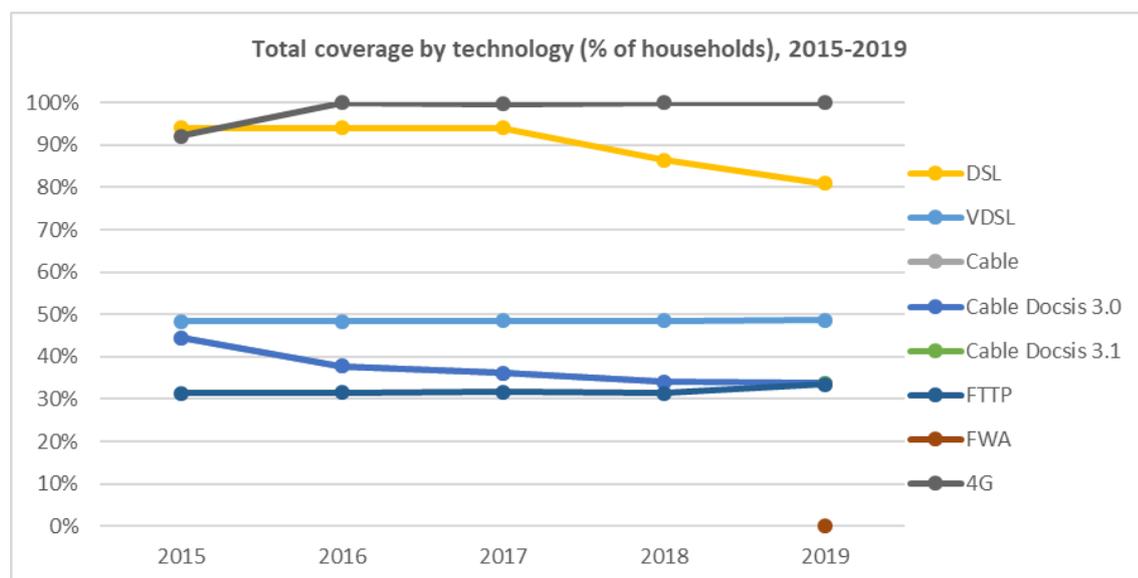
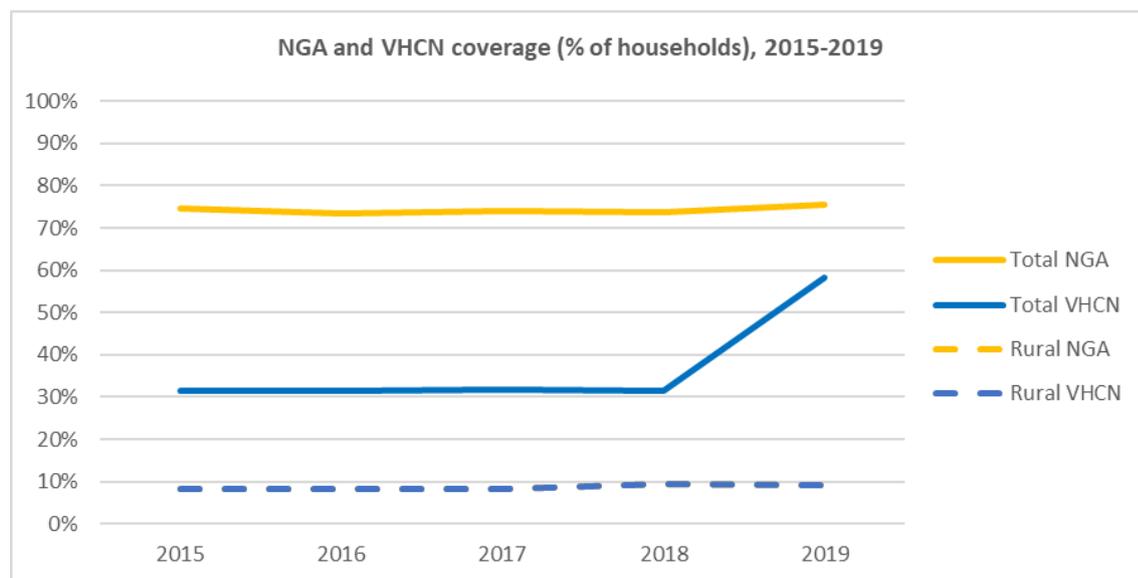


