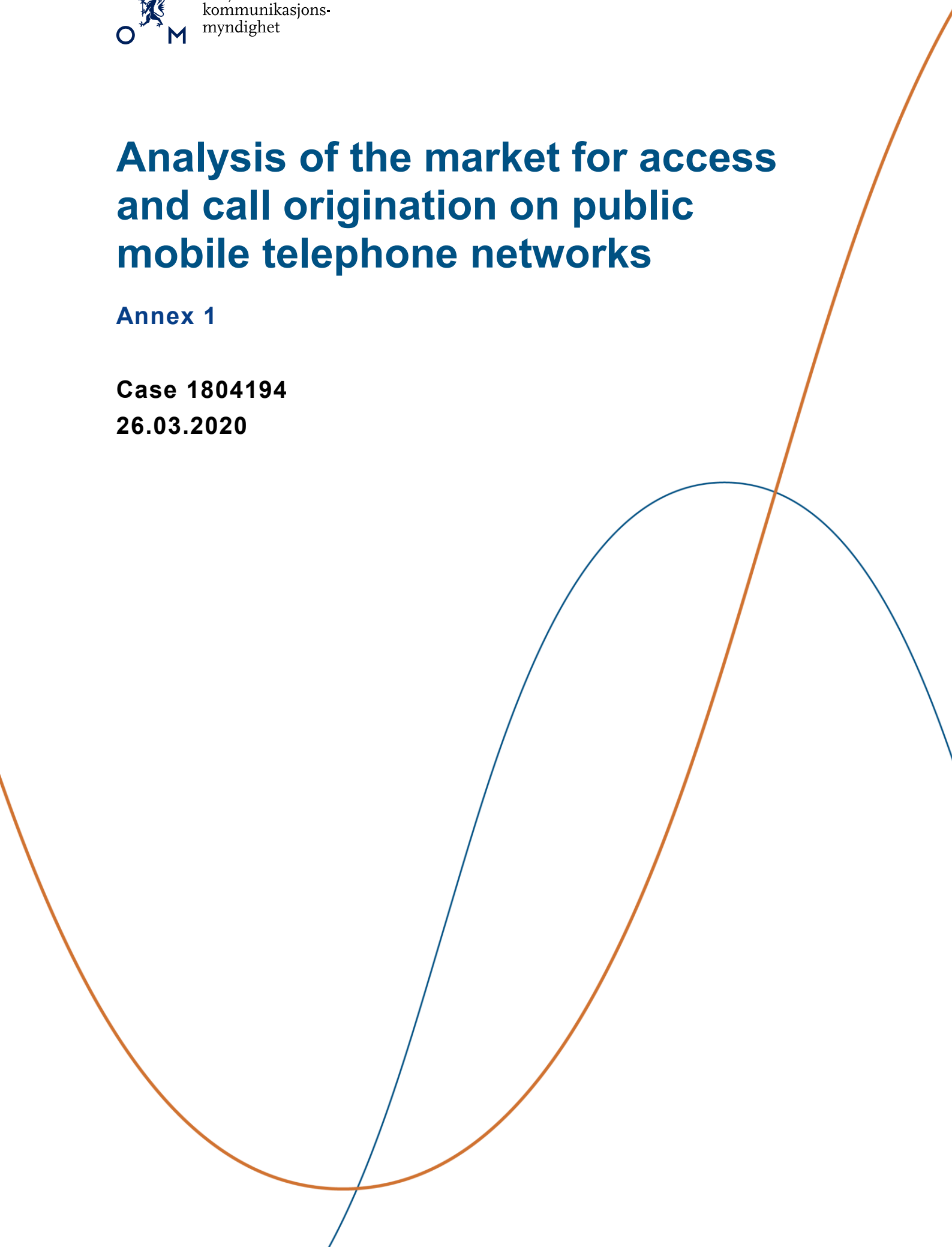


Analysis of the market for access and call origination on public mobile telephone networks

Annex 1

Case 1804194
26.03.2020



Summary

The Norwegian Communication Authority (Nkom) has previously issued decisions in the wholesale market for access and call origination on public mobile telephone networks (formerly market 15 - hereinafter referred to as the market for access and call origination on mobile networks) on 23 January 2006, 5 August 2010 and 1 July 2016.

This decision presents Nkom's assessment of whether there is still a need for sector-specific ex-ante regulation in the relevant market in the coming two to three years (three-criteria test) and an updated analysis of whether there is/are a provider(s) with significant market power.

Chapter 1 contains a description of the background and framework for the analysis.

Chapter 2 contains Nkom's definition of the relevant market. Nkom has found that the relevant wholesale market is technology-neutral and includes wholesale access to be able to offer voice call origination, text messaging and data services for the following external access types:

- Access by national roaming
- MVNO access
- Service provider access

Both access in order to offer ordinary mobile services and access in order to offer mobile broadband are included. Co-location is also included as a separate form of access within the relevant wholesale market. The geographic market is defined as Norway.

Chapter 3 provides an overview of the market development and operators on the supply and demand sides in the relevant market.

In Chapter 4, via the three-criteria test, Nkom has assessed whether the market is still susceptible to sector-specific ex-ante regulation. The three cumulative terms on which the assessment is based are:

1. The presence of high and non-transitory structural or regulatory barriers to entry.
2. The market structure does not trend towards effective competition within the relevant time horizon.
3. Competition law alone is insufficient to adequately address the identified market failure(s).

Nkom believes that the market for access and call origination on mobile networks continues to be characterised by high and non-transitory entry barriers in the form of very costly roll-out, a high percentage of sunk costs, restrictions on access to financial resources and substantial

economies of scale for already established operators. On this basis, Nkom has concluded that the first criterion has been met.

In the assessment of the second criterion, Nkom took account of any structural changes and market behaviour since the previous analysis, and the impact this will have on the market dynamics within the time horizon of the analysis. Telenor and Telia still control a very large part of the market. At the end of first half of 2019, the two established operators accounted for 85 per cent of bundled mobile subscriptions and around 91 per cent of the sales in this retail market.

At network level, there are still only two providers of access to external operators, Telenor and Telia. Ice offers data traffic on its own network to its own retail activities while voice and SMS are primarily produced on Telia's network. Telenor has a market share of 51 per cent on wholesale level based on the number of subscriptions, while Telia's market share is 40 per cent. Ice has just over nine per cent of the subscriptions. Of the total data traffic in the market, around 55 per cent goes via Telenor's network, 41 per cent via Telia's network and only four per per cent via Ice's network.

To establish as a competitive operator offering wholesale access to external operators takes longer time than to establish in the retail market. Nkom has no clear evidence that Ice will be able to establish itself as a competitive provider for external buyers in the wholesale market within the time horizon of the analysis. Thus, Nkom cannot conclude that Ice would be sufficiently able to discipline the established network providers in the relevant wholesale market within the analysis' time horizon.

On this basis, Nkom believes that there is no sufficiently clear evidence of dynamics in the market within the analysis' time horizon which would indicate that the market will trend towards sustainable competition without ex-ante regulation. The second criterion is therefore fulfilled.

Reliable access to infrastructure is important to achieving the goal of sustainable competition in the market for access and call origination on the mobile network. Nkom believes that general competition law alone is not sufficient to achieve this predictability, and the third criterion is thereby also met.

On this basis, Nkom has concluded that the three criteria for sector-specific ex ante regulation are still fulfilled.

In Chapter 5, Nkom assesses whether one or several providers alone or together have significant market power in the relevant market, i.e. whether any provider has financial strength to largely behave independently of its competitors, customers and consumers. The

assessment is based on the providers' market shares. Telenor's sustained high market share, both at retail and wholesale level, gives an indication that Telenor has significant market power alone. Telenor has also had stable high profitability over time, and this also supports the presumption that Telenor has significant market power. Furthermore, the perception appears to exist, particularly among business customers, that Telenor has the best network in terms of coverage. The perception of the networks among retail customers suggests that Telenor's strong position in the market will continue. The assessments of both vertical integration and economies of scale support the presumption that Telenor has significant market power. Nkom has also assessed whether there are disciplining factors which mean that the company nonetheless cannot act independently of competitors, customers and consumers within the time horizon of the analysis. Neither the assessment of buyer power nor potential competition indicate that there are sufficient disciplining factors.

On this basis, Nkom believes that Telenor can largely behave independently of competitors, customers and consumers during the period covered by the analysis, which means that Telenor has significant market power in the wholesale market for access and call origination on mobile networks.

In theory, the existence of single dominance excludes findings of joint SMP¹ in the same market. However, Nkom has still also assessed whether it is probable that Telenor and Telia would find it rational, on a permanent basis, to tacitly collude in the absence of regulation. In order to be able to establish joint SMP, three cumulative criteria have to be satisfied:

- The market must be transparent enough for each member of the oligopoly to monitor each other's behaviour in a sufficiently detailed manner and in real-time.
- The tacit collusion must be possible to maintain over an extended period.
- It must be probable that neither the current nor potential future competitors or customers can prevent the goals of the coordinated behaviour from being achieved.

An assessment of joint SMP must be based on the focal point of potential tacit collusion. Denial of access, either in the absolute sense or more indirect in the form of unreasonable terms, has been identified as the core problem in the market and thereby constitutes a natural focal point.

Despite there being many similarities between Telenor and Telia, the analysis of single dominance shows that there are several factors that differentiate the two operators and which influence their incentives to engage in tacit collusion to prevent wholesale access. Telenor's

¹ Section 3-1 of the Electronic Communications Act states that a provider "individually or jointly with others" may have significant market power. When a provider has significant market power alone, this is referred to as single dominance, while if several providers together can act independently of their customers, competitors and consumers to an appreciable extent, this is referred to as joint SMP.

stable market position, both in the form of market share and profitability, differs from the development Telia has undergone and is still undergoing. Wholesale agreements make an important contribution to Telia's profitability and will also be able to continue to do so within the next two to three years. This may indicate that Telia will consider itself better served by selling access to wholesale customers rather than denying access. Nkom is also of the opinion that it is uncertain as to whether the wholesale-market can be said to be sufficiently transparent for the operators to be able to monitor coordination to not grant access on sufficiently favourable terms. Furthermore, it is also uncertain whether any tacit collusion could be maintained over time. It is therefore Nkom's conclusion that currently there are insufficient grounds for claiming that Telenor and Telia would consider it rational to permanently engage in tacit collusion to deny access.

