THE SWEDISH COMMITMENT TO BROADBAND BOTH IN THE CITIES AND IN THE COUNTRYSIDE

By Dr Arne Granholm, Special Adviser at the
Ministry of Industry, Employment and Communications, Sweden

Contents

SUMMARY OF SWEDISH BROADBAND POLICY

The Swedish Government takes the position that households and businesses in all parts of Sweden should have access to an IT infrastructure with high transfer capacity (broadband) within the next few years. The Government stand is based on the policy described in the IT Bill of March 2000, "An information society for all". The expansion of broadband will occur primarily via market channels. However, the state has an overall responsibility to ensure that the infrastructure is available throughout the country. Rural areas, including both small towns with less than 3000 inhabitants and more or less sparsely populated countryside areas, are the main parts of the country where the market will not be able to fund the expansion without assistance.

The Government and Parliament have therefore decided on a number of measures aiming to stimulate and facilitate the expansion of infrastructure in these parts. A total of SEK 5.6 billion of government money will be allocated to the support programme. The cost of a full expansion of optofibre in the rural areas is estimated at around SEK 40 billion, which means that the government subsidy will probably contribute to infrastructure only in some parts of the countryside (the support programme may also cover techniques other than optofibre).

The programme has just started in the sense that all government decisions concerning the conditions for the support were finalised in July this year. The municipalities ("local governments") of Sweden are the authorities that are intended to administer the subsidy. The county administrative boards will make the formal decisions. Sweden has 289 municipalities, the vast majority of which include substantial rural areas. The government subsidies are intended to be advanced primarily to net builders operating in the private market, but if private contractors are not interested the municipality can build the infrastructure itself. A prerequisite for action is that the municipality has first set up a local IT infrastructure programme. Many municipalities are now working on such IT infrastructure programmes. The county administrative boards have so far only received a few applications for support. The Government intends the support period to continue until 2005.

FUNDAMENTAL CONCEPTS

OH 1
(Tree)

The inclusion principle

The Swedish Parliament has declared that the goal of Swedish IT policy should be to make Sweden the first country in the world that is an information society for all. This principle that all should be included is rather typical of Swedish political life. It combines a philosophy of solidarity with practical thinking: if everyone has a computer and can use it, this will constitute a sound market base. Broad competence also provides a good basis for producing the necessary supply of IT specialists.

However, an information society that includes everybody requires investments in education and infrastructure. Building up the physical infrastructure in particular is a costly matter in countries like Canada and Sweden, for reasons obvious on the map. Sweden's 20 inhabitants per square kilometre can be compared with 335 in Japan and 230 in Germany.

IT and growth

The debate often implies a positive correlation between IT infrastructure and growth, and especially between broadband and growth. Empirical evidence in recent years has shown that more use of IT leads to a higher growth rate[1], but we have yet to see any macroeconomic studies demonstrating a corresponding relationship between broadband infrastructure and growth. Nor can we claim that scientific proof exists of the growth benefits of spreading the latest technology throughout the country, even in its commercially least attractive, sparsely populated parts. But the Government is convinced that the future survival of these parts of Sweden depends on their having access to this technology.

Infrastructure levels

By infrastructure we mean the underlying and often shared structure that is used to provide a service to a customer. Here our focus is on the technical and physical part of the infrastructure, and especially on its most fundamental components:

2. OH
(5 levels)

[1] See *IT – an Engine for Growth*. Ministry of Industry, Employment and Communications. Ds 2000:68. (In English).

- The cable and antenna level (the line level)

“Dark fibre” is a cable without transmission equipment (transfer equipment). The dark fibre concept is a central part of the Swedish IT infrastructure policy. Building an infrastructure extending to all houses in Sweden and consisting solely of optofibre would cost about SEK 57 billion. The bulk of this cost would be incurred in building access nets to the scattered population in the vast countryside. This is not a very attractive commercial prospect for a private investor, especially if the nets are required to be open to all operators and not used exclusively by a single operator. This is the fundamental problem that must be overcome if Sweden is to create a nationwide infrastructure.

