PUBLICATIONS OF
THE MINISTRY OF TRANSPORT AND COMMUNICATIONS 16/2008

A phone for everyone – from fixed to mobile services

MINISTRY OF TRANSPORT
AND COMMUNICATIONS FINLAND

Helsinki, 2008

MINISTRY OF TRANSPORT AND COMMUNICATIONS FINLAND

DESCRIPTION

Date of publication

14 December 2007

Author	Type of publication
Mr Harri Pursiainen, Permanent Secretary,	Report
Ministry of Transport and Communications	Assigned by Ms Suvi Lindén, Minister of Communications
	Date when body appointed 24 August 2007

Name of the publication

A phone for everyone – from fixed to mobile services

Abstract

Ms Suvi Lindén, Minister of Communications of Finland, commissioned this study to examine how prices and availability of the fixed telephone network affect the overall provision of electronic services. The underlying cause is the concern of how to ensure that everyone is provided with basic telecommunications and broadband services if the fixed network prices increase substantially or the services are shut down.

The communications policy should prepare for a significant increase in the prices of fixed telephone services or, in the case of some customers, even for a shutdown of services.

The report includes suggestions for measures in communications policy that would ensure a high level and reasonable prices in telecommunications services throughout the country if steps by the telecom operators or the regulatory work by the Finnish Communications Regulatory Authority (FICORA) will not be sufficient.

The key measures would be:

- To ensure reasonable prices so that FICORA follows the pricing policy of the universal service telecom operators and, when necessary, regulates their retail prices.

- To review the effects of universal service regulation in such a manner that FICORA reports to the Ministry of Transport and Communications by 29 February 2008 on the application of the universal service provisions and on the effects of the regulation on availability, usability and price of the services.

- To ensure the service level after the Ministry has reviewed the telecom service level and pricing by 30 April 2008 on the basis of FICORA's studies and the telecom operators' plans and commitments.

The starting point of the study is that before any customer's access to fixed telephone services is terminated he or she is offered corresponding mobile or broadband services that meet the 12 requirements referred to in the report.

Keywords

telecom services, universal service, pricing

Miscellaneous

Contact person at the Ministry: Mr Harri Pursiainen
This report is earlier published in Finnish *(Liikenne- ja viestintäministeriön julkaisuja 70/2007).*

Serial name and number	ISSN	ISBN
Publications of the Ministry of Transport and Communications 16/2008	1457-7488 (printed version) 1795-4045 (electronic version)	978-952-201-725-3 (printed version) 978-952-201-726-0 (electronic version)

Pages, total	Language	Price	Confidence status
28	English		Public

Distributed and published by

Ministry of Transport and Communications

CONTENTS

INTRODUCTION

The first landline telephones in Finland were installed in 1882. For more than a century, the fixed landline telephone was the most important telecommunications service in the country. It has been universally available and provided consumers with basic telecommunications services. The landline phone has been an everyday appliance in virtually every home – a real people's phone.

Since the late 1980s, the emphasis in telephone services has been shifting towards mobile communications. In the space of just over a decade, people in Finland have exchanged their landline phones for mobiles. The mobile phone has emerged as a strong new people's phone.

On 24 August 2007, I was instructed by Minister of Communications, Ms Suvi Lindén to undertake a survey of pricing trends and the availability of services in the fixed telephone network and to draft proposals on necessary communications policy measures. The assignment was motivated by concerns of how consumer access to basic communications and broadband services can be guaranteed if prices of fixed line services are sharply increased, or indeed if these services are discontinued.

During the course of my work I have heard the views of experts from the Finnish Communications Regulatory Authority and major Finnish telecommunications operators: TeliaSonera Finland, Elisa, Finnet Association, Finnet and Digita. Among the representatives of users, I have consulted the Finnish Consumer Agency and requested relevant information from the Ministry of Transport and Communications working group on barrier-free communications, which includes representatives of the Finnish Federation for Communications and Teleinformatics; the Finnish Communications Regulatory Authority; the Finnish Consumer Agency; the Finnish Federation of the Hard of Hearing; the Finnish Association on Intellectual and Developmental Disabilities; the Finnish Association of the Deaf; Nokia Oyj; the Finnish Federation of the Visually Impaired; the Research and Development Centre for Welfare and Health Stakes; and the Ministry of Social Affairs and Health.

I have reviewed the business plans of telecommunications operators and in accordance with my assignment sought to determine what demands should be placed on operators so that Finnish consumers can continue to enjoy access to modern and reasonably priced communications services regardless of where they live. By way of a background to my assessment, I have reviewed current regulations concerning universal service provision and licensing. The statistics I use mainly serve the purpose of illustration; as such they shed only partial light on the true situation today. I have been aware of the work that is ongoing at the Finnish Communications Regulatory Authority to define and establish new obligations with respect to universal service provision and usability.

I conclude my assessment with a few communications policy proposals that are intended to ensure the standard of communications services even in the present environment of change.

Having now completed my work I herewith respectfully submit my report to the Minister of Communications.

Helsinki, 14 December 2007

Permanent Secretary Harri Pursiainen

THE COMMUNICATIONS MARKET AND LEGISLATION

In Finland, telecommunications services are offered competitively in the commercial marketplace. Access to basic telephone services, regardless of user location, is guaranteed by universal service regulation.

A telecommunications operator that is assigned by the Finnish Communications Regulatory Authority as a universal service provider for telephone services, is required by law to provide reasonably priced access for all users at their permanent place of residence or location to the public communications network, regardless of geographical region.

The universal service obligation is technology neutral: the service provided may be based on fixed or wireless systems, so long as it works flawlessly.

The Communications Market Act that took effect in 2003 (393/2003) is the most important legal instrument governing communications in Finland. It covers both the fixed telephone network and the mobile network, including the services delivered in those networks. Furthermore, the Act is applicable to broadband services.

The Communications Market Act is also the principal instrument governing the implementation in Finland of EU telecommunications directives and decisions. Key among these is the Universal Service Directive, which is designed to guarantee access to basic telephone services.

Community legislation stipulates that all users within the European Union shall have access to universal services at reasonable cost and acceptable quality. The Directive imposes no restrictions with respect to the technology used, i.e. the service must be equally accessible via wired or wireless technology. The subscriber connection must support the use of both plain old telephone services and Internet services, which are delivered at speeds compatible with the subscriber connections used by the majority of the population.

The objectives of the Communications Market Act are to promote the provision and use of services within communications networks and to ensure that communications networks and communications services are available under reasonable conditions to all telecommunications operators and users throughout the country. A further objective of the Act is to ensure that the opportunities available for telecommunications in Finland accord with the reasonable needs of users and that the opportunities are competitive, technologically advanced, of high quality, reliable, safe, and inexpensive.