Contents

1	Background and framework for the analysis	8
2	Definition of the relevant market.....	10
2.1	Market definition in general	10
2.1.1	The product market.....	10
2.1.2	The geographical market.....	12
2.2	Market definition in previous decision	13
2.3	Definition of the product market at retail level	14
2.3.1	Bundled services.....	14
2.3.2	International roaming	14
2.3.3	Access and origination on fixed networks.....	15
2.3.4	Mobile broadband telephony	15
2.3.5	Pre-paid subscriptions/cards and post-paid subscriptions	16
2.3.6	Business and residential subscriptions.....	17
2.3.7	Access to mobile networks via various technological platforms	19
2.3.8	Conclusion concerning the retail market	21
2.3.9	Mobile broadband.....	21
2.3.10	Machine-to-machine communication (M2M) via mobile networks	26
2.4	Definition of the derived wholesale market	28
2.4.1	Access to mobile networks for buyers of wholesale products.....	28
2.4.2	Services at wholesale level.....	30
2.5	Definition of the geographical market	31
2.6	Conclusion concerning market definition	32
3	Overview of market development and market operators	32
3.1	Operators on the supply side	32
3.2	Operators on the demand side	33
3.3	Summary concerning market operators	34
4	Three-criteria test.....	36
4.1	Further details of the performance of the three-criteria test.....	37
4.2	First criterion: High and non-transitory entry barriers	38
4.2.1	General comments on the first criterion.....	38
4.2.2	Structural entry barriers	38
4.2.3	Regulatory entry barriers	42
4.2.4	Conclusion – first criterion	46
4.3	Second criterion: The market is not tending towards effective competition	47
4.3.1	Introduction.....	47

4.3.2	Development in market shares	47
4.3.3	Market concentration	56
4.3.4	Price developments and usage patterns	58
4.3.5	Importance of a third mobile network	62
4.3.6	Potential competition.....	69
4.3.7	Conclusion - second criterion	70
4.4	Third criterion: General competition law alone is insufficient	72
4.4.1	General comments on the third criterion	72
4.4.2	Relationship between sector-specific regulation and competition legislation.....	73
4.4.3	Assessment of whether general competition law is sufficiently effective in the market	74
4.4.4	Conclusion concerning the third criterion.....	76
4.5	Conclusion concerning the three-criteria test	76
5	Analysis of the market – assessment of dominance	76
5.1	Legal basis.....	76
5.2	Method and indicators of significant market power	77
5.3	Market shares.....	78
5.3.1	Market share at retail level for bundled mobile services.....	79
5.3.2	<i>Market shares for mobile broadband</i>	81
5.3.3	<i>Market shares at wholesale level</i>	83
5.3.4	Summary concerning market shares.....	84
5.4	Profitability	85
5.5	Access to sales channels.....	87
5.6	Access to information, switching costs and lock-in mechanisms	88
5.7	Vertical integration.....	90
5.7.1	Significance of quality and coverage in the mobile network as input factor	91
5.7.2	Significance of ownership and control of the network for leased lines and other input factors	92
5.7.3	Summary and conclusion concerning vertical integration.....	94
5.8	Economies of scope.....	94
5.9	Cases under the current regulation	95
5.9.1	Development and follow-up of access prices.....	95
5.9.2	Follow-up of non-discrimination requirements	96
5.9.3	Follow-up on requirements for the standard offer	97
5.9.4	Summary and conclusion	97
5.10	Buyer power/countervailing buying power	98
5.11	Entry barriers and potential competition	100
5.12	Summary and conclusion concerning significant market power	100

5.13	Assessment of joint SMP	102
5.13.1	Method for assessing joint SMP	103
5.13.2	Focal point for potential coordinated behaviour	104
5.13.3	The incentives for the providers to coordinate.....	106
5.13.4	Opportunities for the operators to tacit coordinate.....	107
5.13.5	Maintaining the cooperation.....	109
5.13.6	Threat from outside parties	110
5.13.7	Conclusion regarding joint SMP	110

1 Background and framework for the analysis

1. The regulatory framework for electronic communications is based on five Directives adopted by the European Union (EU).² These Directives have been implemented in Norwegian law by Act no. 83 of 4 July 2003 relating to electronic communications (the Electronic Communications Act) and associated regulations, including the Regulation of 16 February 2004 on electronic communications networks and electronic communications services (the Norwegian Electronic Communications Regulation).

2. The regulatory framework must lay the foundation for the harmonisation of regulation in the EEA, limit entry barriers and facilitate sustainable competition for the benefit of users.

3. It follows from Sections 3-2 and 3-3 of the Electronic Communications Act, and Norway's obligations under the EEA Agreement, that identification of providers with significant market power must take place in accordance with the guidelines and recommendations prepared by the EFTA Surveillance Authority (ESA) under the framework directive for electronic communications services. The ESA has established guidelines for market analysis and the assessment of significant market power³ and a recommendation on relevant markets (hereafter referred to as the Recommendation).⁴

4. It states in the ESA's Guidelines that an assessment of relevant markets and significant market power must be based on a market analysis. The assessment must be in accordance with competition law methodology. The Guidelines and the Recommendation, together with relevant provisions in the Electronic Communications Act, particularly sections 3-1 to 3-3, will therefore form the legal framework for the market analysis.

5. The ESA's guidelines are identical to the Commission's guidelines for market analysis and the assessment of significant market power dated 11 July 2002. The Commission

² Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (Framework Directive); Directive 2002/20/EC on the authorisation of electronic communications networks and services (Authorisation Directive); Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive); Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive); Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).

³ EFTA Surveillance Authority Guidelines of 14 July 2004.

⁴ EFTA Surveillance Authority Recommendation of 11 May 2016 with the Commission's Explanatory Note.

published new guidelines⁵ on 7 May 2018 which replaced those from 2002. Among other things, the new guidelines provide an overview of more recent case law and a more in-depth description is given of the legal basis for identifying significant market power.

6. Nkom expects that ESA will adopt similar guidelines to the Commission's guidelines. Based on this and due to harmonisation considerations with the rest of the EEA, Nkom will, for all practical purposes, use the Commission's guidelines as a basis for this market analysis (hereafter referred to as the Guidelines). The same applies to the accompanying Explanatory Note⁶.

7. The ESA revised the original Recommendation⁷ concerning relevant markets in 2008. The number of pre-defined markets for ex-ante regulation was then reduced from 18 to 7. The Commission has revised the list of relevant markets again and adopted a new Recommendation on 9 October 2014⁸. The ESA published an identical recommendation for the EEA/EFTA countries on 11 May 2016.

8. The wholesale market for access and call origination on public mobile telephone networks (previously market 15 - hereafter referred to as the market for access and call origination on mobile networks) was one of the markets that was removed from the Recommendation in 2008. However, Nkom is able to define markets departing from the Recommendation. For a market that departs from the Recommendation to be susceptible to sector-specific ex ante regulation, the three cumulative criteria (three-criteria test) specified in section 2 et seq. of the Recommendation must be met.

1. The presence of high and non-transitory structural or regulatory barriers to entry.
2. A market structure which does not tend towards sustainable competition within the relevant time horizon.⁹
3. Competition law alone is insufficient to adequately address the identified market failure(s).

9. If the three criteria are fulfilled, a market analysis must be performed with a view to determining whether any service provider(s) has/have significant market power in the market. The term "significant market power" in the Electronic Communications Act is very close to the competition law standard of "dominant position".

10. This analysis is based on Nkom's document entitled "Methodology for Market Analysis" (methodology document) from June 2009. In this document, Nkom has elaborated on the criteria for the market analysis on certain points. The methodology document is not legally binding, but expresses Nkom's understanding of the guidelines that Nkom is obliged to follow. The market analyses will therefore be undertaken in accordance with the views and

⁵ European Commission Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services.

⁶ Commission staff working document accompanying the document communication from the Commission Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services, Explanatory Note.

⁷ The EFTA Surveillance Authority Recommendation of 14 July 2004 was identical to the Commission Recommendation of 11 February 2003.

⁸ COMMISSION RECOMMENDATION 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.

⁹ The Recommendation uses the term "effective competition". The Guidelines define this as a market in which operators with significant market power are absent, cf. section 19. This cannot be interpreted in an antithetical manner, i.e. that the presence of a provider with significant market power will prevent the market from becoming more effectively competitive. Odelsting Proposition No. 58 (2002-2003) page 99 states "*If none of the providers has significant market power then there is assumed to be effective competition in the market*". The terms do not mean exactly the same, but Nkom nevertheless assumes that the terms will coincide for this purpose.

assessments expressed in the methodology document. Should there prove to be discrepancies between the methodology document and the Guidelines or the Recommendation, the methodology document will be waived. The document in no sense regulates the Norwegian Competition Authority's assessments in accordance with the Norwegian Competition Act.

11. This is Nkom's fourth analysis of the market for access and call origination on public mobile telephone networks. Previous analyses are dated 23 January 2006, 5 August 2010 and 1 July 2016. In the analyses of 5 August 2010 and 1 July 2016, Nkom performed the three-criteria test and concluded that the market was susceptible to sector-specific ex-ante regulation.

12. This annex will hereafter be referred to as the "market analysis" and comprises Nkom's definition of the relevant market, an updated assessment of whether the three criteria are fulfilled, and an analysis of whether there are one or multiple providers with significant market power. The market analysis is an annex to the draft decision in which Nkom identified Telenor as a provider with significant market power and imposed specific obligations to remedy existing and potential competition problems.

13. Market shares and other statistics in the market analysis are based on Nkom's electronic communications statistics for half year 2019, unless otherwise specified.

14. The market analyses will be subject to regular review. In markets with frequent and comprehensive changes, such reviews will have to be carried out relatively frequently. The market analyses are therefore limited in the extent to which they are forward-looking, cf. Section 14 of the Guidelines. This market analysis has a time horizon of two to three years.

2 Definition of the relevant market

2.1 Market definition in general

15. In the market analysis, Nkom must assess whether the markets pre-defined by the ESA suit Norwegian conditions. For markets that are no longer in the Recommendation, updated definitions of the product market and the geographical market are required.

16. The definition of relevant markets must follow the same procedure as the market definition within competition law. However, in some cases, markets defined by the competition authorities may deviate from markets defined in ESA's Recommendation or by national regulatory authorities in accordance with Article 15, no. 3 in the Framework Directive and the Guidelines¹⁰. The preparatory works to the Norwegian Electronic Communications Act furthermore make clear that sector regulation can have a broader perspective for the market classification than competition regulation since it seeks to take further developments into account.¹¹

2.1.1 The product market

17. A relevant product market consists of products or services (the terms are used interchangeably below without any difference in meaning) that are sufficiently substitutable. The starting point for the definition of a relevant product market is an assessment of demand-side substitutability. Demand-side substitutability exists when two or more products in the

¹⁰ Chapter 1.3, paragraph 10 of the Guidelines.

¹¹ Proposition no. 58 2002-2003 to the Odelsting, page 99.

market are, in the perception of the end-user, mutually exchangeable on the basis of characteristics, price and area of utilisation.

18. If demand-side substitution does not exist to any sufficient degree, supply-side substitution must be considered. Supply-side substitution presupposes that suppliers that are not already providers within the relevant product market can, as a reaction to small but significant and non-transitory changes in relative prices, redirect their production to the products or services in question and market them in the short-term without this entailing significant extra costs or risks. If these conditions are met, the additional production will have a disciplining effect on the affected providers' competitive behaviour. Such immediate and direct effects will have equivalent effects to demand-side substitution.

19. However, the ESA's announcement¹² regarding the definition of the relevant market states that demand-side substitution must be assigned the most emphasis:

“From an economic point of view, for the definition of the relevant market, demand substitution constitutes the most immediate and effective disciplinary force on the suppliers of a given product, in particular in relation to their pricing decisions. [...] Basically, the exercise of market definition consists in identifying the effective alternative sources of supply for the customers of the undertakings involved, both in terms of products/services and geographic location of suppliers.”