- The channelisation level

Different types of channelisation should naturally be a central concern for local government policy. We have, however, not yet succeeded in getting a clear picture of where available channelisation already exists or in finding ways to stimulate the municipalities to supply channelisation.

What is broadband?

What does broadband really mean? There is no officially accepted definition, not even in the IT Bill. Broadband is officially called “IT infrastructure with high transfer capacity.” Both concepts are commonly used.

The Swedish IT Infrastructure Study has defined broadband as a transfer capacity for telephone and data communication of at least 2 Megabits per second (Mbps) both to and from the user. In official contexts, however, the Government uses the formula "capacity to transmit multimedia services with good technical quality" to denote broadband capacity.

INFRASTRUCTURE POLICY AND DEVELOPMENT

The heritage

The telephone monopoly was abolished in 1993. The telecom authority became a company, Telia, albeit wholly owned by the state, and a special regulatory authority was established to monitor the deregulation process. Last year privatisation of Telia started, though the Government still owns 70 per cent. Almost all households have access to a fixed telephone line.

Further, the mobile telephone infrastructure now extends to give a potential coverage of more than 95 per cent of the Swedish population. 58 per cent of the population has a mobile telephone. The 3rd generation of mobile telephony, UMTS, which initially has a normal capacity of some hundred kbit/s, is now being developed. Licences have been awarded to 4 operators, and though they pay a rather low license fee, the competition for licenses has resulted in commitments to cover almost 100 per cent of the population. The former state monopoly was not one of those awarded a licence, which sparked intense debate in Sweden.

A backbone fibre optic network was being developed as early as the 1980s by the state-owned telecom authority, and paid for to a large extent out of tax revenues. After the deregulation, telecom infrastructure investments have been made by a number of net owners – Telia, the National Rail Administration and the National Electricity Grid have expanded the capacity of the backbone network (the cable network). Purely private operators, such as Utfors, have also built backbone networks.

The expansion of the public urban dark fibre network has also begun in earnest. Companies owned by local governments play an important role in this field. A company mainly owned by the local government of Stockholm, Stokab, has achieved the largest expansion and recently had about one third of the total cable length of all Swedish municipality-owned nets.

3. OH

(Survey)

In total we calculate that on national, regional and urban net levels we have roughly 100 000 km of opto fibre cable length. Of this more than half is owned by Telia and the rest is divided in more or less equal parts between four different owner categories:

- the municipalities,
- the National Rail Administration,
- the National Electricity Grid, and
- finally, private net owners, primarily Utfors.

If we now turn specifically to access nets, ADSL, until recently completely in the hands of Telia, has become at least formally accessible to the public, thanks to the EU law requiring local loop unbundling.

Cable television, which is potentially available to about 70 per cent of households and is largely owned by purely private companies, is being modified to allow its use for access to the Internet.

In addition, the development of local area networks (LAN) and high capacity radio infrastructure for telecommunications is proceeding rapidly in different parts of our country.

To sum up, investments in the expansion of infrastructure needed for broadband traffic are being made by a combination of Telia, other state or municipality owned organisations and a large number of purely private companies.

Make old nets available or build new nets?

An IT Infrastructure Study Committee commissioned by the Government and delivering its report in 1999 has calculated that the volume of information transferred may be 1000 times greater than today's volume within the next four years. Two strategic alternatives were discussed by the committee: to make the existing nets more widely available or to build new, high-capacity nets.

The net owned by Telia and other operators is not automatically and generally available to other operators at the dark fibre level, at least not on commercially attractive terms. One alternative was obviously to open up Telia's net, for example by separating it off from Telia as an operator. During the 1990s proposals were twice made to Parliament to separate Telia's net completely or in part from Telia's service production, but on both occasions Parliament rejected the proposals, citing the disadvantage Telia would suffer as a result, due to the weakening of its international competitiveness. This path was therefore not considered a possible option.

How, then, was a new broadband net to be accomplished? Could we rely on the market, in the first instance, Telia?

