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consultation

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EU Kommissionen

Response to the European Commission's White Paper "How to Master Europe's Digital Infrastructure Needs"

The Swedish Local Fibre Alliance (Svenska Stadsnättsföreningen) is an industry and interest organization representing municipal networks in nearly 200 municipalities and 125 service and equipment providers in the broadband sector. Thus, the association represents the vast majority of players actively investing in new modern broadband infrastructure in Sweden.

The Swedish Local Fibre Alliance welcomes the opportunity to provide feedback on the European Commission's white paper "How to Master Europe's Future Infrastructure Needs?" where the Commission outlines its vision for Europe's digital future.

Please be advised that the enclosed document has been translated into English for your convenience. The original document in Swedish constitutes our official response. We reserve the right to address any discrepancies or content changes that may arise from the translation process.

Summary

The Swedish Local Fibre Alliance supports the Commission's long-term goals for the digital decade: to promote sustainable economic, environmental, and social benefits throughout Europe through digital transformation.

The Swedish Local Fibre Alliance finds it positive that the Commission's white paper aims to promote the expansion and development of digital infrastructure. There is a need for robust and stable digital infrastructure, which is equally important in rural areas as in urban areas. People without high-quality connectivity risk digital exclusion and cannot access the public services they are entitled to. Digital solutions can compensate for physical distances where the same offerings are not available in rural areas as in cities and can also reduce the number of transports. A vibrant countryside must mean the opportunity to work remotely and for businesses to establish and operate on equal terms as in cities.

The European fiber and telecom market is mainly functioning well, and the Swedish Local Fibre Alliance firmly believes that increased consolidation, particularly in the fiber market, is the wrong path to take from a competition perspective. The association believes that the current EU telecom regulation has resulted in a diversity of market players, large and small, which has been crucial for the EU's digital development. A diversity of actors is essential to

ensure competition and meet the needs of consumers, businesses, and public administrations. Competition between different actors promotes expansion and investments. A more liberal competition policy is not the right way to address the challenges facing the EU. It could lead to a lack of competition and negative effects on consumers, innovation, investments, reduced competitiveness, and growth in the internal market.

The Swedish Local Fibre Alliance believes that the current regulatory framework needs to be harmonized before more regulations are developed or changed. There are several risks with extending an already existing regulatory framework to include new sectors. This is noted, among other things, by the consultancy firm Plumconsulting in the report "Consequences of EC proposals to extend regulatory scope to the entire digital economy."¹ Instead of extending the existing EU telecom code and parallel implementation of new regulations, the Commission should prioritize the regulations already adopted in recent years and work for more effective implementation and enforcement of these.

The Swedish Local Fibre Alliance further supports a rapid shutdown of the copper network and transition to fiber networks as it will contribute positively to the environmental adaptation of digital networks and promote broadband expansion. The proposal that the shutdown of the copper network should be closely monitored and supervised by the respective country's regulatory authority is good. It is important that competition is not weakened in the transition from copper to fiber networks.

Regarding the third pillar, "Secure and Resilient Digital Infrastructure for Europe," The Swedish Local Fibre Alliance believes that the security issue related to Europe's telecom infrastructure needs to be expanded and developed. Digital infrastructure, whether fixed or mobile, in urban or rural areas, needs to be adapted to both current and future needs. The goal for the digital EU should be to have a secure, robust, and constantly available digital infrastructure in all member countries. The infrastructure should be reliable at all times and under all circumstances, meaning it should be able to withstand disruptions and still function reliably. This is a prerequisite for achieving the necessary digitalization that society faces. To succeed, investments in robust security systems are needed, as well as continuous maintenance and upgrades of the digital infrastructure.

Security is a very important aspect, but the question is whether the EU should commit to post-quantum encryption recommendations. As quantum technology develops, it is crucial that the EU not only focuses on existing security solutions but also invests in research on future security solutions. The rapid technological development means that threat scenarios are constantly changing, and a flexible and forward-looking strategy is required to ensure that the digital infrastructure remains secure and robust in the future.

¹ Consequences of EC proposals to extend regulatory scope to the entire digital economy
June 2024, plumconsulting.eu. t

Introduction

In the Commission's White Paper *How to master Europe's digital infrastructure needs*, it is stated that Europe is falling behind. Therefore, the Commission presents a number of possible measures to promote the expansion and development of Europe's digital infrastructure. The white paper outlines possible measures to attract investments to the sector, promote innovation, increase security, harmonize regulations, and complete the digital single market. The aim of the measures is to stimulate the establishment of future digital networks, manage the transition to new technologies and business models, and meet future connectivity needs for all end users.

Is Europe Really Falling Behind?