20. The same announcement further states that supply-side substitution “[...] may also be taken into account when defining markets in those situations in which its effects are equivalent to those of demand substitution in terms of effectiveness and immediacy.”

21. An acknowledged method of assessing substitutability is the "hypothetical monopolist test" (SSNIP¹³ test), which seeks to find the most-delineated market in which a hypothetical monopolist can exercise market power. This test assesses the effect of a marginal, but significant (in practice 5-10 per cent) and permanent increase in the price of the relevant product based on the assumed price level in a market with effective competition. All other prices are assumed to be unchanged. The question is whether the price increase can be made profitable for the hypothetical monopolist. An alternative product is a substitute if the price increase cannot be implemented without losing sales at a scale that makes a price increase unprofitable. The price increase may be unprofitable because customers switch to the alternative product (demand-side substitutability) or because providers of other products change their production to the relevant product (supply-side substitutability).

22. The Recommendation does not make use of the SSNIP test an absolute requirement in the market definition. Similar methods may therefore also be used. Regardless of method, the hypothetical assessment should be supplemented by factual information about behaviour on the supply and demand sides to the extent that such information is available. On the demand side, factors such as the end-users' access to information, the costs of changing provider and other lock-in mechanisms should be taken into consideration. On the supply side, account should be taken of the actual opportunities a provider has to change production as well as any regulatory conditions that prevent rapid market entry by competitors in the market.

23. The purpose of the market definition is to assess whether the access to substitution can contribute to limiting a hypothetical monopolist's opportunity to increase the price of a product by the buyers of the product choosing a related product. Not being able to demonstrate substitution between two products will not necessarily be an indication that the

¹² EEA Supplement to the Official Journal of the European Union, no. 28, 16 July 1998: Announcement by the EFTA Surveillance Authority regarding the definition of the relevant market within competition law in the European Economic Area (EEA), Section 13, et seq.

¹³ "Small but Significant Non-transitory Increase in Price". See Section 29 of the Guidelines.

hypothetical monopolist can price the various different services independently of each other. If there are other factors indicating that a hypothetical monopolist cannot price the services independently of each other, there can still be reason to include the services in the same market. One assessment criterion is how the products are viewed by the operators on the demand side. If those demanding the products to a great extent consider these to be closely complementary services and view pricing of these products as one, any such common pricing constraint might indicate that the products are in the same market.

24. The Commission opens up for other conditions to justify that products are included in the same market, even though this is not indicated by the substitution assessments. In the Commission's original Recommendation, the market for access and call origination on public mobile telephone networks also included services that are not substitutable. In the Explanatory Note from November 2007, the Commission states that in some cases end-users may prefer to purchase a bundled product instead of purchasing the products separately, and that the bundled product is thus the relevant product market¹⁴:

"Communications companies provide a multitude of services to their customers, which are often sold as a bundle. In most cases the individual services in the bundle are not good demand-side substitutes for each other yet may be considered to be part of the same retail market if there is no more independent demand for individual parts of the bundle. On the supply side, bundling two or more components into one product is driven by savings in production, distribution and transaction costs, and the ability to improve the quality of the product. Bundling may also be related to the technology used where a given network can be configured to provide a large range of services."

25. Reduced transaction costs from purchasing products together, plus the convenience of being able to receive many services via the same handset and SIM card, have been cited as factors for arguing that the bundled product constitutes the relevant product market.

26. However, the Commission emphasises that the bundled product will still not constitute the relevant product market if a sufficient number of end-users will purchase the products separately in the event of a marginal, but significant and non-transitory, relative price increase for the bundled product.

2.1.2 The geographical market

27. After the relevant product market has been determined, the geographical market is defined. In accordance with Section 48 of the Guidelines, the geographical market may be defined as that area in which the relevant product is offered on approximately similar and sufficiently homogeneous conditions of competition. Geographical markets within electronic communications have traditionally been defined based on the relevant network's propagation, and the jurisdiction of the legal regulation of the market¹⁵.

28. Nkom can define regional or national markets. The jurisdiction for defining transnational markets is vested with the Commission and the ESA.

29. It might make sense in the case of some product markets to divide them into geographical markets that are smaller than the nation state, since there are local providers of electronic communications services covered by the relevant product market, or to identify local variations in the competitive conditions.

¹⁴ Commission Explanatory Note, 13 November 2007, Chapter 3.2. Commission Explanatory Note 27. April 2018, also addresses "Bundling of services and products" on page 12.

¹⁵ Section 51 of the Guidelines.

30. BEREC¹⁶ has drawn up "Common Position on geographical aspects of market analysis (definition and remedies)"¹⁷. In this document, BEREC describes the recommended procedure for any geographical definition of the market. Nkom uses this recommendation as a starting point when assessing geographical markets.

31. The Norwegian Electronic Communications Act applies presumptively to Norwegian land territory. Pursuant to Section 1-3 of the Electronic Communications Act, cf. Regulation no. 882 of 4 July 2003, the Norwegian Electronic Communications Act also applies to Svalbard, Jan Mayen, the dependencies and Antarctica. In respect of Svalbard, exemptions have been made for Chapter 3 (significant market power), Chapter 4 (access) and Section 9-3 (consultation procedure).¹⁸ However, electronic communications on Jan Mayen, the dependencies and Antarctica are assumed to have very little significance for the market analyses Nkom carries out pursuant to the Electronic Communications Act.

32. In the following, references to Norway as a local jurisdiction refer to mainland Norway/Norwegian territory.

33. In Chapter 2.5, Nkom assesses whether there is a need for a detailed geographical analysis of the relevant market.

2.2 Market definition in previous decision

34. Nkom defined five retail markets in the decision of 1 July 2016. These were:

- The retail markets for bundled mobile services (residential and business).
- The retail markets for mobile broadband (residential and business).
- The retail market for machine-to-machine communication.

35. The wholesale market for access and call origination on mobile networks was defined as wholesale access to all public GSM, UMTS and LTE networks, and origination of voice, SMS and data services for the following external forms of access:

- Access by national roaming
- MVNO access
- Service provider access

36. Access to offer ordinary mobile services, access to offer mobile broadband and access to offer M2M services were included.

37. Access delivered to MNOs' internal service provider level ("self supply") was included in the same market as access purchased by external providers.

38. Co-location was included as a separate form of access within the relevant wholesale market.

39. The geographical market was defined as mainland Norway.

¹⁶ Body of European Regulators for Electronic Communications (BEREC).

¹⁷

http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/common_approaches_positions/4439-berec-common-position-on-geographic-aspects-of-market-analysis-definition-and-remedies

¹⁸ In Section 1, first paragraph of the Regulation it states that the Norwegian Electronic Communications Act applies to Svalbard, cf. Section 3 of the Svalbard Act, but with the exception of Chapter 3 concerning significant market power, Chapter 4 concerning access, and Section 9-3 concerning consultation procedure.

2.3 Definition of the product market at retail level

40. Nkom first defines the relevant product market at retail level, and then derives the relevant product market at wholesale level. However, there is not necessarily a one-to-one relationship between the products in the relevant retail market and the relevant wholesale market.

41. The definition is based on the description of the market for access and call origination on public mobile telephone networks in the original recommendations from the ESA and the Commission, with the Commission's related Explanatory Note from 2003. Nkom also considered the assessments from previous analyses.

42. The relevant markets for bundled mobile services are defined below. Adjacent markets for mobile broadband are defined in Chapter 2.3.9. The markets for bundled mobile services are defined in Chapter 2.3.10 in relation to machine-to-machine communication.

2.3.1 Bundled services

43. The end-users obtain access to the mobile network in order to make calls, receive calls, send text messages, and use data services for internet access, etc. Thus, from the end-users' point of view there is no substitutability between connection to the mobile network and the aforementioned services. However, the end-users must be connected to the mobile network and have access to the related services at the same time in order to be able to use the mobile service. Access to mobile networks and the option to use the related services are sold as a bundled product.

44. At present, the price of data traffic determines to a large extent the monthly costs of a mobile subscription because the product packages are often offered with unlimited voice and text messaging to domestic fixed and mobile networks. This means that prices for voice, text messaging and data must be viewed as a whole.

45. On this basis, Nkom considers access to the mobile network, voice, text messaging and data to be part of the same relevant product market at retail level.

2.3.2 International roaming

46. At retail level, international roaming entails that the individual user can make and receive calls, send and receive text messages, and use data services via mobile phone outside the country in which the user has an established subscription. The opportunity to use a mobile phone abroad is normally sold together with the subscription for home-country use.¹⁹

47. Joint European requirements were introduced from 15 June 2017 which stipulate that mobile services cannot cost more for travel within the EEA than in the user's home country. However, the rules are only intended to apply to end-users while travelling and it is not the case that end-users shall be able to replace their national subscriptions with roaming services (permanent roaming). There are provisions regarding "Fair use policy" in the rules that will make it possible for providers to prevent permanent roaming. Nkom therefore finds that international roaming will not be a substitute for access and origination of voice, text messages and data services on national networks. On the other hand, the pricing of international roaming will be more closely linked to the national prices. A packaged product with usage included must, for example, also apply to travel within the EEA without being at extra cost to the end-user.

48. In its original Recommendation, the Commission assumed that international roaming would, from a demand perspective, be assumed to constitute a separate retail market. However, in the revised Recommendation it is assumed that international roaming is included

¹⁹ See information on the rules for international roaming at <http://eng.nkom.no/market/telecom-services/regulations/international-roaming>.

as part of a wide retail market for mobile services, together with access, national and international calls and text messaging.

49. Nkom believes that the same conclusion as that arrived at in the Commission's revised Recommendation must apply for Norway. International roaming is not a substitute for national subscriptions for end-users, but is closely related. Consumers expect to also be able to use their ordinary subscriptions during foreign travel. On the basis of the bundling of ordinary mobile subscriptions with international roaming, Nkom believes that international roaming is part of the relevant product market at retail level.

2.3.3 Access and origination on fixed networks

50. Access and call origination are also offered via fixed networks, including broadband telephony. Broadband telephony is a telephone service that uses VoIP technology²⁰ to transfer voice calls via IP networks. Nkom has previously concluded that broadband technology arranged for all-to-all communication must be considered to be a public telephone service and thereby subject to the Electronic Communications Act's regulation of such services.²¹

51. In recent years, mobile-originated voice traffic has increased steadily, at the expense of voice traffic in fixed networks. In 2005, mobile-originated traffic amounted to around 30 per cent of total voice traffic from landline and mobile phones. The corresponding figure for first half 2019 was 92 per cent. There is thus a significant degree of substitution from landline to mobile phone use.

52. However, the issue of assessment for this market definition is whether a marginal, but significant and non-transitory, price increase for mobile telephony would entail a switch to landline telephony on a scale which would make the price increase unprofitable. Norwegian end-users' patterns of use today do not, however, suggest that this scenario is likely. Growth in both voice traffic and data traffic from mobile phones indicates that end-users will not replace their mobile phones and the services the mobile phones make available, with landline phones.

