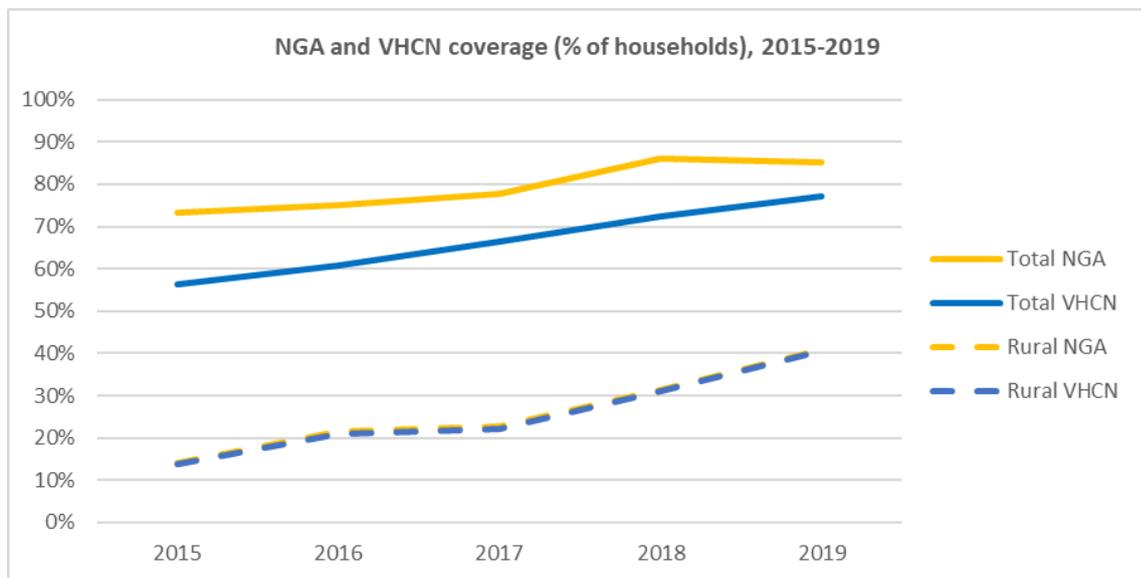
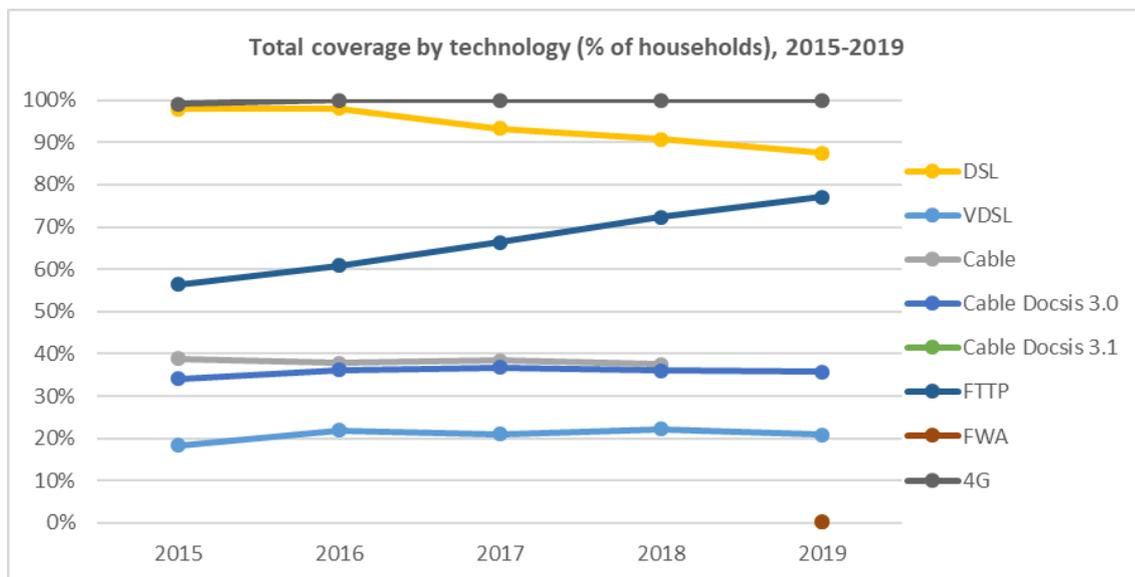