Universal service regulation

The Communications Market Act defines communications service as an activity where a service operator transmits, distributes or provides messages in a network. The

services are offered in the commercial communications marketplace, yet access is ultimately guaranteed by means of public regulation. The concept of *universal service* is particularly important here. Universal service refers to the provision of telephone services in a fixed location and to the provision of directory enquiry services and directories. The object and purpose of universal service regulation is to guarantee access to basic services in the communications market, regardless of users' geographical location, even when commercial services are not available. The value chain in communication service provision is divided between the network operator and the service operator, both of which can be obliged under the EC Directive to provide a universal service.

The universal service obligation used to include a subscriber connection to a fixed telephone network. The provisions concerning universal service obligations in the Communications Market Act were modified in an amendment to the Act (70/2007) that took effect on 15 February 2007. The concept of universal service became even more technology neutral: the obligation is no longer tied to the fixed telephone network, but the universal service can be provided through any communication network. The purpose of the amendment was not to significantly change the user's position, who continues to have the right to the same basic services as before.

The legislative amendment also changed the procedure in which universal service providers are assigned. According to the old law, the universal service obligation followed automatically from the definition by the Finnish Communications Regulatory Authority that a telecommunications operator had *significant market power*. Every telecommunications operator with significant market power is subject to stricter regulation than other operators. If a telecommunications operator has significant market power in the fixed telephone network in a certain operating area, then in the old law it was not only subject to stricter regulation, but also required to provide universal services within that operating area. This meant the obligation to provide reasonably priced subscriber connections to the fixed telephone network in all the users' permanent places of residence and locations in the area concerned.

In other words, the new Act has severed the link between significant market power and the universal service obligation. In the future, the Finnish Communications Regulatory Authority (FICORA) will decide separately on assignments to the status of universal service operator. FICORA is required to assign one or more telecommunications operators as universal service providers if that is necessary to guarantee access in a certain geographical region. A universal service operator is not necessarily a company with significant market power, but any telecommunications operator that meets the Authority's criteria may be assigned as a universal service provider.

A telecommunications operator that is assigned as a universal service provider is required to provide users with reasonably priced access to subscriber connections to the public communications network at the user's permanent place or residence or location, regardless of the geographical region. No restrictions are placed on the technology used, but the subscriber connection shall allow outgoing emergency calls, outgoing and incoming national and international calls and the use of other ordinary telephone services. In other words, the requirements must be met even when universal

telephone services are provided through a mobile telephone network. Furthermore, the subscriber connection shall work flawlessly.

The Parliamentary Transport and Communications Committee observed in its memorandum (32/2006) that fixed telephone connections must be provided in areas where reliable emergency calls, for example, cannot be guaranteed via a mobile telephone network. If a mobile subscriber connection cannot be provided at the same level of reliability as a fixed landline, then the Committee agreed it cannot be considered an acceptable option.

It is my understanding that apart from these concerns of securing operational reliability, the legislation is intended to ensure citizens' access to services even inside buildings and in general to guarantee the same levels of technical quality and reliability that are provided through fixed landline connections.

The flawless operation of subscriber connections will ultimately be ascertained in ex post controls by the Finnish Communications Regulatory Authority.

Telecommunications notification and telecommunications subject to licence

A written notification of the intention to operate public telecommunications shall be submitted before operations begin. The actual provision of services to end-users (such as telephone subscriber connections or broadband connections) constitutes public communications that is subject to notification.

A licence granted by the Government is required to provide a network service that uses radio frequencies in a mobile network practising public telecommunications. The licence is needed both for constructing the network and for offering the network to telecommunications operators. The licence is granted for a fixed period of time, which can be no more than 20 years. The licence shall define the telecommunications operator's geographical operating area. In addition, provisions may be incorporated concerning the technical characteristics of communications networks or the efficient use of frequencies. Examples mentioned in the legislative materials include the condition that operations are started up by a certain date, or that the networks have a specified geographical coverage.

The Communications Market Act specifies quality requirements for communications networks and communications services. The technical quality of telecommunications shall be of a high standard. For instance, the networks and services are expected to withstand normal, foreseeable climatic, mechanical, electromagnetic and other external interference. Access to emergency services shall be secured as reliably as possible even in the event of network disruptions. Furthermore, the Act lists a whole range of other factors that must be taken into account in the design, construction and maintenance of communications networks and communications services. Operating licences may also specify more detailed requirements.

Current operating licences contain only very few provisions regarding the quality of the service provided. Now that the mobile phone has become the people's phone, it

might be necessary to lay down more specific conditions and in this way to ensure public access to universal services.

The terms of a licence may be altered during its validity with the licence holder's consent or otherwise if that is deemed necessary in view of technological development or essential changes in the conditions of the telecommunications operation that is subject to a licence. Licence holders and parties representing the telecommunications operators and users must be afforded the opportunity to present their views on any amendments made to the licence terms.

It is my understanding that the discontinuation of access to fixed landline services in certain parts of the country constitutes such a technological development that necessitates changes to the terms of operating licences. In this situation, therefore, amendments to licences would be possible even without the licence holder's consent.

Orders and decisions by the Finnish Communications Regulatory Authority

The Finnish Communications Regulatory Authority (FICORA) may issue orders concerning the quality and compatibility requirements for communications networks and communications services. These orders may relate to the structure of a communications network, the performance capacity of a communications network and service, network security and the absence of interference and other technical requirements comparable to those set out in the Communications Market Act.

FICORA has issued several such orders; examples include the order on the performance capacity of communications networks and communications services and the order on the electronic protection of communications networks. In addition, the Authority has issued an order on the power supply for communications networks, including specifications for the systems used to supply power to the base stations of mobile communications networks. This order is currently being updated.

FICORA is required by law to declare a telecommunications operator to be one with significant market power if, based on its market analysis, it is found in a particular market to exert such economic influence, either alone or together with others, that it can largely operate independently of competitors, consumers or other users.

In 2004, FICORA identified 42 telecommunications operators as holding a position of significant market power in the fixed telephone network. Examples include the Authority's decisions issued on significant market power over household customer access to a fixed telephone network. Market products include telephone subscriber connections offered to household customers in a fixed telephone network, such as analogue and ISDN connections.

Operators that in practice are the sole providers of landline telephone services to private household customers in their area, are declared by FICORA to be operators with significant market power in that particular market. Having issued its decision on significant market power, FICORA shall impose on the operator a set of separately