Some of the arguments in the Commission's white paper are based on comparisons with other major economies in the world. For example, the Commission notes that the EU and the USA lag behind Japan and South Korea in terms of the percentage of households with a fixed fiber connection and that the proportion of fixed broadband subscriptions is lower in the EU than in the USA, Japan, and South Korea. However, the Commission notes that mobile broadband connectivity (at least 4G) is strong in the EU. The fact that the EU lags behind comparable economies leads the Commission to conclude that the EU's economy is vulnerable, not least considering that future advanced IT and AI services depend on good connectivity with high coverage. Some of the Commission's reasoning is based on the fact that the EU is partly falling behind other economies, and it is therefore important to examine the barriers to cross-border consolidation within the telecom sector. The Swedish Local Fibre Alliance does not share this analysis.

There are certainly areas where the EU lags behind in technological development, especially compared to some Asian economies. But Europe still stands strong in international competition. If the proportion of connected households is studied, the EU is still far ahead today. According to the OECD, European countries are among the nations with the most broadband subscriptions per capita. In the second quarter of 2023, South Korea was the furthest ahead with 41 fiber subscriptions per 100 inhabitants. Next was Sweden with 33 fiber subscriptions per 100 inhabitants, closely followed by Norway. Several European countries - Spain, Iceland, France, and Portugal - are close to but slightly below the Swedish level of fiber subscriptions.

A good way to get an idea of how the EU stands competitively compared to other economies is to study the price levels for mobile and fixed internet in different parts of the world. The fact is that the purchasing power-adjusted price level for consumers and businesses regarding IT-related costs is lower in most European countries compared to other parts of the world. The purchasing power-adjusted cost (in relation to gross national income) for mobile data is also among the lowest in the world when looking at countries like Germany, France, Italy, Spain, Sweden, Denmark.

The European fiber and telecom market is mainly functioning well, and The Swedish Local Fibre Alliance firmly believes that increased consolidation, particularly in the fiber market, is the wrong path to take from a competition perspective. Europe's competitiveness increases with regulatory simplifications, competition, and open networks.

The Swedish Market

When the Swedish telecom market was deregulated in 1993, there were no players willing to build fiber networks across Sweden. But the need for broadband infrastructure enabling digital communication was great, especially in the country's municipalities. In many places, municipalities decided to start building fiber networks themselves. This was a trend that spread quickly, and by the second half of the 1990s, many of Sweden's municipalities had their own municipal network.

The Swedish municipal networks are municipally owned, usually as a municipal company. The phenomenon of Swedish municipalities owning municipal companies is not new but has existed since the 19th century. Compared to several other EU countries, Sweden has an unusually high number of large municipal companies. There are almost 1,900 municipal companies in Sweden in various sectors, such as:

- **Water and Sewage Services:** municipal water and sewage companies manage water supply and wastewater services.
- **Electricity:** municipal energy companies provide electricity.
- **Waste Management:** municipal sanitation companies handle waste collection, recycling, and cleaning.
- **High-capacity Networks:** municipal city network companies manage fiber-optic networks and are often structured as municipal corporations.

The role of municipalities in the Swedish broadband market has from the start been about promoting competition in the telecom market and thereby creating good conditions for both broadband expansion and the construction of mobile masts. Sweden's municipal local network companies have significantly contributed to the expansion of fiber infrastructure. Municipal networks today own 56 percent of the country's fiber infrastructure, according to the regulatory authority Post and Telecom Agency (PTS), and are estimated to be the Swedish actor that has connected the most mobile masts with fiber.

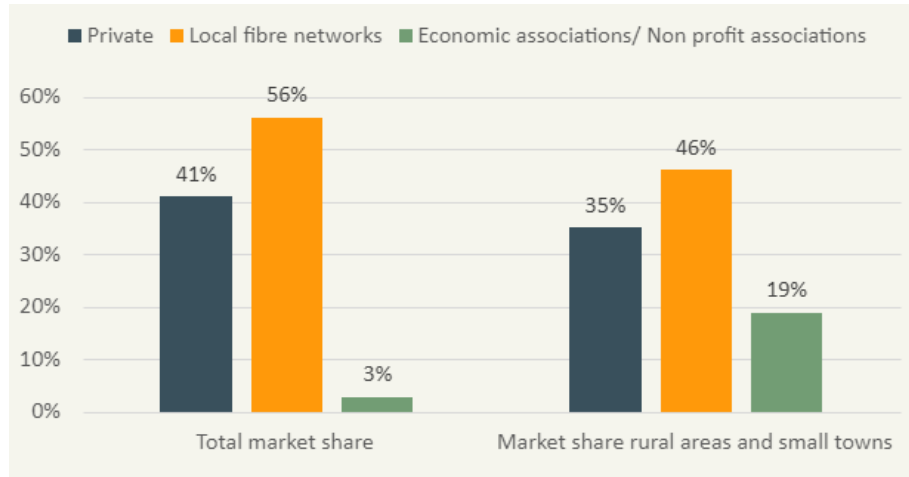
The Swedish broadband model means that owners of fiber networks, such as municipal networks, allow other telecom operators to lease their infrastructure. This has created a new market for companies that sell communication services to businesses and households. End customers have thus also gained greater choice, and thanks to the good competition, Sweden has had internationally low prices for the services offered in the networks. Municipal networks' open networks have thus, in several ways, increased competition in the Swedish broadband market.

