



Summary:

World class broadband?- The Government's measures to achieve the broadband policy objective

Audit background

The Government considers that digitalisation is the single largest factor for change in our time and has an overall objective for Sweden to be best in the world at using the opportunities offered by digitalisation. New digital solutions are being developed continually in areas such as healthcare, retailing and public administration. As a result of this, the relation between the state and citizens is becoming increasingly digital. To enable everyone to participate in society on equal terms, accessible and reliable electronic communications are a necessity.

The Government and Riksdag have set a broadband policy objective for Sweden. The objective is that Sweden is to have world class broadband and that all households and businesses should have good opportunities to use electronic community services and service via broadband. The objective is primarily to be achieved through well-functioning markets. The role of the Government is therefore to ensure an effective market, and to provide broadband support to the areas where it is not expected that the market, for reasons of profitability, will build broadband. It is clear that internet access via broadband plays an important role in the growth, development and digital participation of society. Consequently, the Swedish NAO has decided to audit the Government's efforts to fulfil the broadband policy objective.

Purpose and method

The purpose of the audit is to investigate whether the Government has effectively endeavoured to fulfil the broadband policy objective, that is world class broadband and that all households and businesses should have good opportunities to use electronic community services and service via broadband.

The audit focuses on broadband expansion in relation to the broadband policy objective, the market actors' capacity to provide broadband and the form of broadband support.

The audit questions are as follows:

- How does broadband expansion relate to the broadband policy objective?
- Are there appropriate conditions for the market actors to provide broadband?
- Has state aid been designed to enable broadband expansion in areas where the market does not provide broadband?

The empirical basis for the audit consists of around fifty interviews as well as analysis of relevant reports, statistics, documents and other written material.

The Swedish National Audit Office's findings and conclusions

Good broadband coverage but uneven access between urban and rural areas

Sweden is one of the countries of the world where households and companies have the greatest internet access via broadband. The Swedish Post and Telecom Authority (PTS) reports that about 73 per cent of Swedish households have access to broadband with speeds of at least 100 Mbit/s. Above all Sweden has good provision of broadband with a fast transfer rate in urban areas. According to a PTS forecast, extension of broadband with a fast transfer rate will reach 91–94 per cent of households and businesses by 2020.

The audit shows that the Government has taken a number of measures that have been and may continue to be important for achieving the broadband objectives. This applies for example to the support to broadband expansion in areas the market does not regard as profitable, appointment of regional broadband coordinators and the Swedish Broadband Forum for collaboration between market actors. In addition, the Government has announced a number of measures in its broadband strategy that may contribute to meeting the broadband objective; for example investigating the localisation principle and reviewing the level of functional access to the internet (that is the minimum level for households and businesses' internet access).

The Swedish NAO's audit shows, however, that the Government is facing challenges in achieving the objective that all households and businesses should have access to world-class broadband and have good opportunities to use electronic community services and service via broadband. The challenge mainly consists of bridging the gap between town and country as regards access to fast broadband and robust networks.

Differences between urban and rural areas in access to fast broadband

There are great differences within Sweden as regards who has access to broadband with a fast transfer rate (at least 100 Mbit/s). The differences apply mainly between urban and non-urban areas. At national level, access to broadband with a fast transfer rate in urban areas was on average 78 per cent, while access in non-urban areas was 22 per cent in 2016. However, few households or businesses completely lack access to the current minimum level for internet access of at least 1 Mbit/s.

In addition, a technology shift is taking place where the copper-based network is being replaced by optical fibre or mobile technology. Broadband via the copper network is the technology that gives most households and workplaces access to broadband, both in urban and rural areas. In rural areas the copper network is mainly replaced by mobile technologies, which affects access to fixed broadband.

Risk of uneven distribution of robust fibre networks

The Swedish NAO's audit shows that there is a risk of uneven distribution of robust fibre networks. The audit has shown that there are mainly indications of lack of robustness in access networks, such as those owned by non-profit associations that build broadband infrastructure in rural areas (known as fibre associations) and municipal networks. The factors the audit has identified as inadequate thus cover a smaller percentage of the population, but nevertheless have an impact on the households and businesses affected. As the relationship between citizens and state becomes increasingly digital, equal access to fast and robust internet access is a condition for households and businesses to be able to use electronic community services and service via broadband.

It is, however, difficult to obtain a complete picture of the robustness of the fibre networks, partly because the broadband market consists of about 500 actors and thousands of fibre associations. It is difficult for those not affected by deficient internet access or those who provide the infrastructure to know whether there are robustness problems, and in that case where in the fibre infrastructure the problems exist.

Central government fibre networks can be used more effectively

- Several previous inquiries have shown that the state-owned broadband infrastructure is not used effectively. These inquiries therefore recommend that the Government coordinates central government infrastructure to enable it to be used more effectively. Apart from reduced costs, increased security and network robustness, cooperation could also make broadband expansion easier. These

recommendations are presented for example in the report *Statens bredbandsinfrastruktur som resurs* (State broadband infrastructure as a resource - Swedish Government Official Reports SOU 2016:1) and the Swedish NAO's report *Staten på telekommarknaden* (Central government and the telecom market - RiR 2013:5).