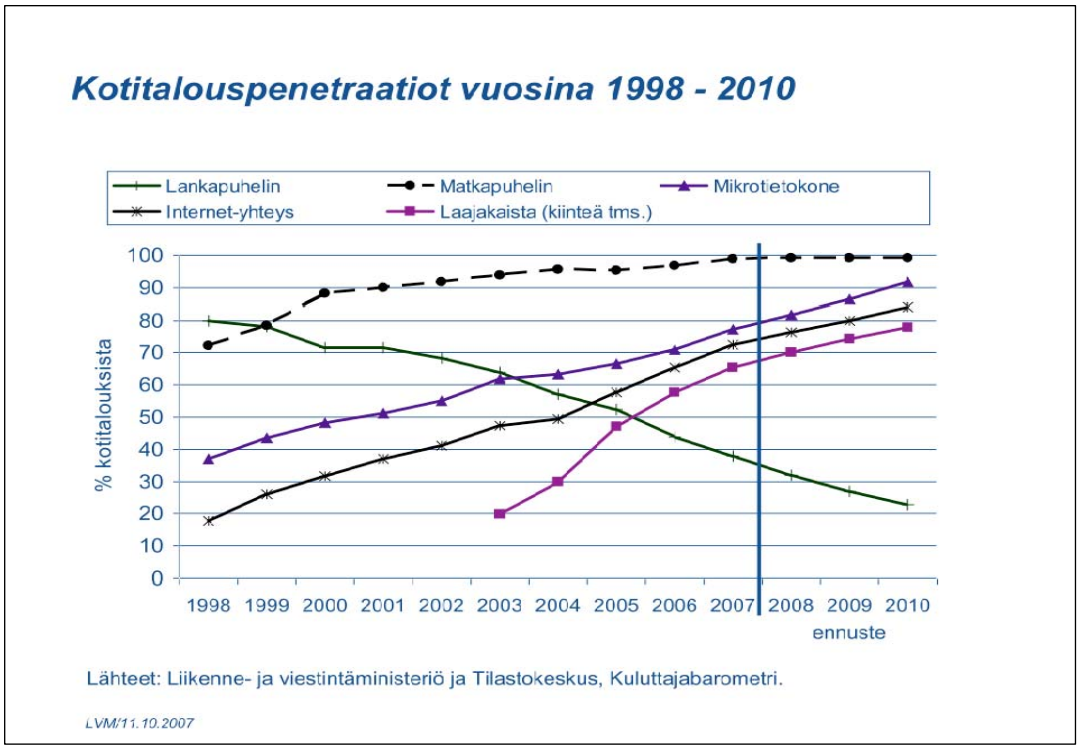
specified obligations with a view to eliminating barriers to competition or to promoting competition.

Following the entry into force of the most recent amendment to the Communications Market Act, the rights and obligations of telecommunications operators set out in the old law will remain effective until FICORA has completed its first assessments under the new Act for the assignment procedure. FICORA is currently in the process of preparing decisions on the designation of one or more telecommunications operators as universal service providers, as specified in the amended Act. It expects to be in the position to issue its decisions by the end of 2007.

It is my understanding that the Act in force confers on the Finnish Communications Regulatory Authority extensive power to issue norms that will ensure an adequate standard of telephone services even in the situation where landline telephone services are not available throughout the country.

AVAILABILITY OF COMMUNICATIONS SERVICES

Figure 1: Household penetration of communications media in 1998–2010



[KUVION TEKSTIT: Household penetration in 1998-2010 ; Landline phone ; Mobile phone ; PC ; Internet connection ; Broadband (fixed or other) ; % of households ; forecast ; Sources: Ministry of Transport and Communications, and Statistics Finland Consumer Barometer]

The aim and purpose of the Communications Market Act is to ensure that communications networks and communications services are available under reasonable conditions throughout the country. The regional availability of services is a particularly important communications policy objective. Furthermore, the services provided should technically satisfy users' needs in all areas. However, the legal right to a subscriber connection is limited to the person's or company's *permanent place of residence or business*. In other words the law does not grant the right to a subscriber connection at a holiday home, for instance.

The landline telephone was long the most common medium of speech communication. By the 1990s virtually all households were in the position to acquire a landline phone: penetration reached a record high of over 95 per cent in 1990.

With the growing popularity of the mobile phone, the landline penetration rate in households has gradually begun to fall back. Today, over 96 per cent of Finnish households have the use of one or more mobile phones, at the same as the proportion of households with a landline has dropped to below 40 per cent. The prevalence of landline phones has decreased much faster than in other advanced countries. It is expected that this trend will continue at about the same rate in the foreseeable future. If this scenario is correct then the landline penetration rate will drop to less than 20 per cent of households by 2011.

More than 60 per cent of Finnish households have a broadband connection. According to the Communications Market Act the subscriber connection shall support not only ordinary telephone services, but also an appropriate *Internet connection*. The Act provides no definition of what is meant by an appropriate Internet connection, allowing for a measure of flexibility as the concept changes over time with technological advances and evolving user habits. However, an appropriate connection does not mean the fastest technology available, for instance the fastest broadband connection. In this context it refers to a subscriber connection that provides satisfactory access to basic Internet services, such as e-mail and web browsing. Based on the rules and regulations currently in force, the requirement of a universal Internet service is satisfied by a GSM connection, which according to the definition commonly in use today is not a broadband connection (e.g. EU minimum 256 kbps).

Over 96 per cent of Finnish households today live in an area where a fixed broadband connection (landline telephone network and cable television network) is accessible. It is estimated that 2–3 per cent of households live in areas where broadband can only be provided via mobile media or other wireless technologies. Wireless technologies can also be used to provide broadband connections to holiday homes that do not have access to a landline network.

QUALITY AND USABILITY OF COMMUNICATIONS SERVICES

The Communications Market Act stipulates that communications services shall be of a high quality, reliable and safe.

Usability means that data, systems and services are readily accessible to all those who are entitled to them.

During the past year the number of significant faults per one million subscriber connections was 22 in fixed and 28 in mobile telephone networks.

In principle most services for special needs groups available via fixed networks can also be provided through mobile networks.

Quality

A central objective of the Communications Market Act is to ensure that the opportunities available for telecommunications in Finland are of a high quality, reliable and safe. Factors that impact the quality of the service include the time that it takes to deliver a subscriber connection, the number of faults per subscriber connection, the fault repair time and the number of failed calls. Service reliability and safety include the technically *flawless* operation of services. In addition, service safety includes the level of *privacy protection and information security*. Telecommunications operators are required to ensure the information security of their services.

The Communications Market Act lists a number of quality requirements that shall be taken into account in the planning, building and maintenance of public communications networks and communications services. It is stipulated that the technical quality of telecommunications shall be of a high standard; that the health and assets of users and other persons shall not be put at risk; and that the networks and services shall not cause unreasonable electromagnetic or other interference.

Another aspect of the quality of communications services is the requirement that they shall satisfy the needs of disabled and other special needs groups.

Wherever possible, the reliability and safety of services shall be guaranteed in all circumstances. Telecommunications operators have an obligation to prepare for *exceptional circumstances:* they shall ensure that their activities will continue with the minimum disruption even in the exceptional circumstances referred to in the Emergency Powers Act (1080/1991) and in disruptive situations under normal circumstances. This may have implications to the operator’s choice of technology for the provision of services.

Usability

Usability means that whenever necessary, there is free and unhindered access to data, systems and services for all those who are entitled to use them. The usability of communications networks may be impacted by faults and interference, such as technical malfunctions, intentionally caused problems such as information security attacks or disruptions in electrical distribution. Service usability is also dependent on the technical characteristics of the communications network.

During the period between 1 January 2006 and 30 September 2007, there were 42 significant faults and disruptions in the fixed telephone network and 161 in the mobile network. In other words, the total number of significant faults or disruptions in the mobile network is around four times greater than in the fixed telephone network. These figures do not include minor faults and defects where an individual hub of a fixed telephone network or a base station in a mobile network is down.