# Sweden



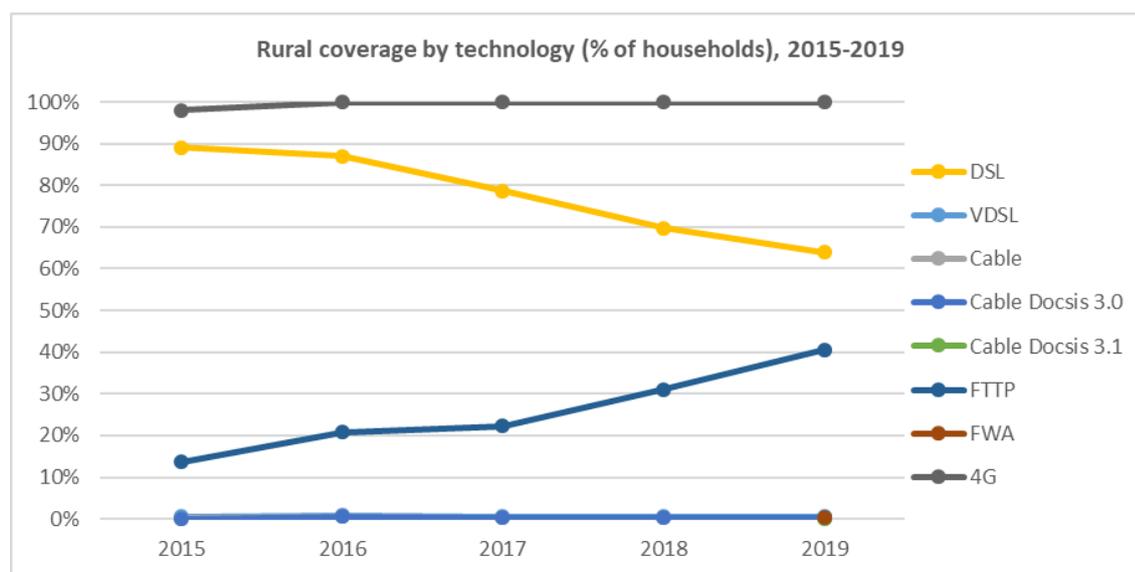
Source IHS and Point Topic, *Broadband coverage in Europe studies*

Fibre to the premises (FTTP) networks are widely available in Sweden (77% of households), more than double the EU average (34%). While there is an urban/rural divide, Sweden’s rural FTTP coverage stands at 41%, more than double the EU average (18%). Moreover, rural FTTP coverage increased by 10 percentage points for 2 consecutive years (22% in 2017, 31% in 2018 and 41% in 2019). The upgrade of cable networks to DOCSIS 3.1 is expected to further increase its very-high-capacity network (VHCN) coverage (currently at 77%) to the levels of its next generation access (NGA) coverage (85%). Aggregate 4G coverage stands at 100%, while the EU average is 99%.

