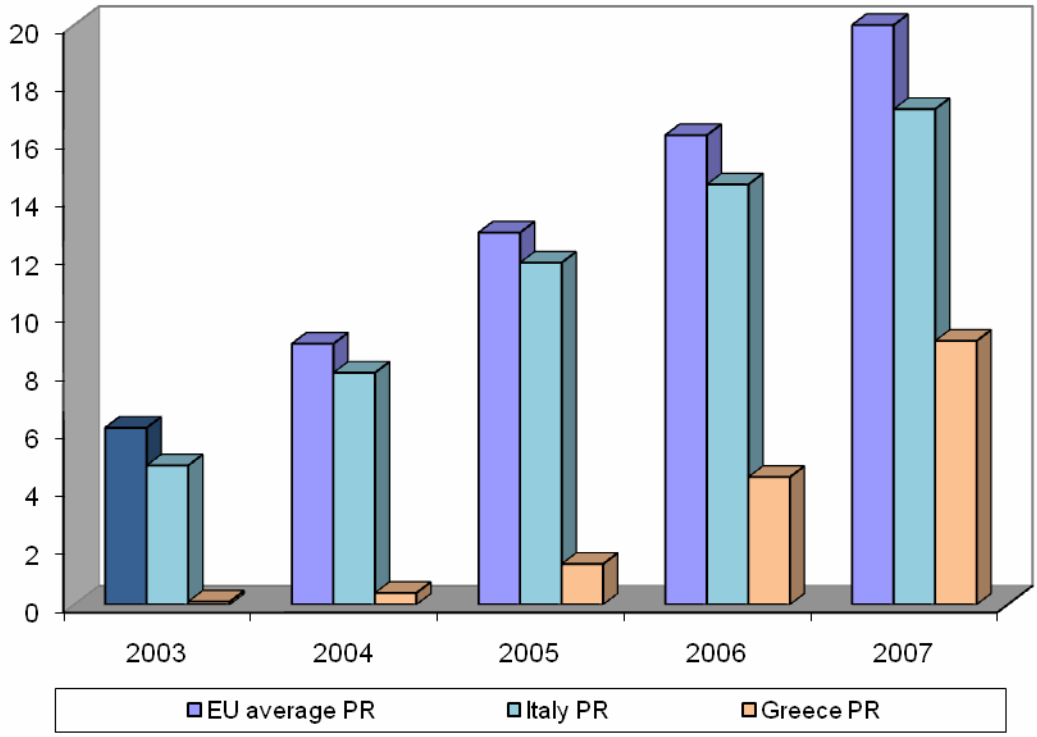

Figure 3: *Greece and Italy broadband penetration rate*

Almost the same situation is observed concerning the growth of broadband penetration rate (Figure 2). As indicated, Greece has presented a higher increase in penetration rate related to Italy, however, its actual penetration rate is significantly lower both from Italy's and EU's average. In particular, Greece increased the penetration rate at about 4.7% in the period 2006-2007 reaching a penetration rate of 9.1%, while Italy increased its penetration rate at 2.6% reaching 17.1%. However, both Italy and Greece present lower growth than the EU25 average growth. This fact means that the divide between EU27 and both countries will be increased concerning the broadband penetration rate.

	2003	**2004**	**2005**	**2006**	**2007**
EU average	6.1	9.0	12.84	16.2	20.0
Greece	0.1	0.4	1.4	4.4	9.1
Italy	4.8	8.0	11.8	14.5	17.1
Greece's deviation from EU average	6.0	8.6	11.44	11.8	10.9
Italy's deviation from EU average	1.3	1.0	1.04	1.7	2.9

Table 1*: Penetration rates of Greece and Italy over the last five years and deviation from EU average*

Regarding the broadband penetration rates of Italy and Greece the last five years, as it can be extracted both by *Figure 3* and Table 1, it appears that the policies and practices adopted by Italy this period resulted in a deviation of 2.9 (maximum value) in its percentage rate from the EU average. On the other hand, the practices and policies followed by Greece resulted in a significantly higher deviation of its penetration rate in comparison to that of the EU average.