Finland



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

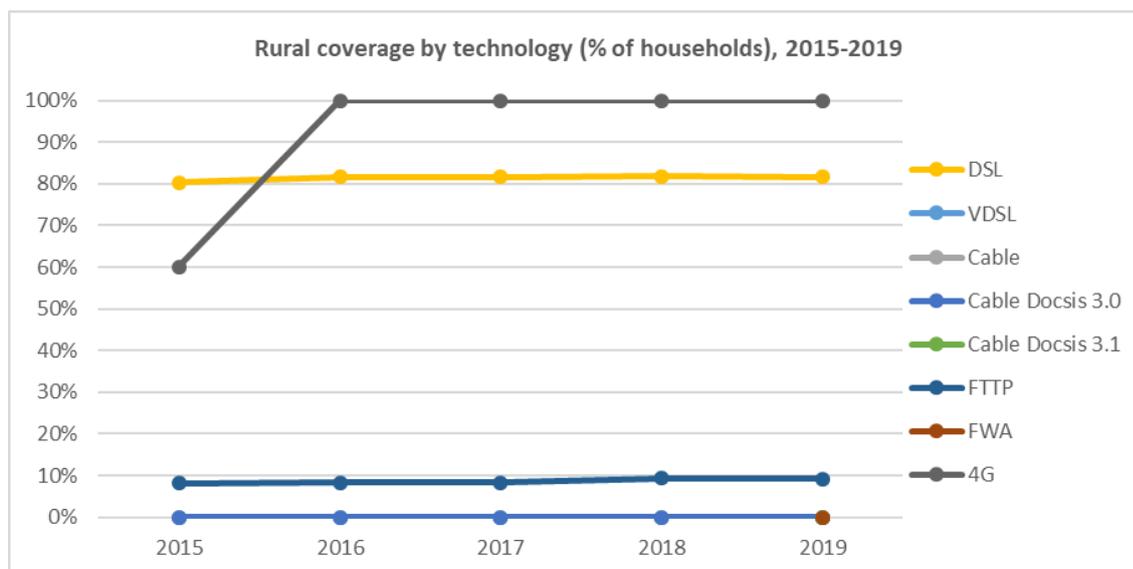
At the end of June 2019, there were more than 1.7 million fixed broadband subscriptions in Finland, out of which 1.5 million were household subscriptions¹. Next generation access (NGA) coverage stood at 75%, below the EU average of 86%. Total coverage of very high capacity networks (VHCN) stood at 58% of the households, above the EU average of 44%. Rural VHCN coverage, made up exclusively of FTTP, remained stable but was only available to 9% of households (both in 2019 and 2018). Aggregate 4G coverage is ubiquitous in both urban and rural areas (standing at 100% in both instances against 99% in both instances for the EU).

However, a decrease in DSL coverage was recorded, falling from 87% in 2018 to 81% in 2019. This decrease may be linked to a gradual decommission of copper lines, which seemingly are being replaced by fibre technology or alternatively by mobile broadband technology. At the end of 2018, more than half of all fixed broadband subscriptions were fibre subscriptions.

Furthermore, the country's coverage in VDSL technology remains marginal. It stood at 49% in 2019

