

Finnish National Broadband Action Plan and Its Current Implementation

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Abstract— In the end of 2008, the Finnish Government approved a national plan of action for improving the infrastructure of the information society. The general aim of the plan is to ensure that both citizens and businesses have access to broadband networks regardless of place of residence. The action plan defines the basic broadband access as a public service and sets the framework for a nation-wide FTTH implementation. The paper reports the challenges and the early results of the implementation of the action plan. The findings of the study suggest the use of pilot project and thorough analysis of them before the large scale implementation of national broadband projects are started.

Keywords— Broadband networks, Telecom policy, Universal service, FTTH, Service obligation

I. INTRODUCTION

APPLICATION of broadband networks can create and sustain new opportunities for economic development. A large number of studies have found that broadband connectivity has a positive impact on job creation, community retention, retail sales, and tax revenues (e.g. [7], [16]). At a national level modern communication networks have been seen as a method to amplify the competitiveness of a nation. Thus many countries have created national policies to foster the acceptance of fast network technologies.

In this paper the national broadband action plan of Finland is introduced. The main focus is on the practical experiences gained from the implementation of the policy. Although the study is limited to only one country the results can be generalized to other countries following the same path.

The structure of the paper is as follows. Chapter II contains a short introduction to the role of the government in fostering the development of broadband network infrastructure. The Finnish national action plan – Making Broadband Available to Everyone - is introduced in Chapter III. The action plan consists of two major steps. The first step is the decision to set a 1 megabit per second broadband service as the universal service. The aim of second step is to cover the entire country with 100 megabit high-speed networks by 2015. The main focus of the national policy is to extend the networks beyond the urban areas to the sparsely populated areas. The implementation and practical experiences of the action plan

are analyzed in Chapter IV. Chapter V includes the discussion and the final conclusions can be found in Chapter VI.

II. GOVERNMENTS AND BROADBAND POLICIES

Although the common trend in telecommunication markets has been deregulation, in many countries governments have taken an active role both in encouraging businesses and homeowners to adopt broadband connectivity and in promoting the implementation of modern network infrastructure. The governmental involvement to the market development has been justified mainly from two perspectives: economical development and social equality.

Broadband connectivity is considered a significant driver in exploiting the full potential of information economy, which in turn is resulting in significant gains of international competitiveness at a national level [17] Although it is not easy to measure the economical benefits of broadband technology several studies (e.g. [8], [10]) have pointed out the positive correlation between increased broadband penetration and GDP growth.

The equal opportunities are the second reason why public policy should focus on broadband and they are often analyzed from the digital divide perspective. Digital divide does not exist only between nations but also between different areas of a country. Providing broadband connections in areas with low population density is an economical challenge for a network operator even in developed countries [9].

However, social returns from investing in broadband networks seem to exceed the private returns of companies and consumers. The main reasons for this are positive network externalities where the benefits from broadband adoption accrue not just to individual consumers, but to other broadband users and society as a whole. As a result, market forces alone will not generate the societally optimal level of broadband, at least for the foreseeable future. [1]

III. NATIONAL BROADBAND ACTION PLAN OF FINLAND

A. Broadband networks in Finland

Finland is a sparsely populated country with around 5.4 million people. It is the eighth largest country in Europe in terms of area and the most sparsely populated country in the European Union. The population is not equally distributed but the majority of the population is concentrated in southern part of the country as can be seen in Fig. 1.

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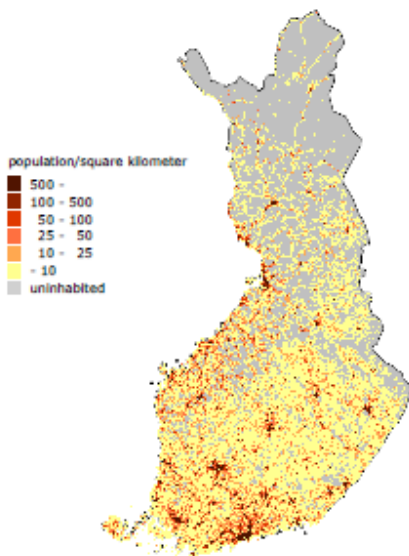


Fig. 1 Population density by square kilometer in Finland 2008 [18]

However, Finland has one of the highest broadband penetration rates in Europe as shown in Table 1.

TABLE I
BROADBAND PENETRATION RATES IN SOME EU COUNTRIES [4]

Country	Broadband penetration in 2009 ^a
EU (27 countries)	23,9
Belgium	28,3
Denmark	37,2
Germany	29,4
Estonia	26,3
Finland	30,5
Poland	12,8
Romania	12,3
Sweden	32,5
United Kingdom	28,8

^a Number of broadband access lines per 100 inhabitants

In Finland the main broadband technology has been DSL, but during the last few years the popularity of mobile broadband has increased extremely fast. Although the mobile broadband has offered large number of new possibilities to use network services, it raises some questions like if the higher acceptance rates of mobile connections can jeopardize the development of the services that can better fulfill the future requirements for example in terms of bandwidth.