53. To a certain degree, broadband telephony can give mobility via Nomadic use. Nomadic use means that it is possible to connect via different physical fixed connection points. Users of these services may potentially obtain access to incoming and outgoing voice communication from any internet access point throughout the world. However, during a call, the user is bound to the location, and thus does not achieve the same mobility as with mobile phones.

54. On this basis, Nkom finds that landline telephone services are not included in the relevant product market at retail level.

2.3.4 Mobile broadband telephony

55. When IP²²technology is used to produce voice via mobile networks, it is sometimes referred to as mobile broadband telephony. Operators such as NextGenTel AS (the Telio brand) offer mobile broadband telephony in Norway. Such solutions are normally based on an application being installed on the user's smart telephone and thereby establishing a connection between the user's handset and the telephony provider's infrastructure. To transfer voice, the mobile telephone must have an internet connection. Access can take place via an available wireless access point (WLAN) or by using data access via the mobile network. The latter therefore requires that the end-user has a mobile subscription.

²⁰ VoIP (Voice over IP) involves digitisation and compression of voice in IP packages. These IP packages are transmitted via IP networks. The SIP (Session Initial Protocol) signalling protocol is used to find the correct recipient and to set up and disconnect the actual call.

²¹ See Nkom's "Regulation of broadband telephony pursuant to the Electronic Communications Act" of 14 June 2006.

²² Internet Protocol.

56. Providers of mobile telephony also offer voice via IP technology (VoLTE). Nkom assumes that so-called VoWiFi (VoLTE via WiFi) is a complementary service to voice service via 4G mobile networks (VoLTE) and traditional voice telephony. Provided that it supports the technology and the provider has activated this support in the network, the end-user's mobile telephone can then move seamlessly between WiFi zones and the 4G network with almost identical voice quality and security. In connection with this, reference is made to the fact that the market is technology-neutral, cf. Chapter 2.3.7.

57. For end-users that use solutions for mobile broadband telephony from operators other than mobile providers, so-called OTT providers such as Telio, the cost of use will only be the subscription price for the actual broadband telephony service as long as the user is connected to a wireless network. However, if the user is connected to a mobile network, the transport of voice data between the application and the provider's infrastructure will use mobile data and this will be invoiced by the end-users mobile provider or deducted from the data allowance in the mobile subscription. This will not normally constitute a major cost because the amount of data is limited. However, if the end-user is travelling outside of the EEA and uses mobile data, the cost can rapidly become higher than it otherwise would be due to unregulated prices for international roaming.

58. In addition, mobile broadband telephony from OTT providers is dependent on a certain amount of available bandwidth and response time and it is normally only 3G data speeds and better that function adequately. Speed and response time can still not be guaranteed, and this may affect the call quality.

59. If a solution for mobile broadband telephony cannot use mobile numbers, many end-users will not experience it as a substitute for traditional mobile telephony either, for example for end-users who are accustomed to an existing mobile number and who cannot transfer this number. For solutions for mobile broadband telephony to be allocated eight-digit mobile numbers, the services must be described as full mobile telephone services. Nkom's document for the principles for allocation and use of numbers for land mobile services (the 4- and 9-series) for mVoIP and other new services indicate the requirements which must be fulfilled in order to be able to use mobile numbers for mobile broadband services.²³ One of the requirements made of a full mobile telephone service is that the end-user must only need to relate to one provider in order to receive the mobile telephone service, i.e. the customer does not need to have a separate subscription for access to land mobile networks (for example, mobile broadband) in addition to a subscription for the voice and text messaging service.

60. On this basis, Nkom believes that mobile broadband telephony for which the use of mobile numbers is not permitted is not part of the relevant product market at retail level. The data traffic generated by VoIP via the mobile network is, however, part of the relevant product market. However, VoWiFi is considered to be a complementary service that is included in the relevant market.

2.3.5 Pre-paid subscriptions/cards and post-paid subscriptions

61. Both pre-paid and post-paid subscriptions give the end-user access to the mobile services which are part of the relevant retail market. On both the supply and demand sides, there is a high degree of substitutability between the two different subscription types at retail level. Flat-rate subscriptions, whereby the subscription price is pre-paid and only use in excess of what is included in the package is post-paid, also entail that the distinction between pre-paid and post-paid is being eroded. On this basis, Nkom finds that the two product types are part of the same relevant market at retail level.

²³ Principle document of 11 December 2014 with the same title.

2.3.6 Business and residential subscriptions

2.3.6.1 Assessment of demand-side substitutability

62. Business and residential customers demand the same basic mobile services (voice, SMS and data), but business customers are more likely to demand more advanced and complex services than residential customers.

63. In the residential market, the products are largely standardised in terms of product features and price. The most important factors for the customers are price, followed by coverage and data speed²⁴.

64. For business customers, coverage is the most important factor when selecting provider²⁵. Poor coverage, dropout or low data speed often have more serious negative consequences for companies than for individuals in the residential market. For a company that manages sales or customer service through a joint mobile number, reduced quality can cause the company to suffer financial loss. In addition, customer-specific development of the network is often required in the business market, as well as better coverage and quality indoors. Business customers that have established and paid for such additional coverage with a mobile operator normally commit to a minimum period that is longer than the lock-in period used in the residential market. Use of early termination fees prior to the end of the lock-in period in the business market also means that the operator has a greater advantage than in the residential market.

65. Furthermore, it is often important for business customers to be able to purchase a total package that is tailored to their needs. In addition to mobile telephony, this type of total package may include other additional services such as unified communications and switchboard solutions, as well as other electronic communications services such as fixed telephony, leased lines, M2M and data communication. By monitoring the price controls under the current decision, Nkom has also received information from Telenor that supports the claim that a large proportion of business customers select tailored products ahead of the company's standard calling plans.

66. Business customers also set other requirements for customer service, including greater demands for availability. For example, Telenor offers 24 hour customer service and personal service. According to the company's website, this also applies for small businesses²⁶. For residential customers, customer service closes at 8pm on weekdays and at 5pm/3pm on weekends.

67. The possibility of receiving customised total solutions and better customer service are factors that contribute to business customers being less inclined to switch to residential subscriptions in the event of a marginal, but significant increase in the price of subscriptions aimed at the business market. However, sole proprietorships and small businesses will most likely be more inclined than medium-sized and large business to select residential subscriptions over business subscriptions. However, high early termination fees and more lengthy agreements are also widespread in this part of the business market, which in practice makes it less attractive to switch providers. Figures Nkom has obtained also show that over 70 per cent of the smaller businesses (1-9 employees) choose to purchase business subscriptions for their employees²⁷.

68. For most residential customers it will not be an option to switch to a business subscription because this requires an organisation number.

²⁴ Survey conducted by Respons Analyse on assignment from Nkom in autumn 2018.

²⁵ Survey conducted by Kantar for Nkom in autumn 2018.

²⁶ <https://www.telenor.no/bedrift/kundeservice/kontakt-oss/min-telenorkontakt.jsp>

²⁷ Survey conducted by Kantar for Nkom.

69. Based on this, the assessment of demand-side substitution indicates that sales to residential and business customers constitute two separate retail markets.

2.3.6.2 Assessment of supply-side substitution

70. If a provider wants to switch its production and reach from the residential to the business market, this entails different requirements for knowledge of technological and market conditions in order to meet the requirements for more complicated and, in part, customized services. Digitisation in companies and the public sector also increases the complexities of the services in the business market. This applies to both small and large businesses, irrespective of the number of employees.

71. The sales processes in the business market also place different demands on the sales and distribution apparatus than in the residential market. More advanced and complex services mean that contracts are often entered into based on dialogue and negotiations, which results in tailored agreements. This principally applies to medium-sized and large businesses. In the public sector, agreements are entered into after public competitive tenders. Therefore, committing to the business market involves a much higher level of tender management and contract negotiations.

72. Such a change in market focus therefore means higher investments and increased costs. It must also be taken into account that many customers in the business market have a lock-in period and it would therefore be costly for a new operator to buy these out. On the other hand, providers that wish to switch their production from business customers to residential customers, will most probably have to significantly increase their marketing costs to reach the mass market, for example, through TV and cinema advertising.

73. Network owners generally offer services to both the residential and business markets. However, MVNO providers and service providers tend to focus their activities on one segment. This supports the assessment above that different requirements are set for establishment in the residential and business markets.

74. Table 1 shows the market shares within mobile telephony for the business and residential segments at the end of first half 2019, measured by the number of subscribers. The table shows the different presence of the operators in the two segments. Operators that only have a presence in one of the segments are marked in blue.

	Residential	Business
Telenor	43,82 %	60,47 %
Telia	38,24 %	33,50 %
Ice	11,62 %	2,62 %
happybytes	0,10 %	0,00 %
Hudya data & tele	0,40 %	0,01 %
Nextgentel	0,00 %	0,69 %
Saga mobil	0,05 %	0,13 %
Sponz	0,05 %	0,00 %
Chili mobil	1,51 %	0,00 %
Fjordkraft	1,89 %	0,00 %
Gudbrandsdal energi	0,06 %	0,00 %
Lycamobile norway ltd	1,74 %	0,00 %
Pepcall	0,51 %	0,00 %
Atea	0,00 %	0,82 %
Phonect	0,00 %	1,75 %

Table 1 Market shares for the business and residential segments for mobile telephony at the end of first half 2019, measured by the number of subscriptions.

75. The table shows that the three network owners have a presence in both segments, albeit at different levels. The smaller providers have essentially chosen to focus on one of the segments.

76. Differences in the presence of providers in the two segments indicate that different requirements are set for becoming established in the two markets and that the competitive conditions are therefore different.

77. Based on the assessment above, Nkom is of the view that there will not be a sufficiently immediate and direct effect of supply-side substitution between sales to residential and business customers for these to be considered one retail market.

2.3.6.3 Conclusion

78. Based on the assessments above, Nkom is of the view that there are grounds for defining two separate residential markets, i.e. for business and residential subscriptions.

79. Even if certain smaller companies may be more inclined to replace business subscriptions with residential subscriptions, Nkom does not consider it particularly appropriate or practical for the subsequent analysis to separate this group of companies from the business market.

2.3.7 Access to mobile networks via various technological platforms

80. Based on the definition above, the relevant retail market includes access to mobile networks, call origination, origination of text messaging, mobile data services and international roaming. Both access by prepaid subscriptions/pre-paid cards and post-paid subscriptions are included. The retail market can also be divided into a business market and a residential market. Reference is also made to Chapters 2.3.9 and 2.3.10 which define the retail markets for bundled mobile services in relation to mobile broadband and machine-to-machine communication. Based on this, the issue is whether in the definition of the relevant product

market at retail level there is reason to differentiate in terms of the technology via which the relevant services are delivered.

81. In the decision of 1 July 2016, Nkom found that it is of little importance for the end-user as to whether the calls or the text messages sent are transmitted via GSM or the UMTS network. At various times during the call, a single call can switch networks from GSM to UMTS, and vice versa. This takes place seamlessly, without the end-user noticing the switch. Therefore, access to GSM and UMTS networks must be largely regarded as substitutes from the end-user's point of view. Furthermore, access to this network is not offered as a separate service, but as a bundled package. In Nkom's assessment, voice and text messaging via both the GSM and UMTS networks are therefore part of the same relevant product market at retail level.