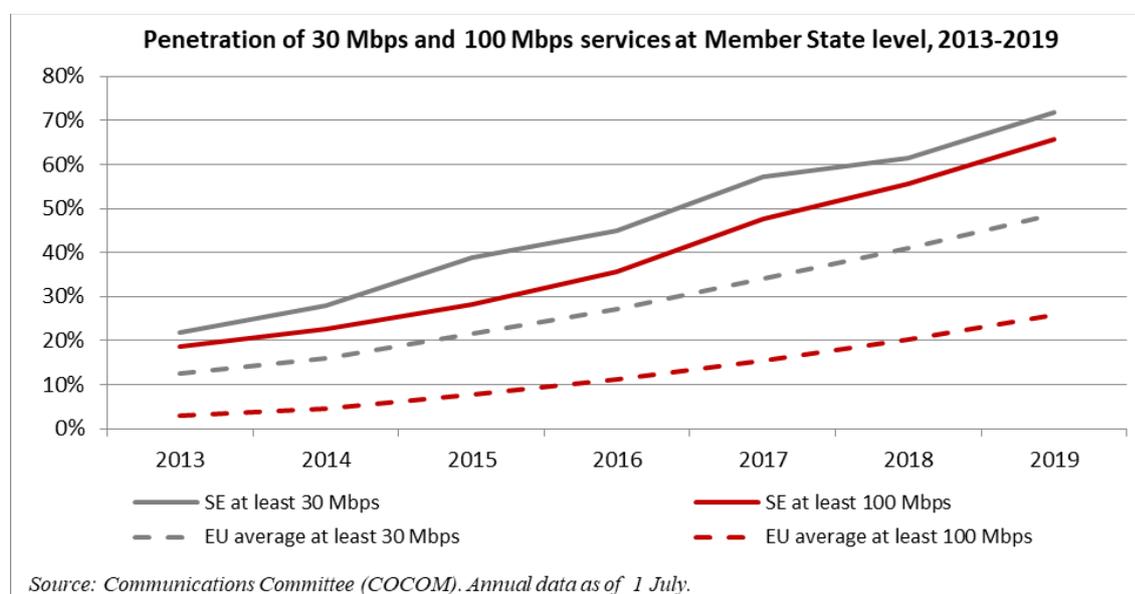


Source IHS and Point Topic, *Broadband coverage in Europe studies*

<sup>1</sup> All the data for fixed and mobile broadband presented in the graphs was collected by Sweden per 1 October 2018 (compared to other Member States where the same data was collected in July 2019).



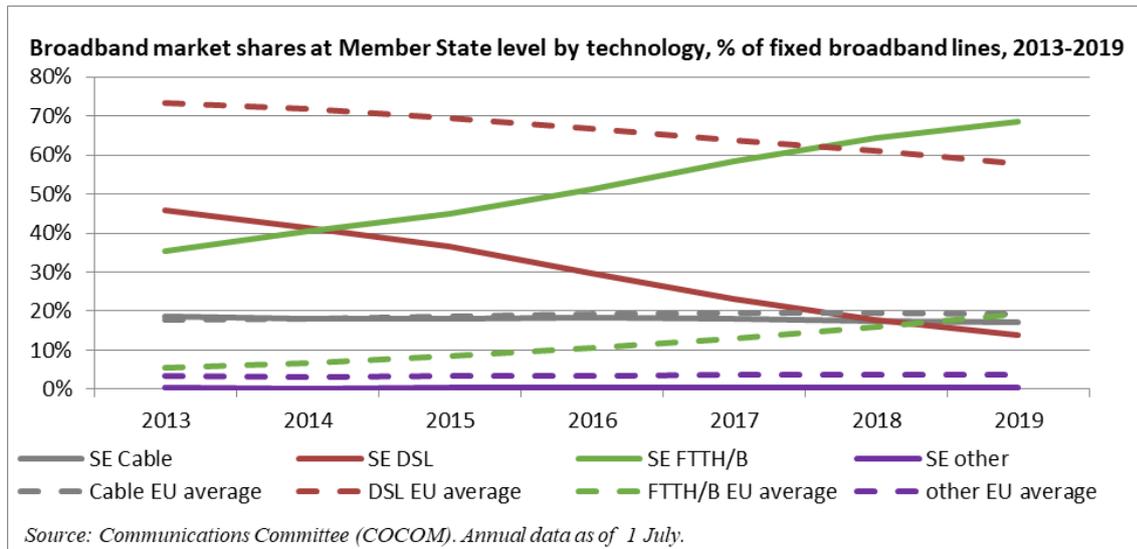
Source IHS and Point Topic, *Broadband coverage in Europe studies*



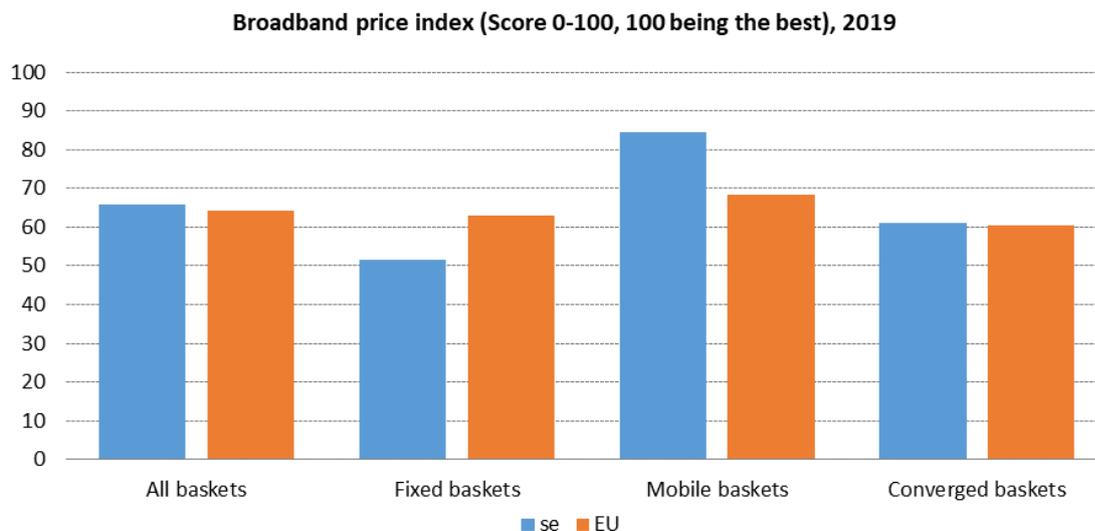
Source: Communications Committee (COCOM). Annual data as of 1 July.