TABLE II
NUMBER OF BROADBAND CONNECTIONS IN FINLAND [5]

Technology	Number of connections in 30.6.2009
DSL	1 162 600
Real estate connections	117 500
Cable modem	229 600
Mobile broadband	1 152 200
Wireless broadband	30 100
FTTH	14 500
Other	800

B. Finnish broadband policy

In Finland, information society policy has been promoted with separate policy programmes. The main aim of the national Information Society Strategy is to transform Finland into an internationally recognized, competitive competence-based service society with a human touch [12].

One of the building blocks of the information society is the broadband access. Finland's national broadband strategy (NBS) was set up in 2004 by the Ministry of Transport and Communications with the practical goal of increasing the number of broadband connections. The strategy was influenced by the EU's i2010 'Broadband for all by 2010' plan which focuses on rolling out broadband through a range of measures while promoting competition in and between networks.

The current developments of Finnish broadband policy are based on the declaration of national action plan for strengthening the infrastructure for information society [21]. The action plan was released on December 2008 and it had two distinct targets. First, by the end of 2010 all Finnish citizens, businesses and public administration bodies should have access to basic broadband services with a minimum download rate of 1 Mbps at a reasonable price in their permanent place of residence. Second, by the end of 2015 the entire country will be covered by the next generation broadband networks. According to the plan, nearly all Finns (99 % of the households) shall have an access to very high speed service with a minimum download rate of 100 Mbps. In the following Chapter the challenges and solution related to implementation of both of these aims are discussed in detail.

IV. IMPLEMENTING THE FINNISH BROADBAND ACTION PLAN

A. Broadband as a Universal Service

To promote the broadband action plan the Finnish Communications Market Act was amended so that universal service also includes a functional Internet connection. This means that a broadband access was included in basic communications services like telephone or postal services. Thus, Finland became the first country in the world to make access to a broadband service a basic right [2].

The Ministry of Transport and Communications defined the minimum rate of downstream traffic of a functional Internet access to be 1 Mbit/s, and later the Finnish Communications Regulatory Authority (FICORA) defined 26 telecom operators across Finland as universal service operators.

The new legislation received also some criticism particularly from telecom operators. After being defined as universal service operator in 337 municipalities covering 72 % of Finland, TeliaSonera petitioned the Supreme Administrative Court that the Universal Service Directive will not be implemented. The Court, however, rejected the petition and the universal service obligations for telecom operators took effect in the beginning of July 2010 [6].

The court decision did not end the debate but the discussion moved from the service obligation to terms of the service - especially price. The decree states that the designated universal service providers will have to be able to provide broadband access at a reasonable price, but there was no common understanding about the correct price level. [11] After two customers made official complaints to the ministry over the pricing, the ministry made it clear that it is ready for all necessary decisions – even some form of price regulation - to solve the issue. In a public hearing all telecom operators together strongly opposed the introduction of maximum prices or some other form of price regulation for the broadband services. [20].

The topic got also an international dimension as European Telecommunications Network Operators' Association (ETNO) raised concerns about universal service situation in Finland and contacted EU Commissioner Neelie Kroes on this matter [19]. The ETNO's main concern was that the legislation did not introduce any state-funded compensation methods for operators and this way it imposed an unfair burden on the industry.

Finally, in October 2010 the Ministry and telecom operators reached an agreement on the prices for 1 Mbps broadband service on rural areas. According to the agreement the decent monthly fee is 30 – 40 Euros and installation cost is between 200 and 1 000 Euros. [15]. However, the agreement still left some open questions to pricing, because in some unspecified cases operators are still allowed to apply higher prices.

B. 100 Mbps to Everyone 2015

The second aim of the action plan was set to year 2015. Then next generation connections with 100 Mbps speeds should be available to almost every Finn (99 % of the population) in their permanent place of residence. The Ministry estimated that the commercial operators will achieve coverage of about 95 % of Finns primarily in build-up areas. But to reach the aim of 99 %, public funding will be needed to reach the remaining 130 000 rural households.

The ministry developed a public-private partnership model in which end users, operators and public organizations together fund the broadband networks to areas with a very low population density. Users of the service are responsible for the monthly and installation fees of the service. Because in rural areas long distances can cause high installation fees the legislation sets 2 km maximum to the user paid connection from the user to the core network.