82. Voice can also be sent as IP packages on LTE networks referred to as VoLTE. The end-users will not have to install their own application to be able to use VoLTE, but must have a mobile phone which supports the technology and the provider must have activated this support for the relevant handset. Most new mobile phones support VoLTE. For some telephones, VoLTE is activated as the standard, while for others the customer has to activate VoLTE prior to use. The mobile phone will choose whether voice is to be transmitted via LTE or 2G/3G, depending on which communication type gives the best connection.

83. For the end-user, VoLTE will, among other things entail voice quality as HD voice (better sound quality and background noise is dampened), faster connection time, better battery capacity and 4G speed available for other services during a call. VoLTE will also allow for handover of calls between wireless networks (WiFi) and mobile networks.

84. Telenor²⁸ and Telia²⁹ launched VoLTE in 2016. The share of voice traffic over LTE has been increasing strongly and accounted for 63 per cent of the number of originated minutes on Telenor's mobile network in first half 2019. Ice has also launched VoLTE in certain areas, the share of VoLTE of their total voice minutes amounted to 30 per cent the 4th quarter 2019. Prices for voice are independent on whether the customer uses voice via LTE or traditional voice service.

85. On this basis, Nkom believes that voice via LTE in ordinary mobile subscriptions is substitutable with voice via 2G/3G for end-users, since they have handsets which support the service.

86. Data services are sold jointly in standard mobile subscriptions, irrespective of whether access is based on LTE or 2G/3G network. Due to variations in the capacity for data transfer between GSM, UMTS and LTE networks, the quality of the services via the various mobile networks can be experienced differently. However, there are factors other than technology that can influence the perceived speed and quality. For example, the number of users connected to the relevant base station and topographical conditions where the user in question is located will also be of importance.

87. End-users can also gain LTE access via dedicated mobile broadband subscriptions. Dedicated mobile broadband subscriptions are offered with access to GSM, UMTS and LTE, depending on the coverage offered in the area where the end-user is located. Reference is made to the definition in Chapter 2.3.9.

88. Both Telenor and Telia have upgraded their LTE networks to LTE-Advanced (LTE-A), or 4G+. This upgrade increased the leased lines for data and it became possible to use more blocks on the same frequency or blocks on different frequencies at the same time. For end-users, data services via LTE-A are substitutable with services via the platforms already referred to above. LTE-A is also compatible with older technologies, so that if the end-user

²⁸ https://www.telenor.no/privat/dekning/4g-tale.jsp?icid=p-151211_privatforside_4G-Tale_tile

²⁹ <https://www.telia.no/magasinet/4g-tale/>

moves out of a coverage area for LTE-A, the ongoing service will be continued within the framework of the technology, with coverage at any time.

89. 5G is the new generation of mobile technology. The standardisation work is still ongoing, but testing and trials are underway. Telenor made 5G commercially available in nine cities or towns in Norway in the middle of March 2020.³⁰ However, using the 5G network requires a handset that supports this technology. A larger commercial roll-out is expected further into 2020. Telia has announced that the commercial launch of the 5G network will take place later in 2020, when 5G phones and other equipment become more available.³¹ Ice is testing 5G and will have a soft offering in 2020.³²

90. 5G will mean there is significantly increased capacity on the mobile networks, which will make them suitable for meeting society's general requirements and expectations of more mobile data. 5G will also support the development of the Internet of Things (IoT), including new services within health technology, smart cars, and media and entertainment. 5G also involves very low latency, something that can be critical for some IoT services.

91. When concerning the services that are covered by the relevant market, Nkom finds that, from an end-user perspective, it will not be of importance as to whether the services use 5G when this technology is launched or use older technologies. 5G will also be compatible with older technologies.

92. In summary, Nkom is of the view that the market is technology-neutral and that there is thus no basis on which to define separate product markets depending on technology.

2.3.8 Conclusion concerning the retail market

93. Nkom has concluded that the relevant market at retail level includes access to mobile networks, call origination, origination of text messaging, mobile data services and international roaming. Both access by prepaid subscriptions/pre-paid cards and post-paid subscriptions are included. The retail market can be divided into a business market and a residential market and is hereafter referred to as the retail markets for bundled mobile services. The retail markets are technology-neutral, i.e. that it is of no significance to the market definition as to whether bundled mobile services are supplied on public GSM, UMTS or LTE networks. The market definition will also not be influenced by whether the above-mentioned services are provided via 5G in the future.

2.3.9 Mobile broadband

94. In Nkom's decision of 1 July 2016, dedicated mobile broadband was defined as a separate, adjacent retail market.

95. The number of subscriptions for mobile broadband increased each year until 2012. This number has since declined every year. At the end of first half 2019, there were roughly 358,000 subscriptions. Sales of dedicated subscriptions for mobile broadband amounted to just under NOK 1.260 billion in 2018 and close to 600 billion in first half 2019.

2.3.9.1 Mobile broadband as a separate market

96. When assessing whether mobile broadband is a part of the market for bundled mobile services, the question from a demand perspective is whether a price increase for the bundled mobile product will entail that the customers will switch to purchasing dedicated mobile broadband on a scale that makes the price increase unprofitable.

³⁰ https://www.insidetelecom.no/artikler/telenor-apnet-5g-ni-steder-i-landet/487433?utm_source=newsletter_2020-03-16

³¹ <https://www.insidetelecom.no/artikler/telia-sjefen-apnet-5g-utbyggingen/482796>

³² <https://www.insidetelecom.no/artikler/ice-trenger-ikke-5g-i-norge-i-2020/485369>

97. Dedicated mobile broadband appears to cover different end-user needs to traditional mobile subscriptions. Traditional mobile subscriptions provide the end-user with simultaneous access to voice, SMS and data services, cf. Chapter 2.3.1 above. As a starting point, mobile broadband only provides access to data services and is therefore no substitute for all of the bundled services from an end-user perspective. Furthermore, an end-user may find that a mobile broadband subscription will not fully provide the same mobility as a traditional mobile subscription because they use routers, which in some cases can be less practical to carry around than traditional handsets/mobile phones. Mobile broadband is also often marketed as a product suited for having at your holiday cabin, i.e. mobile to a certain extent, even if the intended use is more stationary.

98. The number of subscriptions for dedicated mobile broadband has been declining. This development supports the notion that end-users will not consider a dedicated mobile broadband subscription to be an adequate substitute for a traditional mobile subscription. Conversely, the development suggests that many end-users find that a traditional mobile subscription is a substitute for mobile broadband. This could therefore have a disciplinary effect on the provision of mobile broadband. Disciplinary effects from traditional mobile telephony are discussed in Chapter 2.3.9.2. The figure below shows the development in the number of subscribers from first half 2012 to first half 2019.

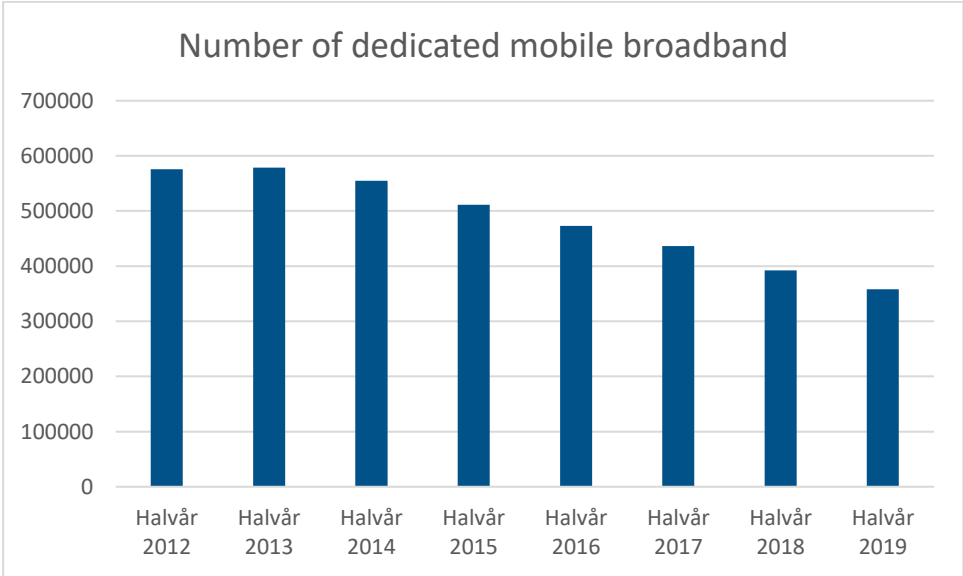


Figure 1 Change in dedicated mobile broadband from first half 2012 to first half 2019.

99. On the supply side, the question is whether an operator that only offers dedicated subscriptions for mobile broadband can rapidly switch to offering traditional mobile subscriptions and without incurring significant costs. If so, such a switch could make a price increase for traditional mobile telephony unprofitable. However, Nkom believes that such a switch would require significant marketing and testing, which would entail delays which mean that the impact would probably not be sufficiently immediate and direct.

100. Based on this, Nkom is of the view that there are no grounds for including dedicated subscriptions for mobile broadband as part of the same retail market as traditional mobile telephony.

101. However, the production of dedicated subscriptions for mobile broadband does not occur in the same manner as data services for ordinary mobile subscriptions. Therefore, in the

decision of 1 July 2016, Nkom found that dedicated subscriptions for mobile broadband constitute an adjacent retail market. Nkom maintains this as a starting point for assessing disciplinary effects below.

2.3.9.2 Assessment of disciplinary effects on the offer of mobile broadband

102. In Nkom's view, it will be data traffic in ordinary mobile subscriptions and fixed broadband in particular that can have a disciplinary effect on mobile broadband. Below is an assessment of the extent to which the retail market for mobile broadband is subject to disciplinary effects from these services.

Disciplinary effects from ordinary mobile subscriptions

103. Data traffic via ordinary mobile subscriptions represents a steadily growing part of the total data traffic. Until 2013, dedicated subscriptions for mobile broadband represented the largest share of data traffic, however data traffic from ordinary mobile subscriptions has since become the largest share. The figure below shows the development in data traffic from 2013 to 2018, measured in millions of GB.