At year-end 2006 there were 1.92 million landline subscriber connections and 5.67 million mobile subscriber connections. Calculated per one million subscriber connections, the number of faults in the fixed network came to around 22 and in the mobile network to around 28.

The number of technical faults and disruptions in broadband networks was more than twice as high as in fixed telephone networks. This is largely explained by the occurrence of information security problems, which are far more common in broadband than in fixed landline or mobile networks. FICORA maintains records on customer contacts by type of problem reported, but the statistics do not separately identify information security problems that impact the usability of the broadband network.

The actual local loop in a fixed telephone network (often a wire on a telephone pole) is more vulnerable than the radio based subscriber connections in a mobile network, exposed as it is to falling trees and other mechanical hazards. Mobile networks are not affected by these kinds of hazards. On the other hand, telecommunications operators have routed increasing numbers of subscriber connections underground, which has helped to reduce their susceptibility to other than digging operations. However, this is still uncommon in the most sparsely populated regions that have the longest and most vulnerable subscriber lines that incur the heaviest maintenance costs -- and that are faced by both price hikes and the threat of service closure.

As the profitability of fixed telephone services continues to suffer and the maintenance of subscriber connections receives ever less attention, the number of faults and disruptions is bound to increase relative to the number of subscriber connections in use.

Broadband subscriber connections using the existing fixed telephone network (ADSL) are equally vulnerable to the problems described above as telephone services.

The higher absolute number of faults and disruptions in the mobile network is also explained by the technical complexity of the network as compared to the fixed telephone network. Quite simply, the mobile network has more points and devices that are vulnerable to faults than the fixed landline network, which has a more straightforward structure.

Power supply

In the event of failure or disruption in electrical power supply, fixed telephone networks and the most important switching exchanges and base stations in mobile networks can continue to operate for up to a few days. Landline phones can be used without separate power supply. Broadband use via a fixed landline connection, on the other hand, requires constant electrical supply to the ADSL modem and PC.

The maintenance of system performance during power cuts presents a much greater challenge in the case of mobile network base stations outside densely populated areas, and to some extent in hubs of fixed telephone networks, and will require some investment. In principle, power cuts affect fixed telephone networks and mobile networks in the same way, i.e. they are mainly reflected in the operation of the access network. Telephone and broadband network hubs and mobile network base stations simply cease to function when the power supply is cut and when the capacity of any backup system (e.g. batteries) runs out.

FICORA's regulations specify the same minimum requirements for power supply to both fixed network hubs and mobile network base stations. The basic requirement is a three-hour battery back-up plus access to a back-up generator system. In practice, however, there are better emergency electrical back-up systems in place for fixed telephone networks, for both historical and partly for technical reasons. Fixed network hubs require less electricity than mobile network base stations. Often, however, the equipment and hardware for fixed and mobile networks are installed in the same premises and rely on the same back-up power supply. In premises that house all three technologies, the mobile network base station uses the most electricity and the back-up capacity is designed accordingly. In the event of a power cut all networks will begin to run out of electrical power within three hours, and fixed network services will not operate any longer than mobile network services.

FICORA keeps no statistics on the frequency of such disruptions in electrical power distribution that have impacted the usability of different communications networks. The Authority is currently in the process of developing procedures for reporting faults and disruptions with a view to gaining more accurate information on the causes and effects of different faults.

Another power supply factor that has a bearing on the usability of the fixed telephone network is that landline phones run off the electricity in the telephone line. Mobile terminal devices, by contrast, do not get the power they need from the network. In practice, however, modern batteries are so efficient that this difference is often irrelevant to service usability. Broadband connections, on the other hand, are far more susceptible to disruptions in electrical power supply than telephone services, since the terminal using the broadband connection usually relies on mains electricity.

Special needs groups

The requirements of special needs groups and elderly users have been addressed by a working group on barrier-free communications convened under the auspices of the Ministry of Transport and Communications; working group members also included representatives of the Finnish Federation for Communications and Teleinformatics; the Finnish Communications Regulatory Authority; the Finnish Consumer Agency; the Finnish Federation of the Hard of Hearing; the Finnish Association on Intellectual and Developmental Disabilities; the Finnish Association of the Deaf; Nokia Oyj; the Finnish Federation of the Visually Impaired; the Research and Development Centre for Welfare and Health Stakes; and the Ministry of Social Affairs and Health. The views put forward below are based on information obtained from members of this working group.

As far as special needs groups are concerned, the usability of communications networks is a function of (1) services specially designed for them; (2) the features and characteristics of terminal devices in different networks; and (3) the auxiliary devices available for satisfying their special needs.

The most important service among those that are exclusively available via fixed telephone networks is the *text telephone.* This technology is becoming outdated and its use is decreasing. However organisations for the disabled consider real-time text telephone a useful service and have called for it to be developed and updated on the basis of IP technology. The European Information and Communication Technology Association EICTA has provided the European Commission and interest groups a blueprint for how this could be done. The text call transfer service in Finland currently handles over 2,000 calls a month, down considerably from a one-time high of 10,000 calls. It is believed that users today include large numbers of elderly and marginalised people.

The safety phone is a system that comprises a telephonic device (alarm button, speaker phone), an alarm reception centre, possibly a home visitor, as well as mechanisms for monitoring service use, invoicing, etc. There are some 30,000 security phones in use around the country. Customers include disabled and elderly people. As a rule the system operates only on landline phones. If it were to be updated and switched over to a mobile network, that would require changes to alarm reception centres as well. There are some safety phones in use that are connected to mobile phones. GSM adapters are available for some of the systems currently in use, but the costs would be in the region of 200–300 euros per user. A changeover to VoIP is not yet feasible for safety phones because one of the most crucial aspects of this system is the identification of incoming calls, which is not yet possible with VoIP. Furthermore, VoIP may cease to function during a power cut.

Remote interpretation via mobile networks is only just beginning to start up, and indeed it will still be some years before the service is operational throughout the country, 24 hours a day even via fixed networks.

There are also connections via fixed telephone networks from private homes to *emergency alarm centres.* As yet no such systems are available via mobile networks.

In principle most systems that operate in fixed telephone networks can also set up in mobile networks. There are still systems that do not yet work in mobile networks, but it is clear that this situation will not continue for very long. The emphasis in service development is now shifting towards mobile communications, and new mobile based services and applications for special needs groups are appearing all the time.

The replacement of speech by text or multimedia messages (including 112 emergency text messages) is a particularly useful service for some special needs groups. Furthermore, some mobile phone models support symbol-based SMS messaging (Imagetalk). A whole host of SMS-based services are currently in use, including notification of medical appointments, various reminders, etc.

Furthermore, mobile media offer some features that are not available on landline phones and that might be useful to special needs groups. These features include positioning outside the home, vibrating alarm, voice-based telephone user interface, address book and caller identification, instant messaging services (Messenger etc.), neck-loop receivers that transmit sound directly to a hearing aid without interference from environmental noise sources, text size enlargement, voice guidance and connections to Braille terminals for the visually impaired.