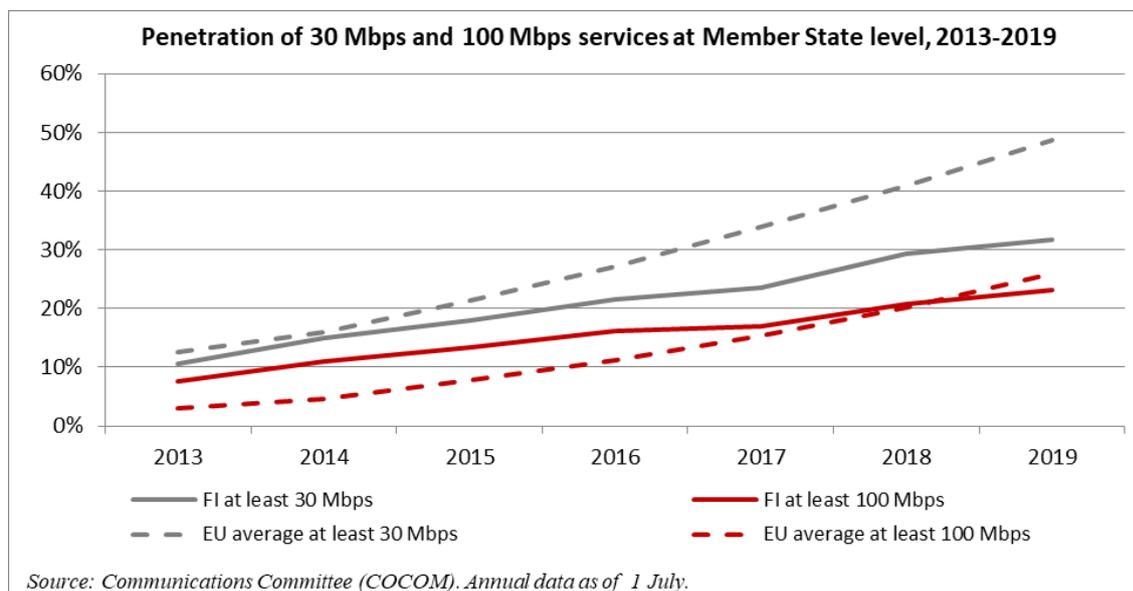
¹ Source: Traficom.

against 59% for the EU.



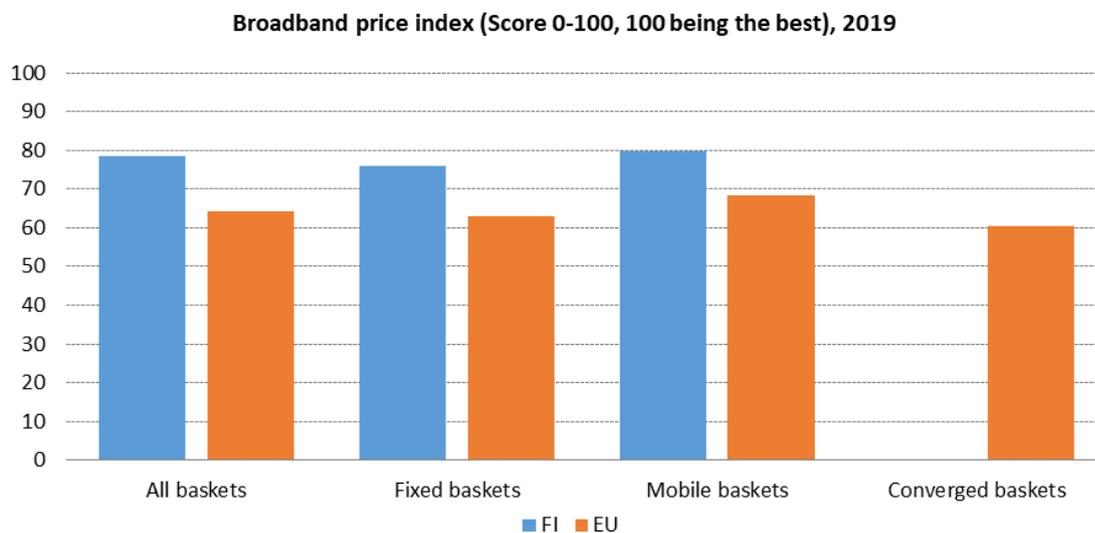
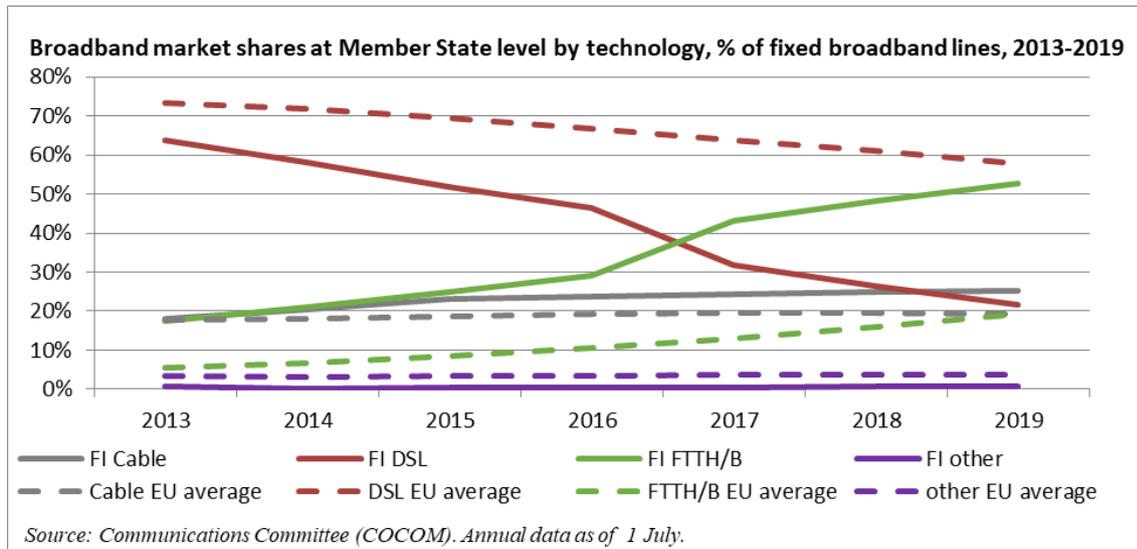
Source: IHS and Point Topic, *Broadband coverage in Europe studies*