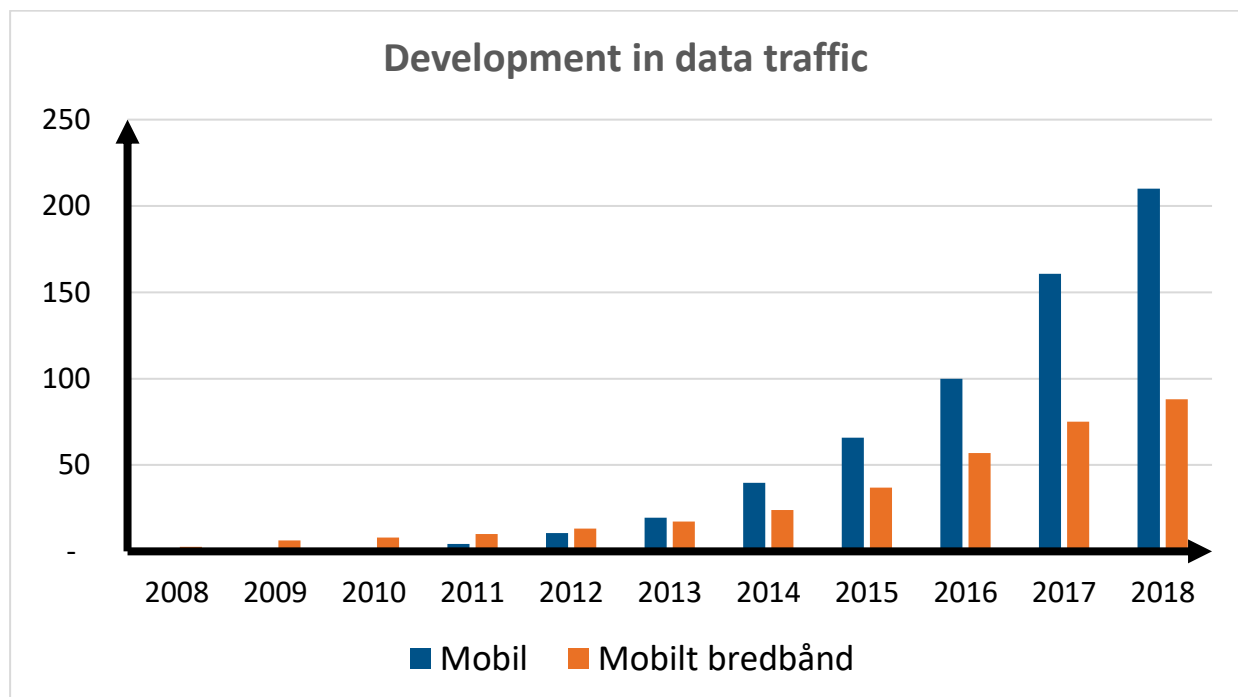


Figure 2 Development in data traffic (millions of GB) for ordinary mobile subscriptions and dedicated subscriptions for mobile broadband.

104. In 2018, around 70 per cent of total data traffic was generated from ordinary mobile subscriptions. The share was approximately at the same level at first half 2019. The development shown in the figure indicates a certain degree of substitutability from dedicated subscriptions for mobile broadband to data traffic over ordinary mobile subscriptions. The decline in the number of subscriptions for mobile broadband shown in Figure 1 can also support a certain degree of substitutability from mobile broadband to ordinary mobile subscriptions.

105. However, there have been considerable differences in how mobile subscriptions and subscriptions for mobile broadband are sold. Telenor's mobile subscriptions include up to 60

GB per month, while mobile broadband includes up to 200 GB. Telia's mobile broadband includes up to 200 GB. However, in January 2019, Telia launched the mobile subscription Telia X with free data usage (maximum 1,000 GB) for NOK 579 per month. However, the speed is reduced to 3 Mbit/s when 40 GB has been used. Subscriptions such as Telia X still contribute to blurring the boundaries between mobile broadband and traditional mobile subscriptions and will therefore most probably cause customers to increasingly use traditional mobile subscriptions as a substitute for mobile broadband.

106. However, there are still major differences in consumer patterns for mobile broadband and data traffic via ordinary mobile subscriptions. The figure below shows average usage per subscription per month for mobile broadband and ordinary mobile subscriptions.

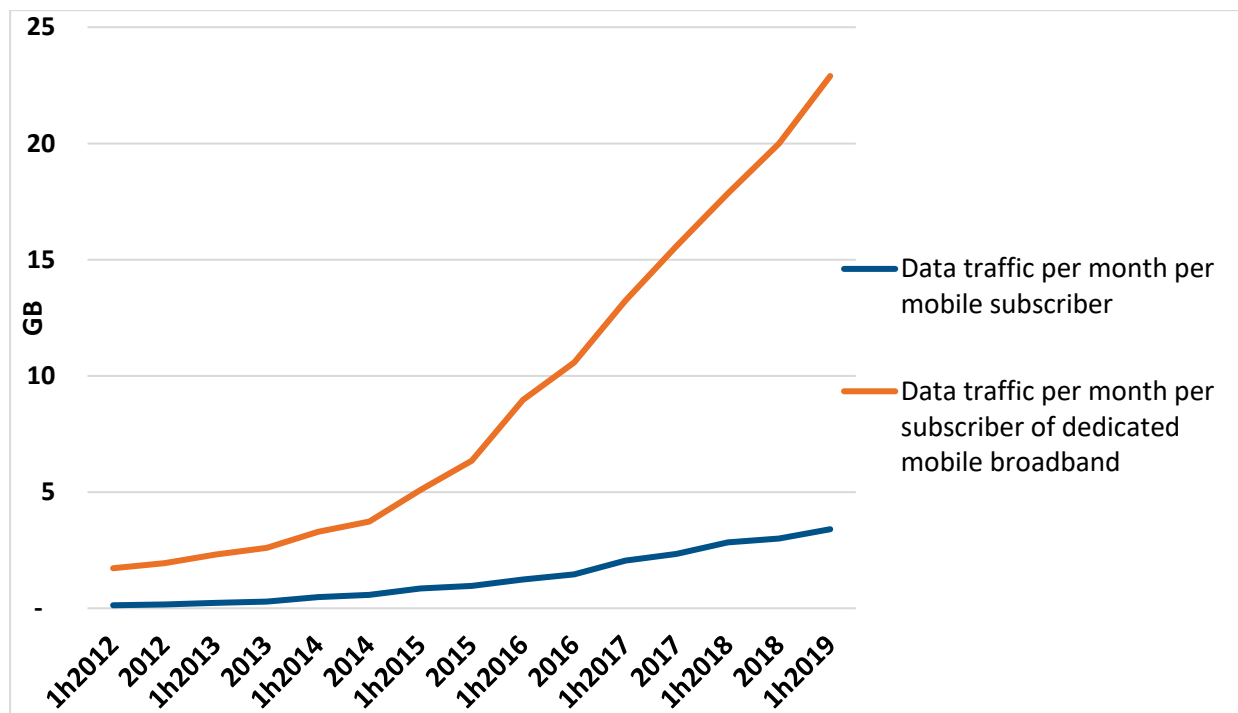


Figure 3 Development in data traffic for ordinary mobile subscriptions and dedicated subscriptions for mobile broadband.

107. The figure shows that customers who have mobile broadband use much more data per subscription than an average mobile customer uses via ordinary mobile subscriptions. However, it must be taken into consideration that some mobile customers use little or no data traffic via ordinary mobile subscriptions and these therefore bring down the average. If one disregards mobile subscribers who do not use data, the average data traffic via ordinary mobile subscriptions per month was 3.4 GB in 2017, 4.2 GB in 2018 and 4.6 GB first half 2019. This is still much lower than the average usage via mobile broadband.

108. These development trends support the claim that mobile broadband and data traffic linked to ordinary subscriptions cover different end-user needs. There are differences in product features and use which mean that the products cannot be considered substitutes during the period covered by the market analysis. There also appears to be an increasing degree of substitution from mobile broadband to ordinary mobile subscriptions such that the offer of data traffic in ordinary mobile subscriptions will most probably have certain disciplinary effects for mobile broadband in the coming years.

109. On the supply side, the question is whether providers that only offer traditional mobile telephony can quickly switch to offering mobile broadband and without incurring significant costs. If so, these providers could discipline a price increase for mobile broadband. Since it is essentially the same input factors that are used, such a switch should be possible. However, costs will be incurred, particularly in connection with marketing and logistics relating to the dispatch of routers for mobile broadband, which can cause delays. There are also, in practice, fewer operators that actively market mobile broadband than what applies for traditional mobile telephony. At present, it is primarily the network owners that market mobile broadband and have the vast majority of customers. This indicates that there are factors that limit the ability of access buyers to also offer dedicated mobile broadband and which therefore makes it less relevant to be able to adapt quickly. It is thereby uncertain as to whether the effect of supply-side substitutability will be immediate and direct enough to have a sufficiently disciplinary effect.

Disciplinary effects from fixed broadband

110. There were a total of 2.2 million subscriptions for fixed broadband at the end of first half 2019. Around 86 per cent of Norwegian households had fixed broadband at the same point in time.³³ In comparison, there were around 358,000 subscriptions for mobile broadband. This is equivalent to about 14 per cent of the total number of broadband subscriptions (fixed and mobile).

111. The option of mobility represents a significant distinction between mobile and fixed broadband. Most end-users that have mobile broadband have most probably obtained this with a view to utilising the option of mobility. Mobile broadband has also often been procured for cabins and holiday homes where a fixed broadband connection was not possible or it would have been too expensive in relation to expected use.

112. There are also significant differences in usage patterns for fixed and mobile broadband. Fixed broadband normally has unlimited amounts of data and higher speeds than mobile broadband, which normally has limits on the monthly data volume. This entails that usage will normally be much higher for fixed broadband than for mobile broadband.

113. Based on this, it is unlikely that a sufficient number of end-users will switch from mobile to fixed broadband due to a marginal, but significant price increase for mobile broadband. Nkom is therefore of the view that fixed broadband will have a limited disciplinary effect on mobile broadband and the services are not substitutable from an end-user perspective. It can also not be assumed that supply-side substitutability will have a sufficiently disciplinary effect because the switch from offering fixed broadband to mobile broadband will involve extensive costs and delays.

Segmentation between residential and business

114. Like ordinary mobile subscriptions, Nkom is of the view that there are several reasons that residential and business subscriptions for mobile broadband are not substitutable to such an extent that they can be considered to be in the same market. Residential customers cannot purchase business subscriptions and, in many cases, business customers will not want to purchase residential subscriptions due to requirements for available customer service, ability to connect multiple devices simultaneously and to negotiate tailored agreements etc.

115. The presence of different providers in the residential and business segments also means that the competitive conditions for mobile broadband may be different for the two segments. The figure below shows market shares based on residential and business subscriptions for mobile broadband.

³³ Only residential subscriptions are included.

	Residential	Business
Telenor	32,85 %	54,94 %
Telia	36,18 %	29,08 %
Ice	30,28 %	14,12 %
nextgentel	0,15 %	0,49 %
eninvest	0,23 %	0,00 %
happybytes	0,19 %	0,00 %
hudya data & tele	0,06 %	0,03 %
saga mobil	0,00 %	0,11 %
chili mobil	0,05 %	0,00 %
atea	0,00 %	1,02 %
phonect	0,00 %	0,21 %

Table 2 Market shares for mobile broadband at the end of first half 2019, measured by number of subscriptions.

116. The table shows that the three networks owners are present in both segments. The smaller providers have essentially chosen to focus on one of the segments. Operators that are only present in one of the segments are marked in blue.

117. Differences in the presence of providers in the two segments indicate that different requirements are set for becoming established in the two markets and that the competitive conditions are therefore different.

118. Nkom therefore considers there to be grounds for defining two separate retail markets for mobile broadband, i.e. business and residential subscriptions.