Development of the traditional landline phone has virtually ceased, which is also reflected in the services and terminals available for special needs groups. At the same time efforts are being stepped up to develop and improve mobile and VoIP networks and dedicated services: these efforts are expected to translate into better, more extensive and more affordable services to special needs groups as well. It is noteworthy that in its new package of directives, the European Commission will be outlining measures to facilitate service access and use for special needs groups, which is not possible in the case of services provided over the fixed telephone.

Communications links are used not only for making telephone calls, but also for such uses as *remote diagnosis and monitoring of medical conditions*. In the future, IP technology and networks will provide the best support for these and other similar applications and allow for greater diversity in communications. In services designed for the safety of special needs groups and provided via broadband, power cuts may present a major problem as the network terminals do not usually function at all without mains electricity.

Services for special needs groups do not represent significant business for telecommunications operators, either in terms of business volume or profitability. However, when considered from the point of view of communications policy and the universal service ideology, it is paramount that in the ongoing technological revolution, a high standard of services is guaranteed to special needs groups.

PRICING OF COMMUNICATIONS SERVICES

As a general rule, it is cheaper to make phone calls using a mobile than a landline phone. The difference is more pronounced the smaller the number of monthly calls because on average, the fixed monthly charge for landline subscriber connections is much higher than for mobile subscriber connections.

FICORA has the authority to intervene in the telecommunications industry's retail pricing where this is considered necessary to maintain reasonable pricing.

Telephone costs are largely dependent on the way that the telephone is used. Initially, landline and mobile phones were used in very different ways. However, differences in the duration of phone calls, for instance, have continued to decrease. In 2006, the average duration of a landline phone call was 4.2 minutes compared to 2.8 minutes for mobile phone. The difference in the total number of minutes spent on the phone was also quite small, i.e. around eight minutes a day for landline phones and around six minutes for mobile phones. On average, people make a couple of phone calls a day from both landline and mobile phones. There are large numbers of people who only use the phone very little.

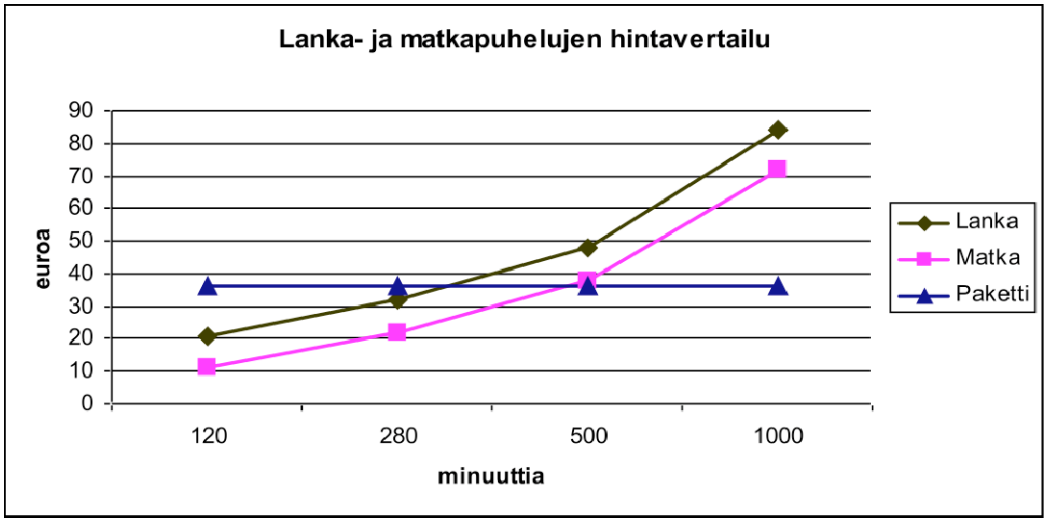
In 2006, 48 per cent all landline phone minutes used were local calls, 10 per cent were long distance calls and 17 per cent calls to a mobile network. Other calls, including calls to business numbers and national service numbers, accounted for almost one-quarter of the total. Foreign calls accounted for no more than two per cent.

Prices of landline calls

As a general rule, fixed network landline calls are more expensive than mobile calls. The difference is more pronounced the smaller the number of calls because the fixed monthly charge for landline subscriber connections is much higher than for mobile connections. Weighted by the number of subscriber connections, the fixed monthly charge for a landline subscriber connection at the beginning of 2008 was around 12 euros, compared to just 1–4 euros for a mobile subscription.

In 2003–2006 the average monthly charge for a landline phone has remained more or less unchanged.

Figure 2: Comparison of monthly costs between landline and mobile phone calls with rising number of minutes spent on the phone



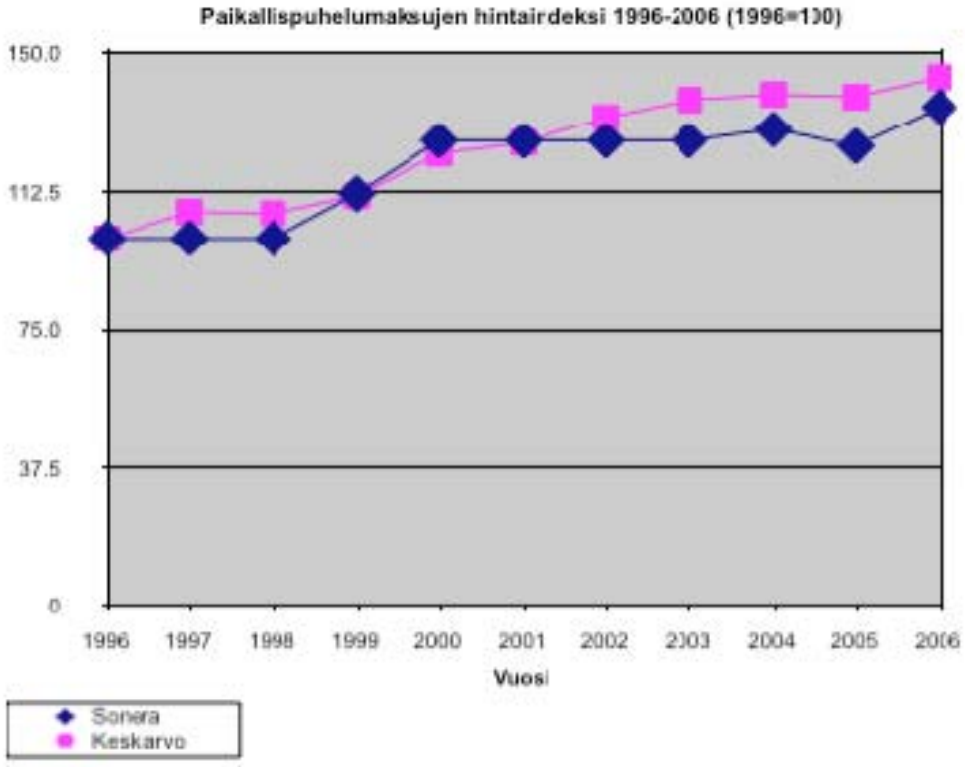
[Price comparison of landline and mobile calls; euros; landline; mobile; package; minutes]