Overall, take-up of fixed broadband increased from 78% in 2018 to 86% in 2019, which is higher than the EU average (78%). Sweden is at a very advanced stage of fibre deployment, and end-users increasingly demand high-speed broadband connections. In parallel, the importance of the legacy copper network is dropping significantly, and the copper network is increasingly being phased out in favour of more advanced technologies. There is overlap between the coverage of different technologies: approximately 60% of end-users connected with copper are also connected to fibre, and approximately 29% of those end-users connected with copper are also connected to cable. In 2019, the market share of FTTH/P fixed broadband lines increased slightly to 68.7% from 64.3%, while the share of DSL decreased slightly from 17.9% in 2018 to 13.8% in 2019. Cable networks are mostly present in multi-dwelling units (MDUs) in urban areas, with only limited presence in rural areas. The number of fibre subscriptions has increased significantly in recent years, while the number of copper subscriptions has fallen significantly.

Fibre is currently by far the most widely used type of broadband subscription in Sweden. The municipalities have played a key role in the deployment of local fibre networks. In this situation, the fibre network reach of the incumbent operator, Telia, differs significantly across Sweden, where it competes with more than 180 local municipal fibre networks.



Prices in Sweden, adjusted for price purchase parity, are close to the EU average. Prices for mobile are significantly lower than the EU average. This could explain the fact that the take-up of mobile broadband has reached 124 subscriptions per 100 people and is one of the highest in Europe. Fixed and converged baskets are more expensive than the EU average, but this does not affect the high take-up of fibre or prevent Sweden having the highest penetration of offers of at least 100 Mbps. In 2019, Sweden scored 66 on the broadband price index, compared with the EU average of 64.



Source Commission services based on Empirica (Retail broadband prices studies)

### 1. Progress towards a Gigabit Society<sup>2</sup>

Sweden is a front-runner in very-high capacity connectivity in Europe, but it needs to address coverage in remote areas in order to reach its ambitious national broadband targets. 84% of Swedish households already had access to 100 Mbps speeds in 2018. The goal is by 2020 to reach 95% coverage of 100 Mbps, and by 2025, 99.9% coverage of 100 Mbps and 98% coverage of 1 Gbps (homes passed). To reach these targets, roll-out in remaining sparsely populated areas needs to speed up. For the next 3 years, the Swedish government has allocated SEK 650 million (€61.16 million) for broadband development. Sweden is preparing a new national State aid scheme to distribute this funding to

<sup>2</sup> It is noted that statements regarding planned or potential State aid measures record intentions declared by Member States and do not pre-judge or pre-empt the assessment of such measures by the Commission under the relevant state aid rules. The DESI report is not meant to provide any assessment of the compliance of such measures with state aid rules and procedures.

ensure the effective deployment of broadband. Approximately SEK 150 million (€14.11 million) will already be made available in 2020. The Swedish Post and Telecom Authority (PTS) estimates that in addition to this funding and commercial investments, further private investment of SEK 22 billion (€2.07 billion) is required in the next 3 years to reach all the targets set for 2025 in the national broadband strategy.

In June 2019, the Swedish government asked PTS to evaluate how future support for broadband could be designed effectively based on PTS' earlier report from 2017 with suggestions for future measures to support broadband. PTS' proposal was submitted to the government in January 2020 and concerns a state-subsidised scheme. The new State aid scheme aims to promote the support of long-term sustainable and high-performing infrastructure enabling access to 1 Gbps speeds, as well as a cost-effective expansion that will help achieve to the goals of the 2020-2025 national broadband strategy. The support scheme sets regional priorities and covers the non-urban areas, which are not connected to next-generation access (NGA) networks.