It is important to also notice, that especially for the case of Greece, the deviation of its penetration rate in comparison to that of the EU average was continuously increased, reaching the maximum value of 11.8 for 2006 and falling down to 10.9 for 2007.

Furthermore, both Italy and Greece seem to have problems in the exploitation of the opportunities offered by information and communications technology. According to the latest rankings of the World Economic Forum's Networked Readiness Index (NRI) (which measures the propensity for countries to exploit the opportunities offered by ICT) (Weforum (2008)) Greece is in the 56th rank (from 48th in 2006-07) and Italy is in the 42nd rank (from 38th in2006-07).

The broadband status is the same (if not worse) in the regions participating in this project (i.e. Preveza, Lefkada, Ilia and Lecce). However, according to the data presented in this paragraph it seems that the participating regions of the project can exchange experiences and know-how on broadband issues for a number of reasons. For example, the Greek regions could provide know-how about the development of local broadband wireless networks due to the fact that many wireless broadband local area networks are developed in these regions. Furthermore, Italian regions could provide know how about the deployment of FTTB technology and services.

Thus one of the main objectives of the project is the investigation of models and strategies that can be adopted for the further promotion of broadband in the collaborating countries. To this direction, the project will investigate international and interregional elements by comparing concrete indicators that are related to broadband so as to conclude on the factors and the indicators that influence considerably the penetration of broadband for the households and enterprises, as well as the evaluation of international experience in regard to the strategies, the basic factors and the best practices that are related to the expand of broadband services.

4. Identifying best practices

According to a report of ITU, broadband promotion is mainly based on two factors: (a) on the growth of broadband demand and (b) on the growth of broadband supply. Countries that have achieved important broadband promotion have followed common directions, independent from their cultural and

geopolitical differences and their technological growth. Furthermore, OECD has created a line of recommendations so that member countries can encourage the growth of broadband markets and the effective use of broadband services. With the relative decision in the 12/2/2004, OECD recommended among others: (a) a combined approach so that the growth of infrastructures, services and requirements is encouraged, as well as the aggregation of demand in under populated regions, as means for the promotion and the effective use of broadband services, (b) the policies that promote access, with equal terms and at competitive prices, in all social groups, (c) the assessment of availability and the diffusion of broadband services in the market, so as to determine whether the undertaken initiatives are suitable.

This section presents on the one hand the methodology that will be adopted within the framework of the project for achieving the project's goals and on the other hand the key indicators measured for identifying the best practices that could be applied in the collaborating countries.

4.1. Methodology

The methodology for identifying best practices will be based on the directions of both OECD and ITU so as to assure the achievement of the project objectives.

In particular, the methodology could be divided in the following steps:

Step 1: Monitoring of data relevant to broadband: within the framework of the project a bibliographic survey and collection of primary data relevant to the situation of broadband, both on an interregional and international level will be realized.

Step 2: Establishment of Wi-Fi hot spots in the participating regions. Based on the results of Step 1, the main problems and challenges related to broadband promotion will be identified. With the development of Wi-Fi hot spots broadband promotion will be enforced, while the possibilities of public access points will be exploited in a way that more challenges can be faced. A fundamental objective to be achieved through this step is the transportation of relative know-how, mainly to small-medium-sized enterprises (SME), via the demonstration of broadband possibilities.

Step 3: Development of a portal for broadband issues: Given the fact that during Step 2 a basic infrastructure will be implemented for the demonstration of broadband capabilities and benefits, the portal will constitute the "space" where broadband applications will be demonstrated. Thus the portal will constitute a dynamically updated space, where users can be informed about broadband benefits and capabilities, while broadband content will also be provided.

Step 4: Review of common practices for broadband growth: Having identified the problems of broadband development in combination to the state of broadband infrastructure and services on an international level, this step aims at investigating basic directions for broadband growth both on an international level but mainly for the participating countries. Furthermore, best practices in other countries will be examined, along with the transportation of knowhow between Greece and Italy. Finally, the feasibility of applying international best practices for broadband growth to Greece and Italy will be examined.