The ownership of Telia is potentially a sensitive issue, as the Minister for Industry, Employment and Communications is both the public owner of Telia and politically responsible for measures to increase competition against Telia. Alongside the work of the IT infrastructure committee, the bill on the privatisation of Telia was under consideration by the Government, during the winter of 1999/2000.

4. OH

(3 options)

1. Some argued that Telia should be forced by law to make its net available to everyone, which would make it unnecessary to build a new net. The committee did not consider this possible, because it would not be easy to issue such a regulation in the light of the EU policy that the IT infrastructure should be governed by market forces.

2. Moreover, the main problem still remained, namely, the access net, which according to the IT Commission, another government body, was inadequate for future broadband needs and would have to be replaced by an optofibre access net. A few words should be said about the IT Commission (as opposed to the IT Infrastructure Committee mentioned earlier). The IT Commission has been active in spreading the vision of a future broadband society. It was

established at the same time as similar institutions in many other industrial countries, 1994, in response to the Information Highway debate started by US vice president Al Gore. In 1999 the Swedish IT Commission presented a master plan for an open IT broadband infrastructure, to be initiated and, apparently, mainly financed by the Government. The IT Commission did not want to use the Telia net at all: it was in favour of building a completely new net with high capacity, extending to every home. Only one political party in Parliament, the small Centre Party, with voters mainly in the countryside, made this vision a part of its political programme. Most other parties are divided on this question.

3. A rather substantial minority in Parliament could be thought to support this vision as its policy, but the Government was unable to propose it for a couple of very important reasons. One reason was that it conflicted with the EU policy, which states that the IT infrastructure should normally be supplied by the market. According to the EU rules, the situation for IT highways is quite the opposite to what is the case for ordinary roads, which can be treated as infrastructure and be built and operated by public authorities without objections from the EU.

Another relevant reason for not accepting the vision was financial. During the work on the Bill it became clear that the government was prepared to invest only SEK 5.8 billion, which was only half of what the IT Infrastructure Committee had proposed. It was not prepared to finance a general vision that could cost anything from 5 to 40 billion Swedish kronor or even more – 40 billion was the sum cited by the IT infrastructure study just for dark fibre connection in the countryside. The figure could be even higher if the small towns were not economically viable for the market, or if some equipment was also to be financed.

The solution proposed to the minister was, in short, that the Government should stimulate the building of a new net, as a competing alternative to the Telia net. The actual administration of the support was delegated to local governments, with the help of central government economic support. Thus, instead of the central, technically optimal plan proposed by the IT Commission a decentralised model was chosen.

This decentralised, reduced support solution was approved by the Government, and later by Parliament.

The general principles of the Bill

5.OH

(Infrastructure policy)

In the IT Bill of 2000, “An information society for all,” the Swedish Government describes its views on the technical IT infrastructure. Over the next few years, households and businesses in all parts of Sweden should acquire access to IT infrastructure with a high transfer capacity. This is primarily to be achieved through market channels. Central government, however, has overall responsibility for ensuring that IT infrastructure with a high transfer capacity is available nationwide.

The policy states that competition, low prices, and rapid development are to be fostered by a large number of operators and IT companies being given the opportunity to use the networks. IT is capable of bridging geographical distances in Sweden and reducing the gap between metropolitan and sparsely populated areas. Therefore, there must not be major differences in accessibility, charges and capacity.

As you see, the Government has not committed itself to the popular formulation “Broadband to all”. The target is instead "An information society for all" in combination with the expression "households and businesses in all parts of Sweden". "All parts" was interpreted as all 289 municipalities.

The investments, even in commercially not very attractive areas, were meant to be financed not only by central Government but also by the municipalities and the market. The implementation of the broadband project is only partly in the hands of central Government.

Access in the countryside

6. OH
(Map of Europe)

Companies on the market are expanding their networks especially in the biggest cities of Sweden. Most of Sweden's 450 000 square kilometres consist not of cities but of stretches between settlements, empty of people but full of forests, swamps or mountains.