(The calculation is based on the cheapest normal rate for mobile calls at 6.9 cents/minutes, for landline calls on the average rate for local calls at 10.5 cents/call plus 1.5 cents/minute. 80 per cent of landline calls are to another landline phone, the rest to mobile phones. The average duration of phone calls is 4.2 minutes. Source: Telecom Consulting Kangas)

Examples of price increases in landline charges

Over the ten-year period from 1996 to 2006, the basic charge for a fixed landline subscription with TeliaSonera increased moderately in line with average inflation. On the other hand the operator's charges for phone calls have been higher than average. TeliaSonera put up its monthly fees for a landline subscription as from 1 September, 2007, which primarily affected the less than 100,000 private consumers living in sparsely population regions. According to TeliaSonera the majority of their landline customers were not affected by this increase in monthly fees, as only some five per cent of the Finnish population live in sparsely populated regions. On average the operator says the monthly fee will be rising by 3.95 euros. Prior to the price hike the monthly fee for sparsely population regions was 11.77–15.47 euros, as from 1 September 2007 they will rise to 16.20–21.50 euros. This represents a price increase in monthly fees of almost *40 per cent*.

Figure 3: Price index for local call charges 1996–2006



[Price index for local call charges 1996-2006; Sonera; average; Year]
Source: Telecom Consulting Kangas

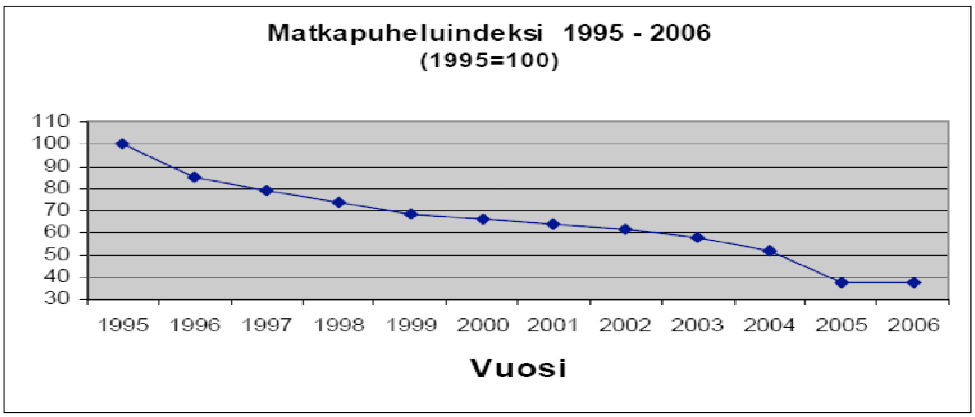
Prices for mobile phone calls

At the beginning of 2007 typical monthly fees for mobile subscriptions, excluding charges for phone calls, were 1–4 euros. The past few years have seen an increase in so-called package subscriptions in which the fixed monthly fee includes both the basic monthly charge plus a certain number of minutes of call time. The cheapest package subscription per minute came in at 3.58 cents/minute (Saunalahti 17.9 euros/500 min or 35.8 euros/1,000 min).

In connection with the price increase announced in autumn 2007, TeliaSonera launched a new package subscription (“Puhe 350”) in which calls cost 5.68 cents per minute (19.90 euro/350 min). This comparison does not take into account start-up fees for mobile calls, which are not charged either in the above-mentioned package subscriptions if the allocated minutes are not exceeded, or in many other old mobile subscriptions. Judging by comments made in the media, start-up fees have only little impact on the overall costs of mobile phone calls.

Prices for mobile phone calls have continued to fall since 1995. During 1995–2004 the average price per minute dropped by 7 per cent a year. In 2005, the price of mobile phone calls fell by over 27 per cent.

Figure 4: Price index for mobile phone calls 1995–2006



[Price index for mobile phone calls 1995–2006; Year]

Source: Telecom Consulting Kangas

Broadband prices

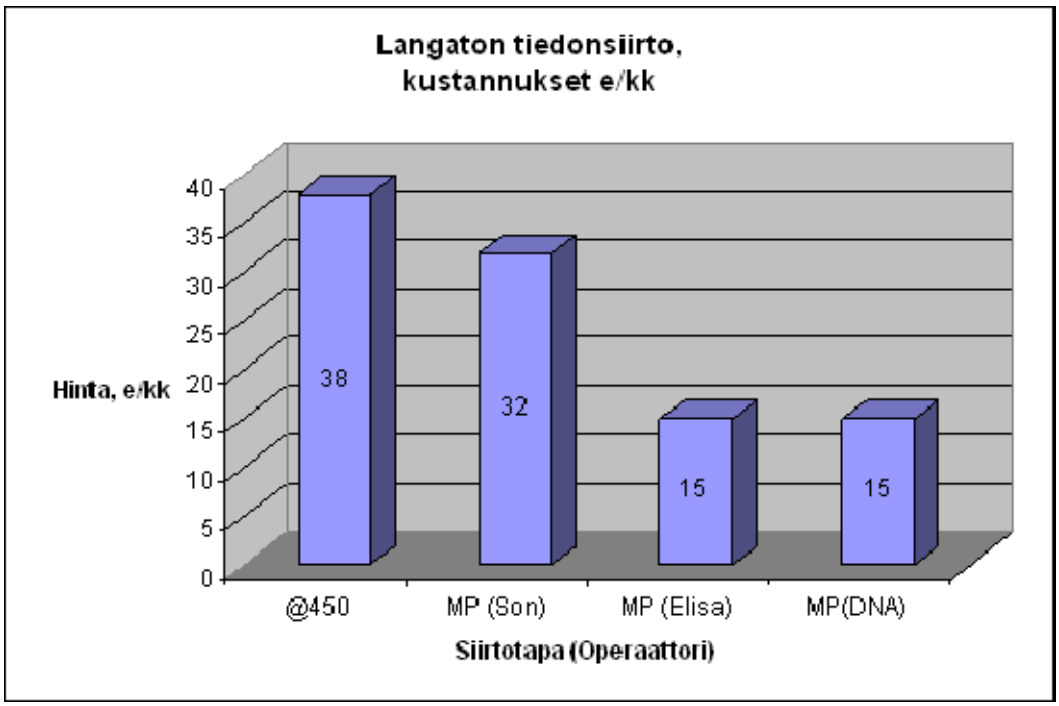
Prices of broadband subscriptions are largely dependent on local competitive market conditions. For instance, in August 2007 monthly subscription prices for a 1 mbps connection in the telephone network in Helsinki, Loviisa and North Karelia ranged from 23.90 to 36.90 euros with TeliaSonera and from 24.90 to 33.00 euros with Elisa. The price quoted by local Finnet operators in Loviisa was 33.90 euros and in Sotkamo 33.00 euros.