Private investments in broadband are still ongoing, but the pace of fibre roll-out has slowed since its peak in 2016. The main reason for this is market saturation and the fact that it is mostly rural/difficult/rocky areas that have yet to be covered with fibre. Telia, the largest private investor, announced an investment slow-down and is examining other business scenarios such as fixed wireless access for rolling out fibre in the difficult/rural areas. For this reason, reaching the national broadband targets by 2025 will likely depend on investment and increasing fixed wireless access in the difficult/rural areas. Local networks continue to invest, and the private wholesale operator IP-only has announced it will increase its fibre investments in the coming years.

Following an ordinance from the Swedish government, the Swedish Transport Agency made the permit granting procedure shorter and more efficient. This helped tackle the delays in deployment in sparsely populated areas caused by the permit granting procedures.

A total of 60 licences for 5G test trials have been issued since PTS released its spectrum plan for 5G test licences in March 2017. Of the 60 issued, 38 are in the 3.4 – 3.8 GHz band, 8 in the 2.3 GHz band and 4 in the 26 GHz band at 27 different locations. Umeå will be the first 5G-ready city in Sweden. Five public stakeholders in Umeå worked together throughout 2018 and 2019 to build an infrastructure that will include the first 5G hospital and 5G university in Europe. This creates a test environment for developing new digital solutions, products and services that provide community benefits and a better everyday life for residents. An important step towards the commercial launch of 5G in Sweden in 2020 is the creation of Sweden's first 5G network at KTH Royal Institute of Technology in Stockholm. The aim is to create an innovation arena where the Institute can test various applications of 5G with the support of industry actors.

## **2. Market developments**

On 12 November 2019, the European Commission approved, under the EU Merger Regulation, the proposed acquisition of Bonnier Broadcasting by Telia. The approval is conditional on full compliance with commitments. To address the Commission's competition concerns, Telia committed among others to grant access to free-to-air and basic pay-TV channels, as well as to premium sports pay-TV. Some market players expressed concerns over the implementation of the commitments by Telia, which is their main competitor in the broadband market and now the distributor of Sweden's most-watched commercial TV channels.

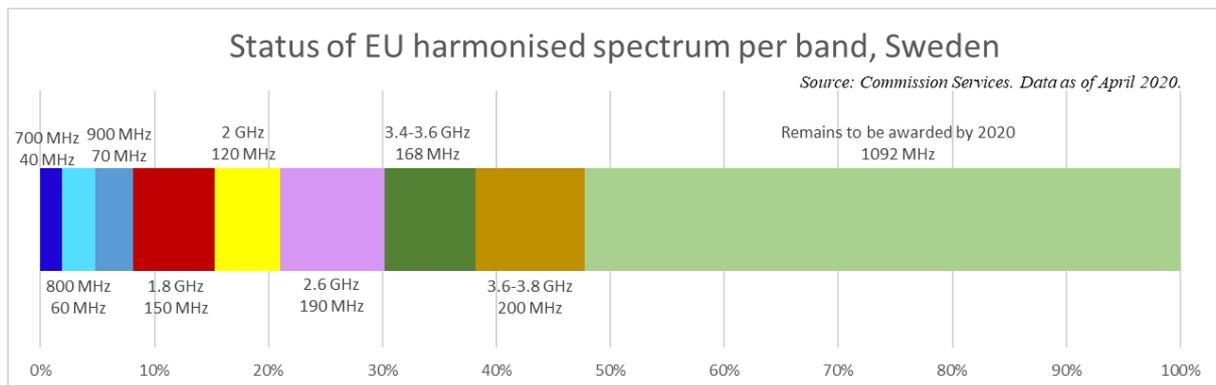
The Swedish mobile market is a competitive market dominated by five mobile network operators: Telia, Tele2, Telenor, 3 Sweden and Net1 (an operator offering only mobile broadband services at a fixed location in the 450 MHz band). There are also several mobile virtual network operators (MVNO) with very small market shares. The incumbent, Telia, continues to have the largest market share.

The number and composition of subscriptions of bundled services has been stable in recent years, without any significant change since PTS last adopted measures in 2015. The only increase concerns IP-TV over fibre. The trend in voice communication continues, with mobile increasing and fixed service decreasing. The mobile operators have adopted a clear strategy offering data packages, which include unlimited voice and message services. This lowers consumers' incentive to use number-independent interpersonal communications services (NI-ICS), at least on a domestic level. NI-ICS continue to be used for international communications.