2.3.9.3 Conclusion

119. Nkom is of the view that dedicated subscriptions for mobile broadband represent an adjacent market to the retail market that is defined in Chapter 2.3.8. The market is disciplined to some extent by data traffic via ordinary mobile subscriptions and to a lesser extent by fixed broadband. The disciplinary effect from ordinary mobile subscriptions can be expected to be increasing. However, in Nkom's view, this disciplinary effect will not be enough to prevent a hypothetical price increase within the period covered by the analysis. Nkom's is also of the view that there are grounds for dividing the retail market for mobile broadband into a residential market and a business market.

2.3.10 Machine-to-machine communication (M2M) via mobile networks

120. In Nkom's decision of 1 July 2016, Machine-to-machine communication (M2M) via mobile networks was defined as an adjacent retail market. M2M is automated or semi-automated exchange of voice, text messaging or data services between machines and is a communication carrier that is necessary for a number of services. M2M communication services via mobile networks differ significantly from services that are offered via ordinary mobile subscriptions intended for communication between people. M2M communication via the mobile network is, for example, used to transmit information on stock inventories, automatic meter reading of power consumption, holiday cabin heating systems, alarms, emergency calls from vehicles and for executing transactions via payment terminals.

121. There are high expectations for growth in M2M/IoT. At the end of first half 2019, more than 1.86 million SIM cards were registered as having been used for M2M communication. There was an increase of almost 130,000 SIM cards compared with the end of 2018.

122. From a retail perspective, voice, text messaging or data traffic for M2M purposes via the mobile network will not constitute a substitute for voice, text messaging or data via ordinary mobile telephony subscriptions, since M2M is not used for communication between people. On the supply side it is uncertain as to how fast and at what cost a provider can switch from offering M2M to traditional mobile subscriptions. Marketing costs and time spent would indicate that the effect of supply-side substitution will not be sufficiently direct and immediate for M2M and traditional mobile subscriptions to be considered as part of the same market. Based on this, like previous assessments, Nkom is of the view that M2M communication via mobile networks is not part of the retail market for bundled mobile services.

123. In connection with this, it is also relevant to make reference to the fact that there is a new method of formulating definitions of electronic communication services in the new European Electronic Communications Code (EECC). Electronic communication services are divided into the following three categories: “*Internet Access Services, Interpersonal Communication Services plus Services consisting wholly or mainly in the conveyance of signals (e.g. M2M or broadcasting)*”.³⁴ The service concepts therefore tend towards functionality and not underlying technology as an input factor.

124. In the decision of 1 July 2016, Nkom made reference to M2M services on mobile networks being closely related to the retail market for bundled mobile services because the production of M2M services essentially uses the same input factors as ordinary mobile services. M2M was therefore defined as an adjacent retail market and covered by the regulation of access in the same way as bundled mobile services, with the exception of price controls.

125. Since the decision was handed down, Telenor and Telia have launched new technologies on the 4G network (NB-IoT and LTE-M) to offer a connection (connectivity) between physical objects (things) and the internet. These technologies are not a substitute for technologies for offering traditional bundled mobile services and therefore do not have the same close association with ordinary mobile services. On the other hand, in many cases these types of technologies for offering IoT connectivity may be a substitute for traditional technologies for M2M. Nkom therefore finds that for future assessments of access to offer M2M/IoT services it would be natural to include more technologies than those that are used for offering traditional bundled mobile services. In addition to technologies based on traditional mobile networks (NB-IoT and LTE_M), technologies on unlicensed spectrum (for example, SigFox) and private networks (for example, WiFi, Bluetooth and ZigBee) could be applicable³⁵. This supports the claim that a potential analysis of these services will most probably have a broader reach than for the product markets defined in this analysis.

126. However, it is only relatively recently that technologies for offering IoT connectivity have been used commercially,³⁶ and the retail offers are at an early stage in terms of areas of application, product development and price models. The Internet of Things will cover a very wide range of services and some of these services will, for example, set high demands for response time or data capacity, while others will set demands for low power use. Both the service offer and the pricing models must to a large extent be considered to be in the trial stage. It is therefore premature to define a product market with a view to assessing the need for regulation. Furthermore, there is a limited basis for being able to appropriately formulate

³⁴ Article 2 (4) of the European Electronic Communications Code.

³⁵ BEREC Internet of Things indicators 7 March 2019.

³⁶ Telenor commercially launched its nationwide network for NB-IoT from October 2018, while Telia announced at almost the same time that the company had 75 per cent coverage for NB-IoT.

potential regulatory requirements for access and pricing. This assessment is in line with BEREC's conclusions in its assessment of IoT/M2M under the rules governing roaming.³⁷

127. Nkom also refers to the Recommendation advising caution³⁸ in the regulation of new markets and is of the view that the assessment of M2M/IoT services should be conducted in line with this.

128. Since the launch of NB-IoT and LTE-M in October 2018, Telenor has offered wholesale access to the technology. In meetings with Nkom in spring 2019, several access buyers stated that it was too early to express an opinion about the wholesale prices for the new technology. However, during the consultation process in June 2019, several stated that the wholesale prices offered are too high to be able to offer competitive products and that the price structure offered is also not suitable. Nkom therefore sees a need to follow developments in this market.

129. In summary, Nkom is of the view that it is important to facilitate competition for offering access to mobile networks for M2M/IoT services, but that any regulation require a separate analysis of the market, as well as an assessment of potential competition problems. Any remedies must also be appropriate for the products in question. Since the development of IoT services is at an early stage and there is little basis for such an analysis, Nkom will for the time being only follow the development in this market. Nkom can assess the basis for potential regulation at a future point in time.

2.4 Definition of the derived wholesale market

2.4.1 Access to mobile networks for buyers of wholesale products

130. Access to mobile networks is a precondition for operators wishing to offer mobile services to end-users. While mobile network operators (MNO) themselves control all of the infrastructure necessary to offer mobile network services to end-users, other operators will depend on being able to buy access at wholesale level to be able to offer such services.

131. There are various means of accessing mobile networks at the wholesale level. The type of access that an access buyer wishes to use will generally depend on the extent to which the access buyer controls its own infrastructure. Four different types of access can generally be identified:

- 1) National roaming. This form of access is relevant for operators with their own frequency resources that have rolled out coverage in individual areas, but need to be able to buy access to mobile networks in areas where they do not themselves have radio coverage.
- 2) MVNO access. A buyer of MVNO access is referred to as a virtual network operator. An MVNO has its own core network and controls interconnection with other providers of telephony services, but does not control its own frequency resources and does not have its own radio network.
- 3) Service provider access. This has been a relatively common access type in Norway and entails that the access buyer does not control its own infrastructure.
- 4) Co-location. This form of access entails that operators that offer products within the relevant wholesale market and/or retail markets must have the opportunity to install equipment on, for example, masts and cabins.

³⁷ BEREC Opinion on the functioning of the roaming market, as input to the Commission's evaluation, 13 June 2019.

³⁸ Section 28 of the recitals to the Recommendation.

132. All of the network operators in the Norwegian market also offer access for own service provider activities, also known as "self-supply".

133. Nkom will also assess which access types are part of the relevant product market at wholesale level.

134. As stated above, buyers of wholesale access have different needs in terms of access to infrastructure, and they therefore require different access products. In contrast to service provider access, MVNO access, for example, assumes that the buyer has its own systems for interconnection, among other things. In contrast to the two other types of access, access via national roaming requires that the buyer also has frequency resources available. The fact that the various types of access reflect different needs, and entail different technical solutions, indicates that the various access types are not fully substitutable.

135. Overall, the production of the services offered at retail level still requires the same input factors. The differences lie in how the access buyers control these themselves to varying degrees. The services offered to end-users by access buyers are also the same (voice, text messaging and data), irrespective of the type of access. This suggests that the various access types should be considered as part of the same relevant wholesale market.

136. New operators wishing to offer mobile services at retail level may want to invest on a step-by-step basis ("the ladder of investment"). In previous decisions, the market regulation has been intended to facilitate this opportunity to gradually climb the investment ladder. Tele2, Phonero and eRate are examples of operators that have moved between various forms of access. This also indicates a certain degree of substitution on the demand side.

137. On the basis of the aforementioned, Nkom considers the relevant product market at wholesale level to include national roaming, access for MVNOs and access for service providers, including the network operators' own service provider level. The wholesale market includes access via the same technological platforms as the definition at retail level comprises, i.e. GSM, UMTS and LTE networks, including LTE-A, as well as 5G when this technology becomes available. In terms of data transfer speeds, the market definition does not set any limits, but includes the speeds that can be achieved within the decision period using the aforementioned technologies.

138. Nkom is also of the view that co-location is a form of access that naturally belongs in the market for access and call origination on mobile networks.³⁹ The ability to install equipment at existing locations is particularly important for new operators that develop mobile networks. The close connection between access for national roaming and co-location means that Nkom considers co-location to also be included in the relevant wholesale market.

139. With regard to internal sales ("self-supply"), Nkom refers to page 16 of the Commission's Staff Working Document⁴⁰ to the Guidelines from 27 April 2018. The Commission makes reference to different market scenarios in which it is relevant to include self-supply. For example, this applies when internal and external sales appear equal from an end-user perspective, when there are alternative wholesale providers and in the absence of an existing wholesale market. Nkom considers internal and external sales in the mobile market to appear equal from an end-user perspective. There are also several wholesale providers.

140. Nkom also makes reference to BEREC's report from March 2010⁴¹. BEREC's report primarily discusses the regulators' treatment of self-supply in the wholesale market for

³⁹ The Explanatory memorandum to the Guidelines from 2003 especially mentions co-location as a complementary obligation.

⁴⁰ Commission staff working document accompanying the document communication from the Commission Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services, Explanatory Note.

⁴¹ http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/?doc=171

broadband access (market 5), but also the treatment of self-supply in other markets. The report concludes that a majority of the European regulators take self-supply into consideration in both market definitions and the assessment of significant market power.

141. Nkom concludes that it is necessary to include self-supply or use in order to give a correct picture of the market and relative strengths at the wholesale level. Access that is supplied to MNOs' internal service provider level is therefore included in the same market as access purchased by external providers.

2.4.2 Services at wholesale level

142. For buyers of wholesale products to be able to offer attractive services in the relevant retail markets, the access product must include voice, text messaging and mobile data services. The access products that are currently offered by the established network owners, via purchase of service provider access, MVNO access and national roaming, comprise voice, text messaging and data in mobile networks.

143. If a service provider is to offer access to mobile data services with the help of an access agreement with a network owner⁴² other than the provider of voice and text messaging, this will require the services to be provided on different SIM cards. In Nkom's assessment, a solution whereby an end-user has to change SIM card to be able to use the various groups of services is not a complete alternative to a mobile subscription which gives access to all services on the same SIM card.

144. At retail level, internet access via the mobile networks is also offered as dedicated mobile broadband subscriptions, independently of voice telephony and text messaging, cf. the definition of the product markets in Chapter 2.3.9. However, at wholesale level, the input factors used to offer data traffic in traditional mobile subscriptions are the same as for offering dedicated mobile broadband subscriptions. Mobile broadband products are not offered as a separate product at wholesale level. The access price for mobile data traffic is also not related to how the product is offered in the retail market.