In Loviisa, the local operator (LPO) quoted a monthly price of 33.90 and in Kajaani (KPO) 33 euros (KPO's price for a cable subscription was 29 euros per month).

M&P Systems, a service operator on Digita's network, provides a wireless 450 broadband connection at 38 euros (512 kbps) or 48 euros (1024 kbps) per month. TeliaSonera has announced the launch of its own 450 connection in December 2007.

An Internet connection via telephone modem costs about one euro per hour. In addition, the user is separately charged a monthly fee that is typically around eight euros. On average, this means that users who spend one hour a day on the Internet via a telephone modem pay 38 euros a month for their connection. The Figure below illustrates some alternative wireless Internet connections in which the user's costs are no more than 38 euros per hour. All of them support higher connections speeds than can be achieved by modem.

Figure 5: Examples of monthly cost of wireless data transfer



[Wireless data transfer, costs euros/month; Price, euros/month; Operator]

In sum then, the costs of using a mobile phone are generally speaking lower than the costs of using a landline phone. The difference is even more pronounced among infrequent phone users. A noteworthy exception is formed by calls to national business numbers, in which the mobile phone is a much more expensive medium. Mobile calls abroad are also more expensive than landline calls, because the price additionally includes international phone charges.

Price regulation

One of the aims of the Communications Market Act is to ensure that telecommunications services available in Finland are inexpensive.

In order to ensure efficient competition, FICORA has the authority to prevent a teleoperator with significant market power from charging unreasonable retail prices. However, in the commercial telecommunications market this kind of forceful regulatory intervention is only intended as an exceptional measure to safeguard users' interests. As yet, FICORA has not had to impose any such retail price restrictions or obligations on teleoperators with significant market power.

The situation is somewhat different under the new rules concerning universal service provision. The new Act requires that FICORA monitors the prices charged by teleoperators it has assigned as universal service providers and compares them with the prices of other communications services. In practice, the monitoring of universal

service prices requires monitoring both retail prices and the costs incurred from performing the duties and obligations assigned to universal service providers.

A telecommunications operator assigned as a universal service operator in telephone services is required to provide, at a reasonable price and regardless of the geographical location, a subscriber connection to the public communications network at the user's permanent place of residence or business. Provisions concerning the reasonable cost of universal cost were not changed in connection with the legislative amendment.

According to the preamble to the Communications Market Act, a reasonable price means one that from the *average user's point of view* is reasonable. This does not entail that the price should always be the same, regardless of the connection's geographical location and its costs. The telecommunications operator is required to meet all reasonable requests concerning the subscriber connection. It follows that the price cannot be unreasonable from the telecommunication operator's point of view either. The Act does not require by default that the telecommunications operator shall provide its services below cost. FICORA monitors pricing to make sure it is reasonable and has the authority to intervene if it is not.

According to the new regulations of the Communications Market Act, FICORA is required to calculate the net costs of universal service provision if it is evident that this service constitutes an unreasonable financial encumbrance to the universal service operator and if the operator so requests. Net costs of universal service refer to the costs incurred in service provision that the universal service operator cannot cover through revenue from the service.

The part of the net costs constituting an unreasonable financial encumbrance shall be compensated to the universal service operator from state funds, if the operator so requests. The final decision on compensation rests with the Ministry of Transport and Communications. Low net costs would not necessarily entitle to compensation as laid out above. A universal service operator might be required to provide *a universal service at a loss* if that is not unreasonable in view of the operator's overall financial standing. In this connection it might also be possible to consider, for instance, whether the compensation could be reduced or even refused altogether if the operator stands to reap savings from the closure of a fixed telephone service.

FICORA thus has the authority to intervene in the retail pricing of universal service operators with a view to ensuring that their prices are reasonable.

CONCLUSIONS AND COMMUNICATIONS POLICY PROPOSALS

The leading idea of Finnish communications policy is to encourage the supply of new, high-quality and inexpensive communications services and to guarantee access to basic communications services throughout the country. Regulatory measures have always aimed at securing technology neutrality, recognizing that the main concern for end-users is the standard of service provided, not the technology with which it is provided.

The motive behind the recent universal service amendment to the Communications Market Act was to ensure continued access to basic communications services throughout the country, but to allow for the use of any technology in service provision, for instance via mobile rather than landline networks. This legislative endorsement is a clear market indication of how the mobile phone is turning into a people's phone.

The change is not reaching all citizens at the same time or in the same way, but the process is still continuing to unfold. Ultimately this is a matter that has to do with every citizen's right of access to basic services. In this process it is paramount that a critical stance is taken on every change that detracts from existing services available to citizens or that undermines the quality of those services.

Access to communications services is a fundamental parameter that cannot be bypassed where universal services are concerned. According to the new Communications Market Act, the minimum requirement for every permanent place of residence and business is that the subscriber connection delivered must be usable for speech and data transfer. These services must work flawlessly, which among other things means inside the building as well. This is necessary for the security and safety of citizens, in the safeguarding of which the telephone is an important medium. For instance, it must be possible to make emergency calls from inside every dwelling.

With respect to the *usability* of mobile networks, electrical power supply requirements and services for special needs groups, the minimum acceptable quality must be set at the same level as that provided through a fixed telephone network. In spite of the ongoing technological changes, children and the disabled, for instance, must continue to have access to suitable communications services.

The mobile phone is cheap to use. In the future it can be used to guarantee reasonably priced communications services throughout the country, including sparsely populated regions. However, this requires measures to control universal service provision and to make sure that there is fair price competition in all parts of the country

Communications policy should seek to control service standards, not technology

Service provision in the Finnish communications market is based primarily on commercial competition. The aim and purpose of communications policy is to make

sure that the services offered in the marketplace are of a high quality and reasonably priced. For the consumer and for business and industry, what matters most is the quality of the service, not the use of a certain technology. This is why communications policy must continue to accept that services are provided by using alternative technologies. Ongoing advances in technology may lead to the discontinuation of fixed telephone services at least in some parts of the country. However it is not the business of communications policy to try and stop that from happening, provided that service standards can be maintained through other technologies. *Regulation should not be applied to steer the development of technology, but it should be aimed instead at ensuring a desired standard of service*. Rather than focusing on technology, therefore, communications policy must concentrate on ways of ensuring a desired standard of service and on how that is defined.

It remains a useful starting-point that a high standard of service and reasonable prices can be achieved through competition in the marketplace. Regulation by the authorities shall be avoided unless that is necessary to secure service standards or reasonable prices. However, this kind of regulation may be needed in order to secure adequate service standards, access and usability for the new people's phone. The attitude taken by telecommunications operators to service development will prove absolutely decisive. If their market-driven strategies undermine the quality of services offered or adversely affect consumer interests, then regulatory measures must be immediately and firmly implemented.

Now that the GSM mobile phone has affirmed its position as the new people's phone, the standard of its services must be reassessed in a new light. In particular, network coverage and availability may require considerable investment by telecommunications operators. On the other hand, the absence of any technological constraints in universal service provision does offer them significant business advantages.