Despite having the EU's second-lowest population density, Sweden is at the top when it comes to fiber expansion. An OECD report highlights the Swedish municipal networks as a success story by making fiber infrastructure available, lowering prices, and increasing consumer choice. It is worth noting that Sweden is the OECD country with the highest proportion of fiber connections outside Asia. In Sweden, the small local municipal networks and the competition they have created have played a crucial role in promoting investments. The Swedish regulatory authority PTS has concluded in its analyses that in municipalities with multiple network owners, the expansion rate has generally been higher than in municipalities with only one network owner. Competition between different actors thus promotes expansion and leads to choices and lower prices for households.

Today, there are a few national network owners and about 170 local municipal networks in Sweden. Municipal networks operate in 200 of the country's municipalities and together own 56 percent of all broadband infrastructure.

Mobile operators have also benefited from the Swedish fiber model. Thanks to Sweden having such a high fiber coverage, mobile masts and base stations have been connected with fiber. This has meant that there are well-functioning mobile networks even outside the larger cities.

Figure: Network Owners' Market Shares, October 2023, Share of All Connected Households and Establishments



Source: The Swedish Post and Telecom Authority (PTS), the regulatory authority

Compared to other countries, Sweden has high connection fees, i.e., the fee that a property owner needs to pay to connect to the broadband network. This price increases as the fiber network extends further into rural areas. An important perspective in this context concerns population density, which is low in Sweden compared to most EU countries, contributing to higher costs for fiber connections. However, subscription fees are lower in Sweden compared to other countries in Europe and the USA.

When other countries across Europe discuss how to best create a telecom market characterized by competition, high connection rates to a fixed broadband network, good mobile coverage, and low subscription fees, Sweden is often highlighted as a success story. Thanks to the open networks of municipal networks, operators and service providers have been able to access the fiber infrastructure without having to make costly and time-consuming investments in infrastructure themselves. This has created a diverse and competitive Swedish telecom market. The Swedish Local Fibre Alliance believes that regulatory simplifications and well-functioning competition are crucial for the continued development of the sector. In contrast, consolidation risks having the opposite effect.

Pilar II: Completion of the Digital Single Market

The Swedish Local Fibre Alliance (Svenska Stadsnätöföreningen) focuses primarily on the second pillar of the White Paper in its response, as this pertains to the internal market for telecommunications, which is the area where the association's members operate.

In the area of completing the digital single market, the Commission identifies the need for measures distributed across four possible scenarios (scenarios 4-7) to complete the digital single market and create incentives for cross-national consolidation of operators. Below is The Swedish Urban Network Association's input on the different scenarios.

Fourth Scenario

In the Commission's White Paper, it is proposed that the current regulatory framework, the European Electronic Communications Code (EECC), be reconsidered and expanded to include more actors. The Swedish Local Fibre Alliance believes that such a change to the existing regulatory framework, as proposed by the Commission in the White Paper, must be preceded by a thorough analysis of the potential consequences of such an expansion. There are obvious risks associated with extending an existing regulatory framework to also cover new sectors. This is noted, among other things, by the consultancy firm Plum Consulting in their report "Consequences of EC proposals to extend regulatory scope to the entire digital economy"².

Therefore, such a decision must be preceded by a careful analysis. The Swedish Local Fibre Alliance does not want the regulatory burden on the electronic communications sector to increase. Instead of expanding the existing telecom code and introducing new regulations, the Commission should prioritize the regulatory frameworks that have already been adopted in recent years and work towards more effective implementation and enforcement of these before carefully studying the effects. It takes time for regulations to have the desired effect.

The Swedish Local Fibre Alliance believes that the EU's current competition policy, with fair and equal conditions for all companies, has served businesses, consumers, and the European economy as a whole very well. The best way to create companies strong enough to compete with American and Asian rivals is to continue promoting competition in the way the EU is doing today.