The Infrastructure Committee proposed that towns with more than 3 000 inhabitants should be regarded as an area for the market. Around 70 per cent of the population lives in such towns. Outside these towns, in villages and in the countryside, where 30 per cent of the population lives, some government support was regarded as necessary. This 30/70 principle was approved by the Government and built into the subsidy regulations. It has initially been the governing principle for the division of labour between the public and private sector.

Cable TV modems and ADSL have so far been the most popular broadband technologies. They are, however, restricted to rather densely populated areas. Cable TV infrastructure is a possibility for about 70 per cent of the population, ADSL, at least in a few years time, for 80 per cent. Telia is starting to expand ADSL, beginning in a number of the largest cities.

The market change

The IT Bill was finally approved during the spring of the year 2000. Since then the market has changed radically. The heavy reliance on the market has proved risky and the Government has not yet been willing to compensate for the market's unwillingness to invest. Now the debate has reopened on the inadequacy of Government financing.

As the market is now declining, the 30/70 principle, mentioned earlier, is more and more subject to question. The market will not be able to supply the 70 per cent we envisaged one year ago. The provisions on Government support were adapted to this fact during the spring of this year and support can now also be made available to towns with more than 3 000 inhabitants. At the same time, the Government eased the cofinancing requirements – local governments are now required to finance only 5 per cent of the project costs if they want to make use of central government support.

The volume of total investments estimated as a result of the Government's support has now decreased to about half of the estimate that was presented to Parliament in the spring of 2000. Instead of achieving an investment that was 3 times the level of government support, we are now happy if we reach a volume corresponding to twice the government support, which to a large extent would be achieved by the activities of active local governments rather than by the market.

As a matter of fact, we have so far seen no effect at all of government support on investment volumes. The reason is that the full Government directives regulating the grants were not issued and in force until July 1 this year. The local governments are just now busy preparing the IT infrastructure programmes that the Government demanded as a prerequisite for support. We are still waiting for the first application to be approved.

THE GOVERNMENT INFRASTRUCTURE SUPPORT AT FOUR LEVELS

The diagram below shows a network hierarchy. In reality, all the networks discussed in this publication are intended to form an interconnected system, but it has been necessary to divide the net according to different kinds of market structure and support bureaucracy.

7. OH

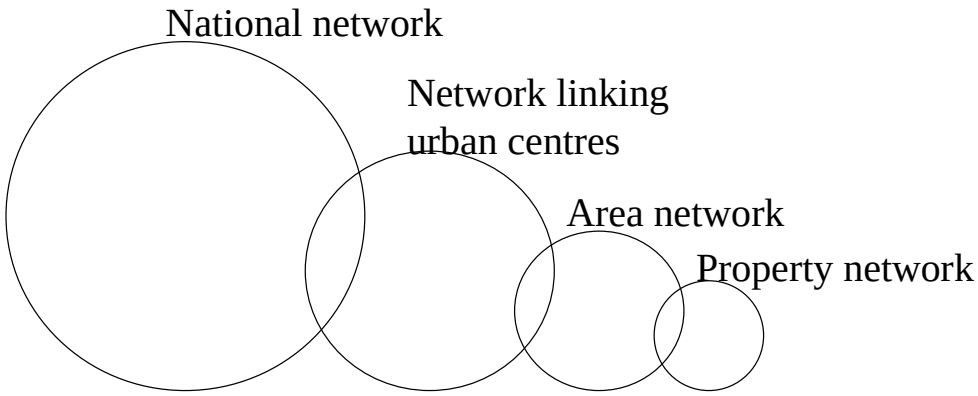

Figure. A net hierarchy

Of the 40 billion investment in the countryside, the Government has decided to subsidise between 5 and 6 billion out of the national budget. To put this in perspective, this would be less than 1 per cent of the total state budget of 800 billion Swedish kronor. In general the central government support will cover 40 per cent of the project costs while local governments will cover 5 per cent. The municipalities have less financing capacity – their total budget is around 500 billion Swedish kronor, considerably less than the central government budget[2].

A backbone network for all municipalities in Sweden

- The Government's intention is that all the main urban centres in the municipalities, in total 289, will be linked to each other by a cable that is available to all operators on commercial terms.