Inadequate conditions for the market actors to provide broadband

The objective of effective competition in broadband networks is, according to both the European Commission and the Government, that they should be open and competition-neutral. This means that both passive and active broadband infrastructure should be available for actors on non-discriminatory terms.

There are three main roles that an operator on the broadband market can play. Some operators choose to play only one role, while others chose to play several roles. Definitions of the roles vary, which in part makes description and analysis of problems more difficult.

We have decided to call these roles the following:

- Network owner (infrastructural level)
- Communications operator (or otherwise activate a network and provide transmission)
- Service provider (provider of television or internet access for example)

There are inherent risks of inadequate competition on the broadband market, since it tends to create monopolies. The network owner controls the physical infrastructure in the form of fibre cables. The economic incentives for other actors to build a parallel infrastructure and compete at the infrastructure level are thus low. Network owners therefore hold a strong position and should not discriminate against potential actors if competition on equal terms is to be possible.

However, entry barriers are lower for establishment as communications operators and service providers compared with the role of network owner. Inadequate competition may arise when a communications operator or service provider has exclusive rights to act at the respective level in a network, making establishment difficult for other operators. This may arise either through network owners also acting as communications operators, or through the role of communications operator only being held by one operator without it being possible for others to be established. To enable competition on non-discriminatory terms the network owner should thus treat all operators equally.

The Swedish NAO's audit shows, however, that sometimes operators do not hire out canalisation, dark fibre or other passive infrastructure on non-discriminatory terms. It is also sometimes the case that operators hold more than one role in the fibre network, in other words being vertically integrated.

The audit also shows that there are different perceptions concerning the remit of municipally owned broadband networks on the market. The private actors feel that the municipalities to varying degrees hinders their establishment. However, the municipalities must take several aspects into consideration when processing land access applications from private actors, which means that the processes may take time. For example, municipalities must take into account the interests of the community, the general public and other already established network owners, and thus impose requirements on those using municipally owned land.

The agencies responsible have not been fully able to deal with the obstacles perceived by the market actors

The broadband policy objective is primarily to be achieved through well-functioning markets. Thus, a central part of central government governance of the area is appropriate legislation. The Swedish NAO's audit shows, however, that the Swedish Post and Telecom Authority and the Swedish Competition Authority, under the provisions of the sector-specific regulation (Electronic Communications Act) and the Competition Act and based on their respective agency role, have not managed to deal with the obstacles perceived by the market actors when extending broadband infrastructure. These perceived obstacles can be summarised as the municipalities' and fibre owners' strong position, as well as limited access to the vertical value chain. The Swedish NAO's assessment is that to some extent there are competition problems in the market that make broadband expansion more difficult, but there is also the matter of the various actors' different operational logic and interests.

Under the sector-specific ex ante regulation, the Electronic Communications Act (2003:389), for example, the relevant market has to date been regarded as national, despite the fact that obstacles to effective competition arise at local level. This has resulted in the Swedish Post and Telecom Authority finding, under the provisions of the Electronic Communications Act, that one actor has significant influence at national level. Consequently, only *one* actor in the market for network infrastructure access is covered by the provisions of the Electronic Communications Act that regulate competition. It can also be noted that the Swedish Competition Authority has not had any case materially reviewed by a court regarding access to the vertical value chain or anti-competitive public sales activities in the broadband market.

In interviews the private actors have stated that they consider the tools available for dealing with competition problems in the broadband market to be insufficient or even ineffective. This is partly due to the perceived obstacles remaining, partly due to long processes for processing competition cases. According to information provided, private actors refrain from reporting competition problems since they know that a judicial process will take so long that it is not commercially justified.

Differing interests lead to friction and conflicting objectives

One problem that emerged in the audit is that the actors the Government considers should be responsible for broadband expansion are governed by different operational logic and objectives, which means they sometimes have opposing interests. The municipalities are in some cases market actors through their municipally owned broadband networks. At the same time, they are governed by their municipal responsibility, which means that they must take questions, other than broadband, into account. The private actors are governed by return requirements, while municipally owned networks are governed by owners' instructions, and the central government actors that own broadband infrastructure are governed by their mandates and interests. The result is that friction arises and the broadband actors' individual actions on the whole do not fully contribute to achieving the Government's objectives.

The Swedish NAO's interviews show that private actors perceive the balance of power as asymmetrical in that the municipalities make many of the decisions on which the actors are dependent to be able to build broadband infrastructure. The private actors sometimes feel that municipalities work against them and act in a way that does not promote broadband expansion. In the opinion of the Swedish NAO, this may nevertheless be an expression of the fact that all actors work on the basis of their respective operational logic and that is why friction and conflicting objectives arise.