Fifth Scenario - Reforming EU Regulations

In the Commission's White Paper, there are considerations for reforming EU regulations to ensure a reduced regulatory burden for businesses and more efficient service delivery, while continuing to protect vulnerable end-users and promote coverage across the EU. They further propose a European wholesale access product, phasing out all ex-ante regulation in

² Consequences of EC proposals to extend regulatory scope to the entire digital economy
June 2024, plumconsulting.eu. t

favor of general competition law, accelerating the shutdown of copper networks, and promoting investment in new technologies.

Regulation and Market Analysis

The Commission's White Paper proposes that the European telecom market should be regulated to a lesser extent than it is today. The purpose of the current ex-ante regulation is to ensure competition and that networks are open and accessible to all operators. It is important that dominant telecom operators cannot exploit their market power and refuse other operators wholesale access to their networks in various ways. If the regulatory authority assesses that competition law can address any deficiencies in the market, the market should be deregulated, which the Swedish Local Fibre Alliance views positively.

The Swedish Local Fibre Alliance believes that the EU's telecom regulation has been successful over the past decades. The competition-promoting EU legal framework has successfully created a free market for electronic communications, helped to overcome national monopolies, and provided EU consumers and businesses with quality and choices at affordable prices. It has also resulted in the diversity of market actors, both large and small, that has been crucial for the EU's digital development. Any changes regarding regulatory measures must be preceded by impact assessments so that competition is not undermined. The Swedish Local Fibre Alliance supports BEREC's recommendation³ to the Commission to prioritize alternative policy measures that can maximize efficiency, reduce barriers to market entry, and stimulate competition.

Consolidations

Europe's largest telecom operators have urged regulators and the Commission to accept mergers between companies as they believe they need to scale up their operations and achieve synergies. In the USA, such consolidation has occurred in the telecom market, but it has not necessarily led to lower prices. According to the ITU, the USA has relatively higher prices for mobile broadband and telephony compared to European countries relative to the standard of living (GNI) in each country.

The EU's current competition policy is, among other things, to prevent mergers that could harm competition because an overly concentrated market can lead to higher prices, inferior product quality, and less choice for consumers. Therefore, certain corporate acquisitions or mergers must be notified to the regulatory authorities and reviewed before they can be carried out. The Swedish Local Fibre Alliance agrees with Margrethe Vestager, the EU Commissioner for Competition, that it is wrong to relax competition rules through consolidations because it can lead to less competitive national markets.⁴ The Swedish Local Fibre Alliance also agrees with the Swedish government that a relaxation of competition policy is not the right way to address the challenges facing the EU.⁵ It can lead to lack of competition and negative effects for consumers, innovation, investment, competitiveness, and growth in the internal market.

³ BEREC preliminär bedömning av de underliggande antagandena om betalningar från stora CAP:er till ISP:er <https://www.berec.europa.eu/en/document-categories/berec/opinions/berec-preliminary-assessment-of-the-underlying-assumptions-of-payments-from-large-caps-to-isps>

⁴ EU's Vestager Warns of Telecoms Merger Risks to Competition, Bloomberg, 18 april 2024

⁵ Faktapromemoria 2023/24:FPM49, Finansdepartementet.

In the Commission's White Paper, there is an indication of a desire to solve the telecom operators' challenges with cross-national consolidations. In this context, it should be emphasized that open fiber networks create conditions for various actors to lease connections for their own operations. In this way, more than just the owner of the fiber network benefits from the expanded infrastructure. A well-developed fiber infrastructure also reduces costs for further expansion of mobile solutions and other things that need to be connected, as fiber is required for 5G masts. Thanks to good access to a well-functioning fiber infrastructure, also outside major cities, mobile operators in Sweden have been able to lease connections from local network owners and connect their mobile masts with fiber. This has created mobile networks with high transfer speeds, and Sweden has long been at the top when European countries were compared based on their mobile expansion. Consequently, mobile operators have also benefited from this model.

If the EU sees increased consolidation in the mobile market, the need for healthy competition in the market where fiber owners operate increases. This is to ensure that there is good access to fiber to connect masts. Good access to fiber also increases infrastructure competition and thereby reduces the risk of unhealthy competition.

It is crucial that there are also actors who are not vertically integrated and thus do not compete both in the fiber and mobile markets. Urban networks and other local actors are such examples, and several studies have shown that they promote competition and ensure fair pricing.

The Swedish Local Fibre Alliance therefore believes that the fiber and mobile markets should be viewed separately when considering potential consolidation in Europe.

Network Neutrality at Risk

The Swedish Local Fibre Alliance believes that an open and neutral internet is fundamental for the continued development of the European digital infrastructure. The Swedish Local Fibre Alliance notes the absence of a clear discussion on network neutrality in the Commission's White Paper.