[2] Sweden's total GNP is about 2000 billion Swedish kronor, roughly 200 billion US Dollars.

In August 2000, the Government instructed the National Electricity Grid Authority to hang opto fibre lines on top of their high-voltage poles and towers, forming a backbone broadband network. A few words should be said about the National Grid. It is government owned and has a de facto monopoly position in supplying a national electricity backbone grid extending across the whole country, though only in high voltage power lines. It does not supply electricity directly to consumers – this is to be done by a number of regional and, ultimately, local electricity netowners. The opto fibre assignment is, however, not meant to be another monopoly exercise, as there is a functioning market on the backbone opto fibre level. The cost of the investment should be commercially financed – the government budget will not be affected at all. Dark fibre network capacity on the backbone network will be made available on market terms.

The objective is to link all the main urban centres in the municipalities by December 2002. Where necessary, this will be carried out in co-operation with the proprietors of other regional networks. The National Grid informed us a month or so ago that it will not be able to fulfil its assignment, due to the weak market situation. 70 out of 289 local governments will not be reached at the end of 2002. We are now trying to solve this problem.

Amendment of the Utility Easements Act

To facilitate the building up of the backbone, the Utility Easements Act had to be changed. The law gives the right to lay utility lines across land belonging to another person. An amendment of the Utility Easements Act was proposed in the Bill in March 2000 and afterwards passed by Parliament and as a result high voltage net owners holding utility easement rights will now also have the right to lay low voltage cables for telecommunications, using the existing area covered by cables. This amendment will make the expansion of broadband easier.

In case property owners feel that the laying of an additional cable involved an interference or infringement, they have been given the right to claim further compensation in the Land Court.

A regional network, linking small towns and villages

- The network that links together urban centres has been allocated a government grant of SEK 1.9 billion. This corresponds to roughly 30 per cent of the total cost for that part of the network.

This network level is meant to connect each municipality urban centre with the smaller towns and villages within the municipality.

Local networks

- The municipalities receive a subsidy for the building up of local nets, i.e. inside towns or in specific areas in the countryside. This support came into force in January this year and a maximum framework of SEK 1.6 billion has been set.

Approximately the same qualifying requirements are made for this support as for the regional network mentioned above. The most important difference is, however, that this net must be new – an upgraded old telephone net is not entitled to support. The reason for this is that the Government wants to stimulate competition against Telia, which in reality is monopoly owner of the telephone access net.

- For property networks, the state gives private subscribers (houseowners and enterprises) tax relief totalling SEK 1.6 billion, according to a law which is in force as from January, this year.

The tax law involves a tax reduction of 50 per cent of the costs over SEK 8 000. The maximum reduction is SEK 5 000 per property, residence or other premises. If your investment costs are SEK 18 000 you qualify for the maximum tax reduction of SEK 5 000.

The connection must be new, and provide for the transfer of multimedia services with good technical quality. The user is also to have the opportunity to choose suppliers of services in order to avoid local monopolies. When the tax reduction is given to businesses it is considered taxable, otherwise not. The tax reductions will be provided in the 2002 or 2003 fiscal years.

The impact of this tax relief will probably be rather marginal; it may have some effect in residential or industrial areas just outside town centres.

General comments on the financing of local and property nets

If the most expensive technology, opto fibre, is used all the way from the town centre to private property borders, the government subsidy for urban and property networks will cover a relatively small part, around 10-15 per cent, of the total cost. As the access net is the most expensive part of the net, it is of course problematic that the central government contributes a smaller proportion of costs at the local than at the regional level. The conclusion must of course be that the government support is not enough to guarantee the building up of a complete access net in the most sparsely populated parts of the countryside. Probably the solution will have to be the use of less expensive technology than opto fibre to achieve broad coverage of the most sparsely populated parts.

HOW TO AVOID DISTORTION OF MARKET MECHANISMS

The infrastructure support must be offered to the market through a public procurement process. Only if no acceptable offer is received can the municipality use the government support to build a net owned by the municipality itself.