### 3. Regulatory developments

Implementation of the European Electronic Communications Code (EECC) has taken a step forward in Sweden, with the publication on 4 September 2019 of a memorandum by the Swedish Government. According to this memorandum, the aim is to implement the EECC in Sweden by means of a new Electronic Communications Act and to amend all relevant legislation accordingly. The public consultation on the draft proposal was completed in December 2019. The next step is to submit the draft bill to the Council on Legislation and then to the Swedish Parliament for voting in May/June 2020.

#### 3.1. Spectrum assignment



In Sweden, 48% of the spectrum harmonised at EU level for wireless broadband has been assigned. Part of the 700 MHz band was auctioned and awarded in December 2018, and the licences are valid from the beginning of 2019 until the end of 2040. However, so far the band has been used by mobile network operators (MNOs) for providing 4G services, due to the lack of capacity in rural Sweden. Also, there has not been any decision from the Ministry on the use of the reserved 2×10 MHz FDD spectrum in the 700 MHz band and no decision regarding the 20 MHz SDL spectrum that remained unsold. Despite the Ministry's decision that this spectrum is available for digital terrestrial television (DTT) until the end of 2020, both the Ministry and PTS confirmed that the entire 700 MHz band is no longer used for terrestrial TV broadcasting. In addition, Sweden appealed against the result of the auction and prompted the national Court to request a preliminary ruling by the European Court of Justice. No decision has yet been taken, and an oral hearing was planned for spring 2020. The auction for the 3.4-3.8 GHz band was initially planned for March 2020 but has been postponed until October 2020 to take into consideration national security issues concerning 5G roll-out. PTS ran a public consultation for the 26 GHz band in January 2020.

#### 3.2. Regulated access (both asymmetric and symmetric)

Operators were consulted in Q2 2019 on the markets for wholesale call termination on individual public telephone networks provided at a fixed location (market 1 of the 2014 Recommendation on relevant markets<sup>3</sup>) and for wholesale voice call termination on individual mobile networks (market 2

<sup>3</sup> Commission Recommendation 2014/710/EU of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC

of the 2014 Recommendation on relevant markets<sup>4</sup>). The market analyses were then notified to the Commission in October 2019. The Commission issued its decision<sup>5</sup> on the notification in November 2019. The market players expressed concerns about PTS' analysis resulting in the lowest mobile termination rate (MTR) in the EU, which could potentially lead to a temporary increase in the termination rate if the mobile Euro-rate is above the current very low rate. According to market players, the termination rates proposed by PTS, which are very low compared to other Member States, will have a considerable negative impact on the Swedish market. PTS adopted its final decisions on 12 December 2019, under which 19 undertakings in market 1 and 12 undertakings in market 2 were designated as having significant market power (SMP).

In November 2019, PTS notified to the Commission its decision for the market for wholesale local access provided at a fixed location (market 3a of the 2014 Recommendation on relevant markets<sup>6</sup>) and for the market for wholesale central access provided at a fixed location for mass-market products (market 3b of the 2014 Recommendation on relevant markets<sup>7</sup>). Based on the fact that FTTH has become by far the dominant technology in Sweden and that subscriptions to the copper network have dropped very significantly, PTS concluded that copper and fibre are no longer part of the same market and consequently defined a separate market for wholesale local access to fibre networks. In a call for input regarding a first hypothesis, PTS indicated a geographical segmentation and found that local fibre networks should have significant market power (SMP) obligations, as they constitute local monopolies. However, PTS eventually changed its position, and in its draft decision for formal consultation defined a national market for wholesale local access to fibre networks, in which only Telia had significant market power. All operators (except for the association representing the municipal fibre companies<sup>8</sup>) expressed concerns over this finding and its implications. Some overall disagreement on the access to these municipality networks surfaced, with most operators calling for further, uniform (access) regulation of the municipal networks. Specifically, the operators argued that the wholesale products currently offered to access seekers on a commercial basis are simple rebranding solutions, with very limited scope for the access seeker to customise the end-product.

The Commission has examined the notification and issued a veto decision<sup>9</sup>, expressing serious doubts on the definition of the geographic scope of the fibre local access market. Following this decision, PTS had to withdraw its draft decision. PTS defined the geographic market as being national despite observed differences in the connections of operators in different municipalities, and variations of the actual reach of historical operator Telia's fibre access network across local municipalities. On the national market, PTS found that Telia holds significant market power (SMP) based on factors including its market share at national level and the significant gap in terms of national market share between Telia and its competitors. However, the Commission assessed that the variations of competition between municipalities were too significant to conclude that the market is indeed national, and it found that a more granular approach to the geographic market definition is needed.