52.7% of fixed broadband lines were composed of fibre-to-the-home/building (FTTH/B), far above the EU average of 19.3%. Some 25.1% are cable lines, while DSL still makes up a shrinking 21.5% share of these lines. Other technologies amounted to 0.6% of those specific technologies used on the relevant market for providing broadband services.



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

In Finland, the penetration rate of 30 Mbps services stood at 31.7 %, significantly below the EU average of 48.7%. The penetration rate of 100 Mbps services stood at 23.1%, slightly below the EU average of 25.9%.



Source: European Commission based on Empirica (Retail broadband price studies)

Finland scores among the top five EU Member States in the mobile broadband price index. Indeed, it stood at 79 against an EU average of 64. On the other hand, when it comes to fixed baskets, Finland ranks 11th with 76 against an EU average of 63.

1. Progress towards a Gigabit Society²

The Finnish digital infrastructure strategy is ongoing. Under this strategy, Finland aims to achieve at least the minimum gigabit connectivity objectives set by the Commission. By 2025, all Finnish households should have access to a connection of at least 100 Mbps, and it should be possible to increase the connection speed to 1 Gbps.

The deployment of gigabit networks in Finland depends almost exclusively on private companies. Telia has created a joint venture with the infrastructure investor CapMan. This joint venture will own, and intends to heavily invest in, Telia's fibre-to-the-home (FTTH) infrastructure and provide the connection to end users in an 'open fibre' business model. This is a new set-up in Finland. The proposed joint

² 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.

venture was notified to the European Commission on 11 February 2020.

Another new joint venture is Adola company, composed of a fully state-owned fibre company and private investors. The company operates as a software company and is active in fibre roll-out.

Furthermore, as regards Finland's national broadband plan, the period in which to submit applications under the high-speed broadband aid scheme ended in 2018 but payments are estimated to continue until 2021. A total of €130 million in public aid has been made available to broadband projects. Of the total funding, €66 million come from the Government, approximately €25 million is from the EU rural development programme for mainland Finland and approximately €40 million is from Finnish municipalities. The authorities are now planning to make arrangements so that it would be possible to apply for and be granted aid again from the beginning of 2021. It is envisaged that aid will be granted for broadband roll-out in areas where no commercial broadband would be introduced before 2025³.

As to 5G, companies have started deploying networks in the 3.4-3.8 GHz spectrum band in mainland Finland⁴.

Some 5G services are already commercially available in the biggest cities of mainland Finland. Indeed, mobile services (for phones) and fixed wireless services (for home broadband) are on offer.