One article of the Treaty of Rome includes the following main regulation:

"support given by a member state, or via public funding, of whatever type, that distorts, or threatens to distort, competition by benefiting certain companies or a certain production, (is) incompatible with the common market to the extent to which it impacts trade between member states."

A guideline from the Commission from 1999 (EGT no C 267, 22.9.1999) states that, if public funding to the telecommunications sector is deemed necessary, it must be "...awarded in accordance with clearly understandable regulations whose purpose is to prevent distortion of competition."

9. OH

(EU rules)

The telecommunications policy of the European Union is thus strictly market oriented. This principle is natural from the European point of view as the main objective of the EU is to deregulate the telecommunications market, which until recently has been heavily regulated and in the hands of monopolies. This market principle is, however, more easily implemented in continental Europe, where the population density is high, than in the large desolate areas of Sweden and Finland. If Sweden were to rely completely on private initiative for supplying IT infrastructure, large parts of the country would probably not get broadband, at least not in the near future.

In spite of what has been said, the EU policy also permits exceptions from the main principle – the support introduced by the Swedish Government is thus completely compatible with the EU regulations. The solution is that if government support is given, a public procurement must be carried out, offering this support in an open way to the market. Companies owned by the local authorities also seem to be eligible to participate in this procurement process, providing there is full competition neutrality. If the procurement does not attract any reasonable tenders, the municipality itself can choose to expand the broadband network and operate the network.

ARE WE APPROACHING AN INFORMATION SOCIETY FOR ALL?

10. OH
(Future IT societies)

Infrastructure

The goal of achieving an information society for all using the ordinary telephone access nets for Internet connection is not far off in Sweden, where 80 per cent of the population has access to Internet[3]. But achieving a broadband society for all is more difficult and a more distant prospect. We are only at the beginning of that society. Even if we include upgraded cable TV connection and ADSL, not more than about 400 000 households so far have a broadband connection, i.e. 10 per cent of households. Internationally, this puts Sweden among the 7 most accessible broadband countries, which of course is not bad, although not as good as many have hoped.

[3] 80 per cent is the percentage of the population who have access to Internet either at home, work or at their place of education. 65 per cent have access to Internet at home (in 2000).

In around 100 of Sweden's 289 municipalities, centrally located enterprises may have access to cheap broadband connections, but the percentage of Swedish companies that actually have such a connection is still rather low. An international research company, Forrester, has interviewed a number of experts and made the forecast that in 2005 around 40 per cent of Swedish households will both want and have a broadband connection[4]. This is even slightly higher than the forecast for the USA.

Demand for broadband services

Technical infrastructure is not all that is needed for the Information or Broadband societies. IT skills and knowledge are also required, both among the general population and at specialist level. Confidence and safety are other important issues and the Bill also dealt with the laws and regulations needed to help people feel safe using IT. I will not go into these matters further here.

When the IT Bill focused so heavily on the technical infrastructure, it implied a choice of strategy. By this Bill, Sweden has chosen an infrastructure road to the broadband society – another choice could have been to stimulate demand for broadband services. In a country where half of the surface area is covered by forests, where very few people live, a demand stimulation policy can be a lengthy route to take. An infrastructure build-up was regarded as a quicker way. Another aspect of this is that it is not very clear if there really are broadband services that are sufficiently attractive to motivate households to install broadband and so stimulate market forces to make broadband investments in both cities and the countryside. The demand for broadband services appears to be higher in the business than in the household sector, but business demand does not provide a sufficient base for an extensive investment in infrastructure.

The Government has taken several steps to stimulate demand, for example the following:

Projects for educating SMEs

Two rather substantial projects have started to give owners and employees of small and medium-sized companies opportunities to increase their skills in using the new technology.

Tax benefit for PCs

The most efficient consumer subsidy so far has probably been the tax benefit that was introduced as early as in 1998, directed towards employees who use computers supplied by their employers. The introduction of that tax benefit seems to have considerably increased the percentage of employees who have PCs in their homes. The percentage is now 76 per cent (in 2000).