Step 5: Models for the growth and exploitation of broadband infrastructures: Based on the results that will arise from Step 4, this step aims at the creation of models of growth and exploitation for broadband infrastructures. The main international directions, the special characteristic of each country (e.g. regulatory framework in Greece and Italy) will be examined and a detailed business plan/ model for each region will be defined.

4.2. Key indicators

In order to better evaluate the areas that the Greek and Italian regions can exchange know how, as well as to locate international experiences and best practices for supporting broadband growth a number of indicators that are related to broadband penetration, growth and ICTs will be examined. These indicators are the following:

- Broadband customer affordability: The affordability of a user to buy broadband expressed by the Kbps per United States Dollars (USD, calculated in PPP) times the GDP per capita
- Broadband subscription cost per Kpbs
- Broadband and Internet penetration per 100 inhabitants
- Broadband and Internet penetration per educational level
- Broadband and Internet penetration per region type (urban, rural)
- Broadband and Internet penetration per income level
- Broadband and Internet penetration growth in the last three years
- ECTA regulatory scoreboard
- Number of broadband providers and level of completion in telecommunications in each country/region
- Digital Access Index (DAI) of International Telecommunication Union (ITU).
- Networked Readiness Index (NRI) of World Economic Forum
- e-readiness ranking of Economist Intelligence Unit
- Digital Opportunity Index (DOI) of ITU.
- Market share of broadband access technologies (DSL, LAN, Satellite, FTTH, cable modem, etc.)
- Provision of broadband services and content (double-play, triple-play, quard-play services, etc.)
- Provision of multi-play services per broadband access technology
- Public investments on broadband infrastructures and services, i.e. (a) number of regional wireless and fibre broadband networks developed in each region/country; (b) usage of broadband services in the public sector in each region/country.
- Inhabitants' profile and opinions in each region/country concerning broadband: (a) Inhabitants' knowledge about broadband access benefits, broadband services; (b) reasons for not using broadband service; (c) usage of broadband services; (d) broadband user satisfaction from the broadband services offered

Most of the above indicators are determinants concerning broadband growth as referred in Bouras (2006). Flamm (2005-1) have found evidence that broadband price is indeed a statistically significant driver of broadband demand. They also refer that "there is a strong correlation between race, age, and levels of income and education, and access decision". According to them the "digital divide" is correlated with these factors, and that the poor, the less educated, and non-whites are on the disconnected side of the divide. In addition, Flamm (2005-2) finds that income is an important determinant of broadband penetration.

Concerning competition Aron (2003) found that competition between providers is an effective catalyst for increased penetration. However, Distaso (2005), refer that while inter-platform competition drives broadband adoption, competition in the market for DSL services does not play a significant role.

5. Conclusions and future work

Broadband is a key element of the developments that are taking place in the electronic communications markets. For that reason one of the main objectives in many countries is the support of broadband growth. The Greek broadband market is still relatively underdeveloped, both in terms of size and competitive dynamics. The Italian broadband market is based on DSL and FTTH. It is noteworthy to refer hat Italy is one of the most advanced countries in Europe in developing FTTB technology and services.

While Greece is far behind from the EU27 average in broadband penetration rate and Italy has a broadband penetration rate just below the EU27 average, it is important to mention that some regions

of Italy, like as Lecce (in Puglia), have small broadband penetration rates like the most regions in Greece.

According to a report of ITU, broadband promotion is mainly based on two factors: (a) on the growth of broadband demand and (b) on the growth of broadband supply.

In order to identify the best practices that could be applied in the collaborating countries like Greece and Italy the following methodology is proposed: (a) Monitoring of data relevant to broadband, (b) Establishment of Wi-Fi hot spots in the participating regions, (c) Development of a portal for broadband issues, (d) Review of common practices for broadband growth and (e) Models for the growth and exploitation of broadband infrastructures.

This paper presented the objectives and the methodology of a project for supporting the broadband growth in an Interregional Level between regions of Italy and Greece. In order to achieve its objectives the project will follow the following procedure: (a) Promotion of broadband and transport of know-how, (b) Creation portal for subjects of broadband, (c) Recording of Interregional and International Elements, d) Exchange of Experiences / Most optimal Practices and export of Strategies and (e) Creation of models of Growth and Exploitation of Broadband Infrastructures.

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