The telecom operators and public organizations together are responsible for implementing the required core network. Originally the ministry estimated that the total cost of the core network is about 200 M€. The operators' share of the core network costs is at least 34 per cent. The remaining 66 per cent is public funding and it comes from the following sources: the government 66 M€, European Regional Development Fund 25 M€, cities and municipalities 40 M€). The share of the city or the municipality is either 8, 22 or 33 per cent of the costs and the share depends on its current economical condition.

The implementation of the project was started with a pilot projects. Originally the Ministry planed to have about 5 pilots [13] but later 10 projects were selected and the total budget for them was 15.6 M€ [14].

Based on the FICORA's market analysis the European Commission notified the pilot measures in December 2009. After that the regional councils started an open tender process and they selected the most economically advantageous offer among those presented by the operators. The regional councils had drafted their tender documents based on common models and the criteria used to select the most economically advantageous offer are listed in Table III.

TABLE III
CRITERIA USED FOR SELECTING
THE MOST ECONOMICALLY ADVANTAGEOUS BID

Criteria	Respective weight
Project price (amount of aid applied)	50 %
Subscription fees (collected from users)	20%
Other fees (collected from users)	20%
Commitment to provide service longer than the minimum term (10 years)	10%

Out of ten pilot projects seven actually started. In one case the municipality cancelled the project and in two cases there were no offers made by the operators. Many issues mainly related to the administration of the projects delayed the starting of the pilot projects. Thus, the actual implementations were started in summer 2010 – more than a year after the operators for the pilot projects were selected.

V. DISCUSSIONS

During the last decades telecom markets has been deregulated all over the world. However, today in many countries governments have taken active roles both in encouraging businesses and homeowners to adopt broadband connectivity and in promoting the implementation of modern network infrastructure to rural areas. The governmental involvement to the market development has been justified mainly from two perspectives: economical development and social equality. On the other hand the intervention of the state is criticized because it alters the conditions of competition in the markets.

In fostering the broadband action plan the Finnish government has affected the operations of the telecom markets with direct regulative actions and with subsidizing the next generation broadband networks.

In the basic broadband access decision the ministry and the telecom regulator FICORA used service obligation rules to guarantee that broadband service is available to all. Service obligation was a typical regulation tool during the monopoly era. At that time the requirement to offer services on the common bases to all potential customers was the price the company paid for its monopoly right. In deregulated environment service obligation has been used far more seldom. Naturally telecom operators criticized the decision because

they thought that it will impose an unfair burden on the industry.

The proposal of price limits received even stronger resistance among the telecom industry. Industry saw the regulation of the prices as a step backward from the self-regulation to the regulator centric system which could possibly lead to price controls also in other areas and services. The agreement on prices of the basic broadband services can be seen as an example of co-regulation in which the Ministry, the regulator and the operator together found a way to apply the legislation.

In Finland the government decided to use public money to promote the next generation broadband network to rural areas. It is well known that the public subsidies can lead to a distortion of competition. Therefore Finnish authorities decided to launch pilot projects to gain experience on the implementation of publicly subsidized project. In pilots the public funding was limited only to the non-build-up areas where it is not economically viable for commercial operators to build their high-speed networks. This is also in accordance with the Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks [3].

The pilot projects have partly served their task to gain practical experiences of the projects. The most important findings so far can be summarized as follows. First, the operators do not have shown a great interest to the projects even though they share is only 34 per cent of the total costs of the project. For example, two pilots measures did not receive any bid from the operators.

Second, the high installation fees seem to be the main obstacle for fiber to the home service acceptance. In the current structure the installation fee typically depends on the distance from the customer premises to the core network. This put customers to an unequal situation and the cost for one customer can be many times higher than for another one.

Third, it is quite easy to underestimate costs and time required in the project. The plans made by regional councils suggest that the total cost of the project is close to 400 million Euros as the original estimate was 200 million. Also the implementation phase of the pilot projects started more than a year after the operators were selected. This delay meant that the main phase of the plan of action started before the experiences of the pilot projects were available. This naturally jeopardized to some extent the original idea of the pilots.

VI. CONCLUSIONS

Finland was the first country in the world to make access to broadband Internet a legal right. Being a pioneer is typically a challenging task and this case is not an exception to that rule. Although many countries like Estonia and Sweden just to name a few have their own next generation broadband strategies Finland's plan of action and its early experiences can be useful to other countries while creating and implementing their broadband initiatives.

Based on the Finnish experiences the use of the pilot projects can be recommended also to other countries. However, it is strongly suggested that the results of the pilot measures are fully analyzed before the main phase is started. The analysis should not be limited only to the outcomes but also to administration and regulation of the projects. This is probably the best way to create a solid framework in which all participants including operators, regulators, regional authorities and end users can operate.

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