As to 5G road coverage, uninterrupted mobile network coverage (LTE) already exists in urban areas and major roads and railways. It is expected that the operators will use the 700 MHz band (auctioned in 2016) to provide 5G coverage to rural and suburban areas and all major roads and railways. The 3.4-3.8 GHz band is expected to be used for 5G in urban areas.

2. Market developments

The Finnish telecommunications market features fixed to mobile substitution: in 2019, the number of mobile subscriptions stood at 9.3 million whereas there are only 290,000 fixed telephone lines left in the country.

In the mobile market, there were no significant changes in 2019 in the market shares of the three main operators. Elisa is the market leader with a 38% share of the market. Telia Company's market share is 32% and the mobile and fixed network operator DNA had a 29% share. The market share of other operators amounted to 1%⁵.

In January 2019, DNA announced that it had acquired Moi Mobiili Ltd, a virtual mobile network operator that had been operating on DNA's network since 2016. This acquisition reportedly did not have any major impact on the mobile market in terms of competition dynamics.

In April 2019, the Telenor Group acquired the majority stake in DNA.

As to the fixed market, the joint venture Adola Oy entered the market on 19 November 2019. It is owned by both DIF Capital Partners and Cinia Oy. The joint venture is planning to build FTTH networks in Finland. In particular, it is reportedly planning to offer 100,000 FTTH connections to both public and private customers.

There are 21 operators with significant market power (SMP), most of whom operate at local level, on the fixed broadband market. The three major SMP operators that account for some 90% of retail and

³ According to the general government fiscal plan, for 2021, a total of €5 million will be reserved for implementing the national broadband project.

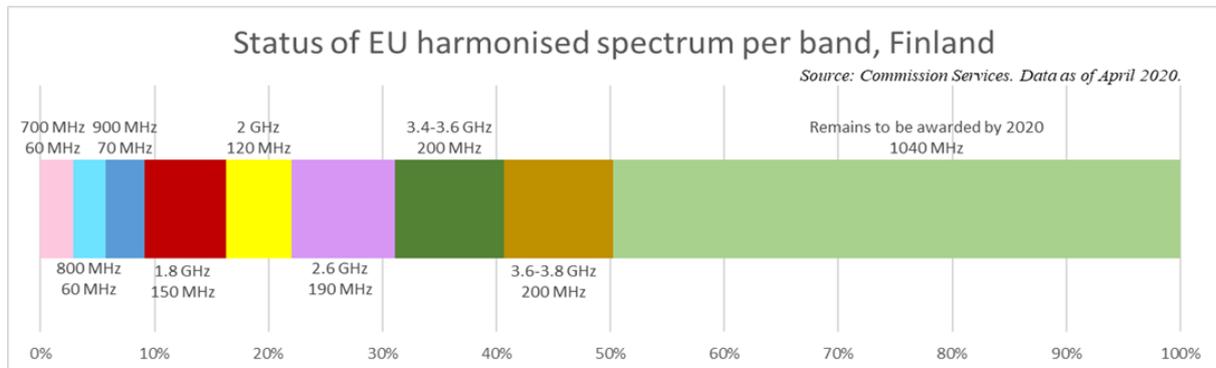
⁴ The licences for mainland Finland in the 3.4-3.8 GHz band were granted in autumn 2018 through an auction procedure to DNA, Elisa and Telia. They are valid until 31 December 2033.

⁵ Source: Traficom.

wholesale broadband markets are DNA Oyj, Elisa Oyj and Telia Finland Oyj. Depending on the region, competitiveness may vary according to the availability of alternative offers. There is more competition in the Helsinki area where an alternative cable modem network is available.

3. Regulatory developments

3.1. Spectrum assignment



In Finland, 50% of the spectrum harmonised at EU level for wireless broadband has been assigned. The spectrum that still needs to be assigned is mainly in the 1.5 GHz and the 26 GHz bands⁶.

As to 5G spectrum in the Åland Islands, in February 2020, the government granted, through a call for applications, network licences for 5G in the 3.4-3.8 GHz band to three operators: Elisa Oyj, Telia Finland Oyj and Ålands Telekommunikation ab. The aim of these network licences is to facilitate the construction of the first 5G networks in Åland⁷.