Without network neutrality requirements, there is nothing preventing telecom operators from influencing consumers' access to services. For example, they could affect access to the network, prioritize services in which they have a vested interest, or give preference to entities willing to pay high prices for prioritized transport. The Swedish Local Fibre Alliance believes there is a risk that the lack of network neutrality could create barriers for new entrants and that business arrangements between content providers and telecom operators will need to be scrutinized by regulatory authorities.

The convergence between telecom operators and tech companies is blurring the lines, resulting in significant changes in both industries. Telecom operators are offering more technical solutions beyond traditional voice communication, and tech companies are starting to offer communication services. Telecom operators have begun providing content and acquiring companies that offer content services, while traditional TV content is increasingly delivered via broadband. Additionally, companies like META, Amazon, and Netflix are entering these markets by acquiring or developing their own content and investing in infrastructure to support it.

Telecom operators have traditionally been characterized by vertical integration, meaning that companies not only own and operate the network infrastructure but also deliver services and

manage customer relationships. Access to infrastructure is therefore crucial for the sale of services to end customers. For this reason, telecom operators, especially Europe's former state-owned telecom monopolies, tend to expand their service offerings across the entire chain—from owning and operating network infrastructure to offering content services and even owning media companies. Such an operator, controlling the access network and owning various types of access networks, gains a strategic advantage over competitors, thus potentially deteriorating the competitive situation. With control over access networks, there is a risk that the telecom operator could influence the consumer's service or give preference to well-funded content providers. The lack of network neutrality creates obstacles for new entrants and could result in the loss of independent press and TV, as their economic future depends on the distribution of their content by operators.

The Swedish Local Fibre Alliance (Svenska Stadsnätsföreningen) believes that the current regulatory framework needs harmonization, and there is a greater need for more guidance rather than creating additional regulations. For example, the White Paper acknowledges differences in how Member States implement the Electronic Communications Code, which complicates operations for operators active in multiple markets. Therefore, The Swedish Local Fibre Alliance suggests that the Commission should work towards harmonizing existing regulations through regulatory simplification, thereby facilitating cross-border investments instead of focusing on developing more regulations.

Regulatory Simplification

The Swedish Local Fibre Alliance asserts that both regulatory simplification and legal predictability are crucial to stimulating development, innovation, and investments. EU legislation must be designed to be proportionate and legally sound. Proposals from the Commission should be based on thorough impact assessments and a genuine need for new regulation.

Recognizing the diversity among EU countries, the Swedish Local Fibre Alliance believes that Member States must have the opportunity to influence the design of measures that significantly affect them and their critical digital infrastructure.

Wholesale Product

The Commission's White Paper discusses the introduction of a European Wholesale Access Product. However, it does not specify how this product would be structured.

Europe's wholesale access markets exhibit significant differences, and a uniformly regulated access product could potentially disrupt market development and adversely affect infrastructure investments, especially in regions where competition has progressed significantly.

In Sweden, wholesale products are available from the municipal local network owners, and these products evolve in response to demand. The Swedish Local Fibre Alliance's experience indicates that different products are needed at different times. To facilitate the market in Sweden, standardized agreements and technical specifications have been developed, ensuring that both buyers and sellers know what is offered and what they are getting.

Rather than developing a wholesale product, the Commission should advocate for open networks and support BEREC's recommendations and standards within the EU industry.

Investments in New Technologies such as 5G Networks and Fiber

The Swedish Local Fibre Alliance agrees with the Commission on the need for increased investment in telecom infrastructure. However, to achieve ubiquitous coverage, continued support is also required for the expansion of fiber and 5G to areas not commercially viable.

Fiber and 5G complement each other. Currently, there is no faster communication method than optical fiber cables, which transmit data at the speed of light. As wireless connections become faster, the amount of data transmitted increases, necessitating standalone 5G with more fiber-connected antennas closer to users. A well-developed fiber infrastructure reduces costs for expanding mobile solutions and other connected services. Proximity to a fiber network creates favorable conditions for future mobile networks and gigabit services.

EU countries differ in size, population density, market conditions, technology choices, construction techniques, market structures, and broadband demand. Many European countries have well-developed fiber networks, even though household penetration may remain low due to high population density.

In Sweden, the situation varies. Access to fiber is good in densely populated areas, but poor in sparsely populated ones. Much of Sweden's territory consists of extremely remote areas, such as large forested regions with few inhabitants. Swedish businesses and the public sector have significant needs for utilizing digital opportunities, including modernizing forestry with technology or providing telemedicine to remote households, reducing the need for physical visits.