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of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, Text with EEA relevance, OJ L 295, 11.10.2014, p. 79–84.

<sup>4</sup> Ibid.

<sup>5</sup> C(2019) 8116 final, Brussels, 8.11.2019.

<sup>6</sup> Commission Recommendation 2014/710/EU of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, Text with EEA relevance, OJ L 295, 11.10.2014, p. 79–84.

<sup>7</sup> Ibid.

<sup>8</sup> This association represents around 200 operators with more than 50% of the market.

<sup>9</sup> C(2020) 619 final of 7 February 2020.

#### 4. End-user matters

##### a. Complaints

The Swedish Quality Index's<sup>10</sup> latest survey of customer experiences in the mobile industry shows that customer satisfaction with mobile operators and services is increasing. In broadband services, the trend for private and corporate customers looks quite different, showing a continuous decline for corporate customers and a positive upturn for private customers<sup>11</sup>. From 1 January 2019 to 30 November 2019, PTS received a total of 1 972 consumer complaints, compared to 2 202 complaints in 2018. The most common consumer complaints in 2019 concerned a) number and call-related issues such as loss of number when switching provider as well as unwanted and unsolicited sales calls and attempted frauds; b) disruption of services; and c) availability and accessibility of services, such as customer service and access to broadband when moving.

##### b. Open internet access

On 15 December 2018, PTS initiated supervision against the internet service provider Bahnhof for possible violation of the open internet rules. Specifically, Bahnhof had blocked several piracy-related domains for file-sharing content subject to copyright, and blocked the site of the copyright holder after the copyright holder submitted a lawsuit at the Swedish court ordering Bahnhof to block the piracy-related domains. PTS dismissed the case in March 2020 after having found that a court decision makes it necessary for Bahnhof to block the content subject to copyright and that Bahnhof no longer blocks the site of the copyright holder.

Telia's mobile offer 'Free surf on social media', which was allowing subscribers to use a number of social media applications and services without deducting data, was subject to supervision to check whether the commercial practice of zero-rating is compatible with Article 3(2) of the Open Internet Regulation (EU) 2015/2120. PTS dismissed the case in June 2019 after having found that the offer was open to all suppliers of content and that the offer did not limit end-users' rights by means stipulated under the Telecoms Single Market Regulation.

PTS initiated supervision in January 2019 regarding a possible traffic management policy published on Telia's website. The policy seemed to limit both the speed of file sharing and its capacity, which seemed to be reduced during most of the day. Furthermore, simultaneous sessions of file sharing seemed to be reduced to a maximum of five. PTS dismissed the case after Telia confirmed that such traffic management was not practised.

##### c. Roaming

In 2019, there were complaints concerning calls while 'roaming like at home' (RLAH) to special numbers (i.e. toll-free numbers or numbers with shared costs such as numbers for companies, authorities and organisations), leading to bill shock.

##### d. Emergency communications – 112

Telenor's IP telephony subscribers were unable to call the emergency number 112 for 5 days in December 2019. Following this incident, PTS is supervising the operational disruptions. Since the interruptions affected a large number of subscribers' ability to call the emergency number 112 for several days, PTS will examine the cause of the incident, how Telenor addressed the problem and what the company is doing to prevent it from happening again.

Sweden implemented AML handset-based localisation for emergency calls through the HELP 112 II project financed by the European Commission. Disabled end-users may access emergency services by sending an SMS to 112 or using an emergency application.

<sup>10</sup> <http://www.kvalitetsindex.se/branschundersokningar/telekom/> .

<sup>11</sup> Ibid.

## **5. Conclusion**

Sweden is a front-runner for ultrafast connectivity in Europe. The biggest challenge for achieving the goals of its ambitious national broadband strategy by 2020 is to address the difficulties of ensuring roll-out and coverage of the remaining sparsely populated areas. In this respect, a spectrum policy consistent with its investment needs will be key. The successful deployment of 5G in Sweden depends on the timely availability and assignment of the 5G pioneer bands. The Ministry is working together with PTS and the other relevant authorities to solve the delays with the permit granting procedures and to allocate funding more efficiently.