Powers of the authorities

The changes now unfolding in the communications market constitute the kind of essential change in operating conditions that legislators had in mind when drafting Section 11 of the Communications Market Act, i.e. changes on the grounds of which the terms of telecommunications licences may be altered if that is considered necessary for special reasons. In assessing whether or not this is necessary, one may consider the steps taken by the telecommunications operators themselves to ensure GSM availability and usability and to maintain reasonable pricing.

Broadband services provided through a fixed network may be inferior to the services offered via wireless broadband, particularly in terms of availability and speed.

The Communications Market Act affords the authorities considerable powers to intervene in undesirable developments in the marketplace. In particular, universal service regulation plays an important role in securing the availability and reasonable pricing of services. The competent authority in matters concerning universal service provision is the Finnish Communications Regulatory Authority, which is required to execute its authority with efficiency. FICORA is currently in the process of

implementing a new universal service system. Decisions taken by the Authority in the near future will have significant implications with respect to service availability and pricing.

The actions taken by telecommunications operators themselves and the regulatory measures taken by FICORA are changing the range of services available in the marketplace. It is possible, however, that these measures will not yet suffice to guarantee an adequate level of telecommunications services after the price increases in fixed telephone services and possible service closures. The number of citizens affected by lowered service standards will not be very high, but in line with the objectives of communications policy, access to services must be guaranteed to all.

Costs of additional obligations

Many of the necessary improvements to existing services can be accomplished by amendments to the law or operating licences, in which case telecommunications operators would carry the costs of the new obligations imposed on them.

Some of the necessary changes can be achieved by updating the definition of universal service. If it turns out that the costs incurred from the required measures are unreasonable from the telecommunications operator's point of view, then it would be necessary to apply the Communication Market Act's provisions regarding the funding of universal services in line with the EU directive.

It is in the telecommunications operators' own interest that they treat their customers well if fixed telephone services are closed down. I do not consider it desirable, nor indeed very likely in view of the last mentioned reason, that it be deemed necessary to impose obligations on telecommunications operators against their will so that the universal service funding mechanism is triggered. Furthermore, in the cases that have been in the public spotlight, the costs to the operators of maintaining fixed telephone services have been so high that the savings achieved from closing down the service would in my assessment be greater than the obligations proposed below.

If against expectations it proves necessary to resort to the funding arrangements set out in the law, the necessary funds could be drawn either from the public purse or allocated industry funding by sharing the net costs of universal service between electronic communications networks and service providers. A combination of both these funding arrangements is also possible.

Since telecommunications operators also stand to benefit from the discontinuation of unprofitable services based on old technology, they should be left to shoulder the responsibility for funding.

Communications policy proposals

Based on the foregoing, the communications policy scenario is one where the cost of fixed telephone services will continue to rise appreciably and where some customers will even be faced with service closures.

To ensure continued access to high quality and reasonably priced telecommunications services throughout the country, I propose the measures outlined below in the event that the measures taken by telecommunications operators themselves and the interventions by the Finnish Communications Regulatory Authority do not yield a satisfactory result:

Ensuring reasonable prices. In accordance with the provisions of the law, FICORA shall monitor the pricing of telecommunications operators with universal service obligations and where necessary take regulatory steps to ensure that their retail pricing remains reasonable.

Assessing the impacts of universal service regulation. Following the publication of its new norms on universal service provision, FICORA will by 29 February 2008 submit to the Ministry of Transport and Communications a detailed report on the application of universal service regulations and on the impacts of this regulation on the availability, usability and price of universal services.

Ensuring service standards. Based on the FICORA report and telecommunications operators' plans and commitments, the Ministry of Transport and Communications will conduct an assessment of the standard and pricing of telecommunications services by 30 April 2008.

> **Based on its assessment the Ministry will decide what changes are needed to telecommunications operators' licences, the law or other norms in order to ensure high service standards. The basic premise is that before the closure of any fixed telephone services to any customers, they shall first be offered replacements in the form of mobile phone and broadband services that meet the following 12 minimum requirements:**
>
> **1) Indoor coverage.** Mobile phone calls shall be possible inside the walls of all permanent dwellings of normal structure and in all business premises, without the user needing to purchase any additional equipment. If this cannot be guaranteed, the operator shall, at its sole cost, provide service access via some other technology.
>
> **2) Network electrical power supply.** Electrical power supply to mobile network base stations shall be backed up in such a way that services will continue to perform flawlessly even in the event of disruption for a minimum of three (3) hours. For base stations located outside densely populated areas, the minimum requirement will be increased to six (6) hours of flawless performance by 1 June 2010.

3) Power supply to terminal device. The telecommunications operator shall ensure that consumers have access to reasonably priced devices for recharging the batteries of mobile media from other than mains electricity sources in situations where the consumer's permanent dwelling does not have mains electricity.

4) Emergency calls. Emergency calls shall be possible from a mobile subscriber connection in a comparable manner to corresponding calls as from a landline phone.

5) Text message emergency number. Operators and the relevant authorities shall together set up a national 112 text message emergency number for use in the mobile network, specially designated for special needs groups.

6) Special needs groups. Telecommunications operators shall ensure that special needs groups have access to mobile network (GSM) terminal devices and services that can provide at least the same standard of service as the corresponding landline services.

7) Notification of closure. Consumers shall be notified of the closure of fixed telephone services at least one year ahead of time.

8) Other than permanent dwellings and business premises. In other than permanent dwellings and business premises, replacement telephone services and at least basic broadband connections shall be offered to customers in place of the services that are closed down, under terms and conditions approved by consumer authorities and FICORA.

9) Compensation. In accordance with the terms and conditions approved by consumer authorities and FICORA, consumers shall be compensated by the telecommunications operator for any devices and costs that are rendered useless by the closure of a broadband service provided via a fixed telephone service or fixed telephone network.

10) Compensation in connection with switchover to wireless broadband. In offering a wireless broadband service as a replacement for a fixed broadband connection that shall be closed down, consumers shall be compensated by the operator for costs incurred from any necessary additional equipment and arrangements in accordance with the terms and conditions approved by consumer authorities and FICORA.

11) Broadband speed. The basic national service standard for broadband is set at 1 mbps.

12) Publicly subsidized networks. Broadband connections built with public subsidies shall be maintained in accordance with the agreements signed by telecommunications operators.

Timetable. The necessary changes to existing regulations and operating licences shall be implemented so as to take effect from 1 January 2009. If telecommunications operators fail to commit themselves to maintaining a reasonable standard of services until the entry into force of the new regulations, it is proposed that the Communications Market Act is amended with immediate effect so that consumers/clients shall be notified of the closure of fixed telephone services at least one year ahead of time.

Extension of universal service obligations to network operators. By way of a separate policy measure, I furthermore propose that the universal service obligation be extended to apply to network operators.

Funding for universal service provision. If it transpires that the measures necessary to safeguard universal service provision require the introduction of universal service funding as set out in the law, that shall be implemented by a universal service fee or tax charged to telecommunications operators.