The low population density in Sweden means these areas are unlikely to be reached by competing offers in the foreseeable future. However, society-wide access to digital infrastructure is essential, not just for individual users. This includes connected spaces, facilities, or equipment crucial for societal digital transformation, such as advanced measurement tools or remotely operated equipment. Both fixed and mobile digital infrastructures must be of sufficient quality to be available and reliable 24/7, meeting diverse user needs.

Sweden has made significant progress with open infrastructure, but there is still work to be done. Therefore, it is crucial that EU regulations on state aid for broadband networks provide sufficient flexibility for member states to address market failures. Overall, publicly funded broadband projects are essential for achieving robust connectivity, lowering barriers to excellent mobile coverage, and enabling future mobile network advancements.

Scenario Six - Radio Spectrum

In the White Paper, the Commission considers proposals for more integrated Union-level governance of radio spectrum. Such governance would enable better harmonization of spectrum allocation processes, thereby creating conditions for the economies of scale needed for EU operators to achieve greater investment capacity.

The Swedish Local Fibre Alliance agrees with the Swedish government that the European spectrum management model has been successful.⁶ Predictable and long-term conditions for radio spectrum within the EU further promote investments in the market. The EU needs to

⁶ Faktapromemoria 2023/24:FPM49, Finansdepartementet

strike a balance between the needs of Member States and the telecom operators' desire for easier operation across different countries.

Scenario Seven - Copper Switch-off

In the Commission's White Paper, it is outlined that they aim to facilitate green digital networks by promoting the switch-off of copper networks and advocating for a transition to full fiber environments and more efficient network utilization across the EU.

The Swedish Local Fibre Alliance supports this initiative. Several studies, such as those conducted by the FTTH Council Europe, confirm that switching off copper and transitioning to fiber will yield significant environmental, societal, and economic benefits, including reduced CO2 emissions, increased energy efficiency, creation of new jobs, attractive investment opportunities, and improved end-user experience.

The Swedish Local Fibre Alliance agrees with the Commission's White Paper that customers affected by the copper switch-off should migrate to alternative solutions such as fiber-to-the-home and mobile or fixed wireless access that support next-generation technologies. In today's digital evolution, this means fiber connectivity and 5G technology.

Overall, the Swedish Local Fibre Alliance believes that the shutdown of copper networks is beneficial and agrees that it should be monitored and supervised by each country's regulatory authority to prevent market distortions.

Pilar III - Secure and Resilient Digital Infrastructure for Europe

The Swedish Local Fibre Alliance believes that the issue of security related to Europe's telecom infrastructure needs to be expanded. The digital infrastructure, whether fixed or mobile, in urban or rural areas, needs to be adapted to meet both current and future needs.

The vision for the digital EU should be to have a secure, safe, robust, and continuously available digital infrastructure in all Member States. The infrastructure should be reliable 24/7 and under all circumstances, capable of withstanding potential disruptions and continuing to function reliably. This is essential for implementing the necessary digitalization that society faces.

The EU's overarching goal should be to make the infrastructure resilient against potential threats, including cyber-attacks and technical failures. This requires investment in robust security systems and continuous maintenance and upgrades by the owners of the digital infrastructure.

Another aspect related to security is the importance of ensuring that the critical digital communication infrastructure on which Member States depend is owned and controlled by reliable entities. The Swedish Local Fibre Alliance believes that critical digital communication infrastructure should be owned and controlled by trustworthy and stable actors to maintain availability of the infrastructure even in deteriorating conditions. There may be a need to review foreign interests in critical digital infrastructure, including interests that could exert indirect influence through pressures or financial means.

Digital infrastructure, such as fiber networks and mobile base stations, is identified as critical assets that need to strengthen their resilience against various hybrid threats, sabotage, and antagonistic threats.

The risks today are not only due to technical flaws and threats but also risks from natural disasters that can affect digital infrastructure. To address these risks, we need digital infrastructures that are robust and secure, with the resilience and endurance required to manage and recover from unexpected events. Achieving this requires investment in technological innovation and training for professionals in the sector. By enhancing the reliability and availability of infrastructure, we can build fundamental trust in digital infrastructure.

Security - Quantum Theory

The Swedish Local Fibre Alliance is broadly supportive of the Commission's ambition in the White Paper to coordinate and support the development and deployment of submarine electronic communication infrastructure, including increased support for research and innovation in fiber and cable technology.

Security is a crucial aspect, but the question remains whether the EU should commit to post-quantum encryption recommendations. As quantum technology advances, it is critical for the EU not only to focus on current security measures but also to invest in research on future security solutions. Rapid technological developments mean that threat landscapes are constantly evolving, requiring a flexible and forward-looking strategy to ensure that digital infrastructure remains secure and robust in the future.