In addition, the auction of the 26 GHz spectrum band in mainland Finland is scheduled for the summer of 2020. It is anticipated that it will be used for 5G.

3.2. Regulated access

Finland's Transport and Communications Agency, Traficom, is planning to notify a new SMP decision for market 18 (television and radio transmission services) to the European Commission in the first half of 2020.

Also in 2020, Traficom is planning to start a new analysis round for i) the market for wholesale local access provided at a fixed location (market 3a of the 2014 Recommendation on relevant markets), ii) the market for wholesale central access provided at a fixed location for mass-market products (market 3b of the 2014 Recommendation on relevant markets), and iii) the market for wholesale high-quality access provided at a fixed location (market 4 of the 2014 Recommendation on relevant markets).

Furthermore, Traficom adopted a decision on access to in-house networks and published a press release on 31 May 2019 on the obligations on housing companies to enable users to choose their broadband operator⁸.

⁶ As regards the 26 GHz spectrum band, the frequencies of 25.1-27.5 GHz would be auctioned for national use as three 800 MHz frequency bands. The proposed starting price in the auction would be €7 million for each 800 MHz frequency band. In February 2020, the Ministry of Transport and Communications requested opinions on a number of draft documents related to the auction.

⁷ The licences were granted for the period running from 1 March 2020 to 31 December 2033 and each applicant received the same amount of frequency capacity.

⁸ <https://www.traficom.fi/fi/ajankohtaista/taloyhtioiden-pitaa-mahdollistaa-asukkaiden-aito-valinnanvapaus-nopeiden>

4. End-user issues

a. Complaints

Traficom received approximately 330 written customer complaints, which were reportedly resolved through counselling. The main source of consumer complaints concerned the availability of fast broadband services and the pricing of fibre networks. Some complaints were related to the pricing of nationwide customer services. However, Traficom is not responsible for dealing with complaints related to contractual terms concluded between operators and private individuals. The Finnish Consumer Ombudsman is responsible for such issues.

b. Open internet

Traficom has launched a project to develop an application for measuring the speed and quality of internet connections. The work is based on a BEREC project to develop a European measurement tool. Traficom aims to provide users with a measurement application with which they can verify the quality of their internet connection. Traficom intends to involve stakeholders in designing and developing the application from the outset through dedicated workshops.

c. Roaming

In May 2019, Traficom granted Elisa a renewed license to apply surcharges to consumers for data roaming in EU and EEA countries. The new license became valid when the previous license expired on 15 June 2019, and is valid until 14 June 2020. Furthermore, DNA and Telia had also been granted authorisations to apply surcharges in 2019⁹.

d. Emergency communications – 112*

Advanced Mobile Location, a handset-based caller location that relies on global navigation satellite systems and wi-fi signals, is available in Finland. Disabled end users can contact 112 via SMS.

e. Universal service

No changes were made in 2019.

5. Other issues

A merger between authorities took place on 1 January 2019¹⁰. The Finnish Communications Regulatory Authority (FICORA) became part of Traficom, which also handles transport issues. Indeed, Traficom is a merger of FICORA, the Transport Safety Agency (Trafi), as well as the Transport Agency for which it carries out certain functions. As of 1 January 2020, Traficom's communications market division will be merged with its spectrum division in order to form a digital connections division.

6. Conclusion

Finland is a front-runner in the EU when it comes to providing commercial 5G, as the 5G service are already available commercially in the centres of big cities. More spectrum capacity for 5G is expected to be auctioned in 2020 with the 26 GHz band.

Finland has good fixed broadband and 4G coverage overall. Nevertheless, fixed coverage in rural areas could be further improved. The main problem encountered has been the lack of incentive for market players to invest in sparsely populated areas of the country. Finland has adopted State aid measures and has further adjusted them to tackle this issue, resulting in more projects being carried out.

⁹ DNA's authorisation expired on 14 April 2020. Telia's authorisation is to expire on 14 June 2020.

¹⁰ The Law (23.11.2018/935) on the Transport and Communications Authority ('Laki Liikenne- ja viestintävirastosta') came into force on 1 January 2019.