Other user nets – libraries, universities and schools

I would also like to mention the government programmes encouraging universities, libraries and schools to use IT and to be connected to the national net. This has been a priority for some years, even before the latest IT Bill. The libraries and universities have a special net with very high capacity, organised by a government authority. The school net is organised locally with some government support.

[4] Report published by Forrester Research, Amsterdam, 1 August 2000. For a summary see www.forrester.com/ER/Press/Release/0,1769,371,FF.html

Accessibility for people with disabilities

The Government believes that the expansion of IT infrastructure and the development of broadband services can give persons with disabilities the opportunity to use IT efficiently and smoothly. Government measures seem necessary in order to achieve this. The regulatory authority for telecommunications has put forward a proposal for trials of broadband services for persons with disabilities, based on special research on who could benefit from broadband, requirements for special adaptations, needs for special equipment and extra costs caused by all this.

FINAL COMMENTS

The market has been assigned the main role in the IT infrastructure area, both by the EU and the Swedish Government. The Government has taken on at least a moral responsibility for those parts where the market does not function. It is crucial to define the border between government and market responsibility. One such borderline is geographical – towns with more than 3 000 inhabitants were defined as the area where the Government expected the market to deliver. Another border is defined in each support project – a public procurement procedure provides a basis for assessing the role of the state versus the market. Another line is given by the general view that central and local government should focus on the lower layers of the infrastructure, i.e. channelisation and passive infrastructure, for example dark fibre.

Changes in the market during the last year have influenced the pace of investment and therefore also the formulation of policy. Almost all parts of the country are now eligible for support. The cofinancing requirements for local governments have been eased and are now rather low.

Complete regional broadband coverage is the goal, although it is still far off. In the new generation of mobile telephony, UMTS, which has high capacity although is not really broadband, total regional coverage is more realistic though under debate, and has been made a condition for a license to operate.

The Government is firmly committed to stimulating competition, not least in the telecom sector, where EU policy has a powerful market orientation. As a result the Government has two dominant targets in this area: one is to stimulate the expansion of the broadband infrastructure, the other is to stimulate competition on the net and operator level.

Sweden, where broadband is concerned, has chosen to give priority to stimulation of infrastructure investments rather than stimulation of demand. Some measures have, however, also been taken to stimulate demand, e.g. in the school sector.

And having said that, I have come to the end of this presentation and thank you for your attention.

SOURCES

Most of the publications below are in Swedish. There are, however, summaries in English of some of the material, which can be delivered on demand – write to arne.granholm@industry.ministry.se

Government bills

An information society for all, IT Bill, 1999/2000:86. (Short summaries of certain parts available in English)

Budget Bill, 2000/2001:1 (areas of expenditure 19 and 22). (In Swedish only)

Tax reduction for costs of certain connections for telecommunications and data communications, Bill 2000/01:24. (In Swedish only)

Government studies

Municipal local IT infrastructure support (Kommunstöd till lokal IT-infrastruktur). An interim report of the Broadband Study, SOU 2000:68. (A short summary available in English)

Broadband for growth in the whole country. Report of the IT Infrastructure Study, SOU 1999:85. (A short summary available in English)

The ICT Commission's report from a hearing, A secure IT infrastructure for Sweden in the future, SOU 1999:134. (In Swedish only)

Other sources

IT – an engine for growth. Ministry of Industry, Employment and Communications. Ds 2000:68. (Available in English).

Facts about information and communications technology in Sweden 2001. Swedish Institute for Transport and Communication Analysis (SIKA), Stockholm. (Available in English). See also www.sika-institute.se

Welcome to *e*Sweden. An information society for all. Invest in Sweden Agency (ISA), Stockholm. (Available in English). See also www.isa.se

Sweden as an IT nation. The Swedish Institute, Stockholm. (Available in English). See also www.itsweden.com

Risks of monopolisation of broadband services in multifamily dwellings (Risker för monopolisering av bredbandstjänster till flerfamiljshus). Report of the National Post and Telecom Agency, 2000. (In Swedish only)