Post-quantum encryption is a promising technology aimed at protecting data from potential attacks using quantum computers. While this is an important development, it is crucial not to rely solely on this technology. Quantum technology also opens up opportunities for new types of security, such as quantum cryptography, which uses principles of quantum mechanics to create encryption methods that are nearly impossible to crack.

To ensure a secure and resilient digital infrastructure, the Swedish Local Fibre Alliance believes that the EU should:

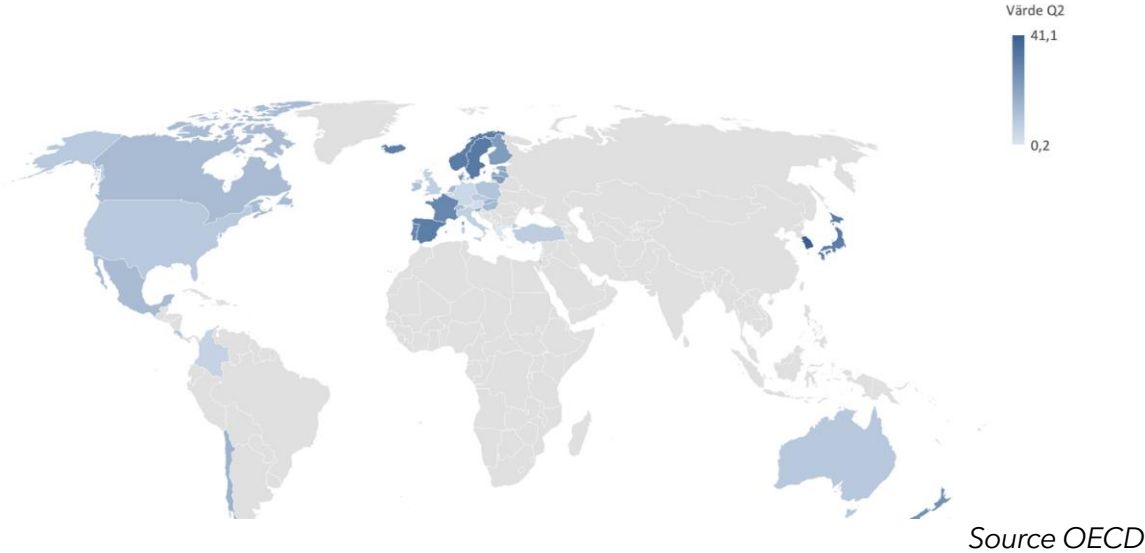
- Promote research and development: invest heavily in research and development of both post-quantum encryption and quantum cryptography. This includes support for universities, research institutes, and private companies working on these technologies.
- Develop standards: collaborate with international standardization bodies to develop and implement standards for quantum-safe communication. This includes ensuring that new technologies are interoperable and can be integrated with existing infrastructure.
- Education and skill development: invest in education and skill development to ensure that the workforce in the EU has the necessary knowledge and skills to work with quantum technologies. This may include both formal education and professional development.
- Security and risk assessment: conduct regular security and risk assessments to identify potential threats and vulnerabilities in digital infrastructure. This includes simulating quantum attacks and developing strategies to mitigate such threats.
- Collaboration and partnerships: promote collaboration among Member States and with international partners to share knowledge, resources, and best practices in quantum security. This can help create a united front against the security threats posed by quantum technology.

By taking a comprehensive approach to security issues and investing in both current and future technologies, the EU can ensure that its digital infrastructure remains secure and

resilient in a world where technological threats are constantly evolving. Such a strategy will not only protect critical infrastructure but also promote innovation and economic growth within the Union.