In its broadband strategy the Government has determined that public actors are not to crowd out private investments and that provision of broadband should be primarily through private actors. It has been stated in interviews during the audit that the Government's formulations on this topic have contributed to the lack of clarity prevalent in the broadband market as regards allocation of roles between private, municipal and central government actors. An example of the friction caused by the lack of clarity is that the Swedish Association of Local Authorities and Regions has left the agreement on municipal principles in the broadband market that it had with the Swedish Competition Authority and the Swedish Post and Telecom Authority.

Risk that state aid has gone to commercially attractive areas

Since 2001 the Government has offered state aid for expansion of IT infrastructure in several support programmes. The Government allocated about SEK 14 billion for broadband support in the period 2001–2020, which has resulted in extensive broadband expansion. The current broadband support comes from the European Regional Development Fund (ERDF) and the European Agricultural Fund for Rural Development (the rural development programme). The ERDF has given support to regional networks linking urban centres and enabled county-wide broadband projects in the northern regions. The Government has allocated the largest percentage of resources for broadband support to the rural development programme, where support goes to construction of end-customer networks in rural areas. Support in the rural development programme is popular and demand is higher than can be met with available funds.

Broadband support has been difficult to coordinate and central government has been criticised

The European Parliament and European Council have demanded better coordination of the European Structural and Investment Funds. Coordination of broadband support in the ERDF and rural development programme has not, however, been possible to the extent desirable, partly due to different regulations in the two support programmes, the involvement of many actors and delays in the process. Moreover, the Swedish Board of Agriculture has been criticised for its handling of broadband support in the rural development programme, including for delays in IT support, inadequate support to the county administrative boards and inadequate communication to fibre associations.

The support goes to an increased extent to larger projects

The selection criteria in the rural development programme have changed between the two programme periods and this has influenced which applications are granted support. Compared with the previous programme period, support goes to a decreasing extent to fibre associations and to a greater extent to the large projects, as well as to private companies and municipalities. The change has created frustration among fibre associations, since the purpose of broadband support in the rural development programme was perceived as “grass roots support”, even though it was not the intention of the central government agencies to favour specific actors.

Risk that the support distorts competition on the broadband market

Broadband support is governed by state aid rules that stipulate that state aid may not distort competition in the market. For broadband support this means that support may

not be granted to areas in which it is expected that market actors will build broadband without support within three years.

There is a risk that broadband support in the rural development programme has been steered to commercially attractive areas. This risk arises as a consequence of several factors: that the selection criteria reward large projects, that support is granted to private actors and municipal companies, and that the high pace of expansion in the market changes the definition of where commercially attractive areas are. The factors risk steering support to areas with a larger population base and thus more profitable projects. In addition, the high rate of expansion in the market has affected where commercially attractive areas are found: As urban areas are developed, expansion takes place more and more outside urban areas.

In addition, the tools for ensuring that support is not granted to commercially attractive areas have found it difficult to achieve their purpose, the tools being market analysis and public consultation. According to several interviews during the audit, support has been granted to areas where market actors would probably have built broadband infrastructure even without support. There is thus a risk that broadband support in the rural development programme has gone to commercially attractive areas.

Broadband expansion has been successful, but there are future challenges

Sweden has good broadband coverage with a fast transfer rate, and expansion is moving forward. The Swedish NAO's audit shows that the Swedish model with a combination of market-driven broadband expansion, central government support and municipal initiatives may be regarded as having been successful, since it has enabled the majority of households and businesses to have access to fast broadband.

In the opinion of the Swedish NAO, the present market model has, however, faced increasing difficulties with regard to provision of fast broadband services to the remaining households and businesses. The threshold for what are profitable areas is redefined as expansion continues and there is increased demand for fast-speed broadband. However, it will not be profitable for the market actors to expand broadband provision to everyone while obstacles still exist that they feel will affect their ability to provide broadband. In addition, state aid has been designed in a way that risks that it will go to commercially attractive areas, instead of facilitating broadband expansion in areas not considered profitable by the market actors.

Broadband expansion depends on the market actors pulling together, but since they are governed by different operational logic there is no one common objective, but several. If

all households and businesses are to have access to world class broadband and good opportunities to use electronic community services and service via broadband, it is important that the Government and responsible actors work together to achieve the broadband objectives. More compensatory initiatives are required to achieve the Riksdag's and Government's objectives and the various actors must intensify their collaboration.

Recommendations

The Swedish National Audit Office's recommendations to the Government:

- The Government should consider instructing the Swedish Post and Telecom Authority to cooperate with the Swedish Competition Authority and the Swedish Association of Local Authorities and Regions to draw up new principles for broadband expansion aimed at achieving the Riksdag's and Government's broadband objectives.
- The Government should review the design of broadband support for the next programme period to ensure that it only goes to households and businesses that are not in commercially attractive areas.
- The Government should instruct the Swedish Competition Authority to analyse whether there are competition problems in the broadband market. This may concern access to the vertical value chain, for example.

The Swedish NAO's recommendations to the Swedish Post and Telecom Authority:

- In the market analysis the Authority is working on for 2018 it should analyse in particular whether broadband markets should also be locally delimited.