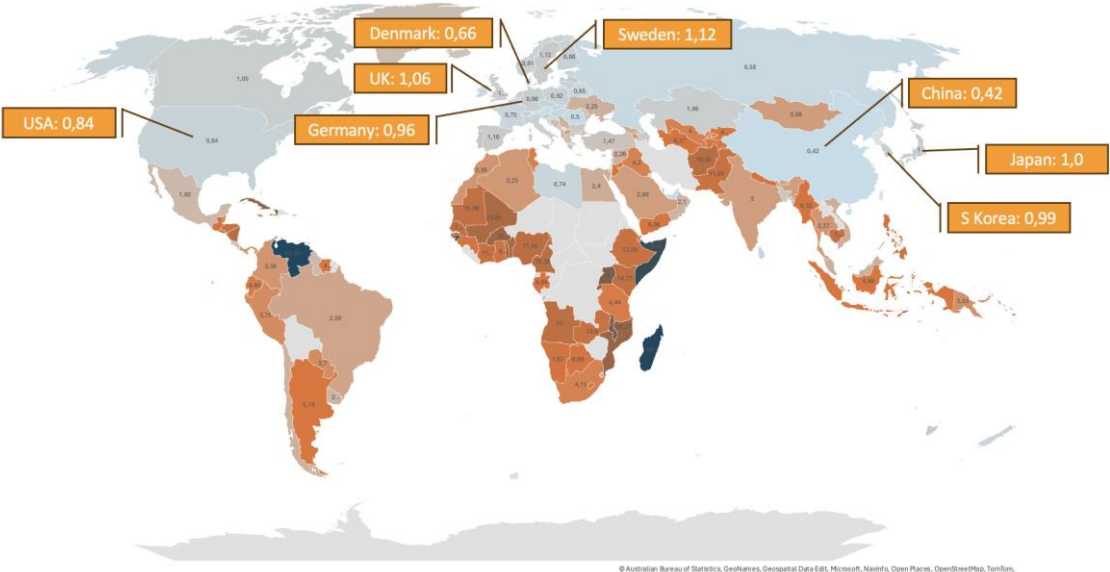
Annex - Statistics and Maps

Map: Fiber subscriptions per 100 inhabitants



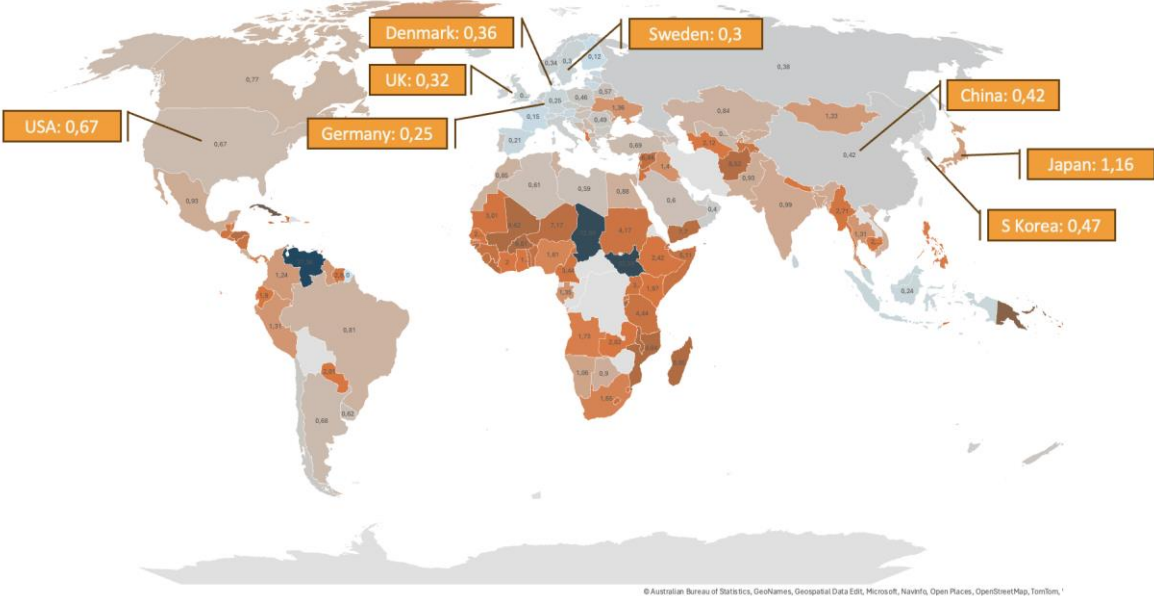
Map: Fixed Broadband Basket, Prices Relative to Standard of Living

Explanation: Developing countries have higher broadband costs relative to the standard of living. There are minimal differences between the EU, USA, China, and South Korea when examining a fixed broadband basket in relation to GNI/c (Gross National Income per capita). China has the lowest prices among the compared countries, while Sweden incurs higher costs followed by the UK, Japan, and South Korea. Germany and Denmark have relatively low prices in the fixed broadband basket.



Map: Data-only Mobile Broadband Basket, Prices Relative to Standard of Living

Explanation: Developing countries face higher broadband costs relative to their standard of living. Germany, Sweden, the UK, and Denmark exhibit relatively low prices for a data-only mobile broadband basket (excluding voice services), while the USA and Japan have higher prices relative to the standard of living (GNI) in each respective country.



Map: Mobile Data and Voice High-Consumption Basket, Prices Relative to Standard of Living

Explanation: Developing countries experience higher broadband costs relative to their standard of living. The USA and selected Asian countries have relatively higher prices for mobile broadband and voice services compared to European countries relative to the standard of living (GNI) in each respective country.