145. If access is sold bundled with voice, text messaging and other data services at wholesale level, these services should be included in the same relevant product market.

146. Nkom came to the conclusion above that international roaming is included in the relevant retail markets for bundled mobile services. At the wholesale level, foreign network operators may require international roaming. In addition, operators with an agreement for service provider access will require access to be able to sell international roaming in the retail market. International roaming constituted a separate market at wholesale level in the original Recommendation from the Commission and the ESA. However, experience gained by the national regulatory authorities and BEREC in conjunction with market analyses in this market showed that it was not possible to remedy the competition problems in this market on an effective basis at national level. In 2007, the Commission therefore initiated a joint regulation for international roaming. These rules were continued and expanded in new regulations in 2009, 2012, 2015 and 2017 respectively.⁴³ The rules cover both direct international roaming agreements between network owners and the resale of international roaming to buyers of access. On this basis, Nkom believes that international roaming is not part of the relevant product market at wholesale level.

147. On the basis of substitution assessments, Nkom has found that M2M communication and IoT services via mobile networks are not part of the relevant retail markets for bundled mobile services. At wholesale level, GSM, UMTS and LTE networks are used to offer M2M. In

⁴² Experience from the Norwegian market shows that there are very limited opportunities to achieve access agreements with several network owners. However, there are a few examples of service providers having parallel access agreements with several network owners.

⁴³ For more information, see <http://eng.nkom.no/market/telecom-services/regulations/international-roaming>

addition, Telenor and Telia offer technologies for IoT that are especially suited for these types of services (NB-IoT and LTE-M). As mentioned in Chapter 2.3.10, Nkom is of the view that it is too early to regulate these markets and in any case, it will require a separate assessment of the market and potential competition problems. Access to offer M2M/IoT therefore does not fall within the relevant wholesale market in this analysis.

148. Furthermore, in principle, all services offered to end-users in connection with the bundled mobile product (voice, text messaging and data) and which are realised via GSM, UMTS, LTE and 5G networks, are included in the relevant wholesale market.

149. Issues relating to whether future services are within the relevant market must be determined based on an assessment of substitutability and other factors described in Chapter 2.1.

2.5 Definition of the geographical market

150. As stated in Section 2.1.2, geographical markets in the electronic communications sector have traditionally been determined by reference to the relevant network's area of coverage as well as the effective boundaries (jurisdiction) of the legal regulation of the market. The markets have thus been viewed as national.

151. As mentioned in Chapter 2.1.2, the "BEREC Common Position on Geographic Aspects of Market Analysis (definition and remedies)" stipulates a recommended approach to any geographical definition of the market. BEREC recommends that the geographical analysis should be introduced with an assessment of the development in competition in the retail market. BEREC has identified the following indicators as the most relevant in determining whether it is necessary to conduct a complete geographical analysis in order to assess whether it is appropriate to define local markets:

- Geographical differences in providers' networks and coverage.
- Number of providers in the retail market and their market shares in different geographical areas.
- Geographical differences in prices and product offers.

152. Both Telenor and Telia have over 99 per cent population coverage for LTE, while geographical coverage is somewhat lower. However, there are no major geographical differences in the providers' coverage that would indicate that there is a need for a detailed analysis with a view to defining local markets. The fact that both wholesale prices and retail prices for mobile telephony are the same throughout the country and that mobile customers naturally move around, also indicates that the relevant market should not be divided into several local or regional sub-markets.

153. In Nkom's opinion, there are no diverging competitive conditions in stable and clearly defined parts of the country which indicate that a geographical division of the market is necessary. For this reason, Nkom believes that no further analysis is necessary regarding the question of whether the market should be divided geographically, and that a national approach to market definition and analysis is well-founded.

154. The right to use allocated frequencies varies in terms of whether they also include Svalbard in addition to the mainland.⁴⁴ As stated in Chapter 2.1.2, however, Chapter 3 of the Norwegian Electronic Communications Act concerning significant market power, Chapter 4 on access and Section 9-3 on a consultation procedure, do not apply to Svalbard. Svalbard is therefore not part of the geographical market.

⁴⁴ In some cases there are separate licences for Svalbard.

155. Nkom thus maintains that the geographical market for access and call origination on mobile networks is mainland Norway.

2.6 Conclusion concerning market definition

156. The relevant wholesale market is technology-neutral and includes wholesale access for being able to offer origination of voice, text messaging and data services for the following external access types:

- Access by national roaming
- MVNO access
- Service provider access

157. Both access in order to offer ordinary mobile services and access in order to offer mobile broadband are included.

158. Access delivered to MNOs' internal service provider level ("self supply") is included in the same market as access purchased by external providers.

159. Co-location is included as a separate form of access within the relevant wholesale market.

160. The geographical market is defined as mainland Norway.

3 Overview of market development and market operators

161. In the relevant wholesale market, a distinction can be made between operators that are providers of wholesale products and operators that are buyers of wholesale products.

162. At the end of first half 2019, there were in excess of 5.7 million subscriptions in the total retail market for bundled mobile services (residential and business). There has been weak growth in the number of subscriptions in recent years. Sales from mobile subscriptions amounted to NOK 17 billion in 2018 and almost 8,5 billion in first half 2019.

163. The number of mobile broadband subscriptions is declining and at the end of first half 2019 there were just below 358,000 of these subscriptions. Sales amounted to NOK 1.3 billion in 2018 and close to 600 million in first half 2019.

164. The total data traffic on the mobile network is growing and an ever-increasing share of the data traffic is generated from mobile telephony subscriptions. This share represents around 70 per cent of the data traffic on the mobile network in first half 2019.

3.1 Operators on the supply side

165. Telenor and Telia have GSM networks (2G) covering virtually all of Norway. In addition, both companies have UMTS networks (3G), but with a somewhat lower coverage ratio than for GSM. Both companies also have LTE networks (4G) with virtually full population coverage. Both Telenor⁴⁵ and Telia⁴⁶ have given notice that the UMTS network will be closed during 2020, thus allowing the companies to prioritize newer technology, i.e. 4G and 5G. Both of the

⁴⁵ http://www.mynewsdesk.com/no/telenor/pressreleases/snart-kroken-paa-doera-for-3g-2813074?utm_campaign=send_list

⁴⁶ <https://www.insidetelecom.no/artikler/telia-legger-ned-3g-nettet/445121>

companies operate as network operators, service providers and content providers and must thus be viewed as vertically integrated companies. In the relevant wholesale market, both operators offer access to national roaming, MVNO access, service provider access and co-location.

166. Telenor owns much of the electronic communications infrastructure in Norway, both as fixed access networks, and as transport networks for leased lines, etc. Telenor has ownership interests in a number of mobile companies in Europe and Asia. In the Norwegian retail market, the company has the brand names Talkmore and Dipper, in addition to its own brand name.

167. Telia Norge AS is Telia Company AB's Norwegian operation. Telia Company AB also has mobile activities in several countries in Europe and Asia. The company covers the majority of the areas within the electronic communications sector. In the Norwegian retail market, the company operates with the brand names OneCall, MyCall and Phonero, in addition to its own brand name. Telia's acquisition of Get TDC was approved by the Norwegian Competition Authority on 5 October 2018.⁴⁷

3.2 Operators on the demand side

168. On the demand side there are operators that purchase access to Telenor or Telia's network based on an agreement for national roaming, MVNO access or service provider access.

169. Ice was established in 2003 and has offered mobile broadband in the retail market, based on its own network with CDMA technology in the 450-MHz band. The company has more than 75 per cent geographical coverage in this network.⁴⁸ The number of base stations using these frequencies is limited and they are designed to produce mobile broadband in areas that are characterised by scattered dwellings and holiday properties. In 2015, Ice replaced its CDMA network with LTE and transferred its mobile broadband customers to this network. As of today there are no mobile handsets to support this frequency band, which means that the network can only be used for dedicated mobile broadband.

170. Ice is owed by the American company Access Industries. At the frequency auction on 2 December 2013, the company was granted frequency resources in the 800, 900 and 1800-MHz bands.

171. Following Telia's acquisition of Tele2 in 2014, Ice was permitted to take over the infrastructure of Mobile Norway⁴⁹ as a remedial measure for the Norwegian Competition Authority approving the acquisition. The company was also to receive access to national roaming and service provider access with Telia, access to co-location and the option to purchase three Tele2 stores.⁵⁰

172. Based on an access agreement with Telia, Ice launched traditional mobile products from 15 June 2015. All traffic to and from mobile phones went via Telia's network up until June 2016. Until then, Ice only had mobile broadband customers on its own network. However, from this date the company commenced the process of moving parts of the mobile customer data traffic over to its own network.

⁴⁷ TDC AS changed its company name to Telia Telecom Services AS from 15 October. <https://tdc.no/om-tdc/>

⁴⁸ <https://www.ice.no/mobilt-bredband/>

⁴⁹ In 2007, Tele2 Norge AS (Tele2) and Network Norway established the network company Mobile Norway AS (Mobile Norway), in which they each owned 50 per cent. In the autumn of 2011, the Swedish parent company of Tele2 (Tele2 AB) acquired Network Norway.

⁵⁰ <https://konkurransetilsynet.no/teliasoneras-kjop-av-tele2-tillates-pa-vilkar/>

173. At the end of 3rd quarter 2019, Ice had expanded its network to cover 90 per cent of Norway's population⁵¹. Coverage is primarily based on LTE in the 800 MHz band. The company's objective is to expand the network to an extent that makes it independent of national roaming. Until then, the company is dependent on purchasing access in the relevant wholesale markets. As of the present date, Ice is not a provider in the wholesale market. Reference is made to Chapter 4.3.5 for a more detailed assessment of the company's opportunities of becoming an operator on the supply side in the relevant wholesale market within the analysis' time horizon.

174. An MVNO invests in its own core network infrastructure (for example, HLR/HSS, Switch, SMSC, MMSC, GGSN, IMS and EPS) and has all the technical systems necessary for interconnection with other network operators. In contrast to providers that require national roaming, an MVNO does not have its own frequency resources or its own radio network. As an MVNO, the provider will have its own IMSI code (International Mobile Subscriber Identity Code), its own network code (MNC) and offer its own subscription (SIM card) and services to end-users. An MVNO can also be a provider in the wholesale market by having its own service providers.

175. Two providers currently purchase MVNO access and offer services to end-users based on such access. In December 2009, Lyca Mobile entered into an MVNO agreement with Telia and launched commercial services in the Norwegian retail market in April 2010. Com4 AS (Com4) entered into an agreement with Telia in December 2012. The company's core business is machine-to-machine communication (M2M) with the exchange of text messaging. Com4 also has a modest share of voice call termination, but has organised the business in such a way that voice calls are terminated on Telia's network. Since the relevant retail markets are defined as not including M2M communication, Com4 will not be an operator on the demand side to the extent that their wholesale purchases are an input factor for offering M2M communication.

176. In August 2018, eRate also entered into an agreement for MVNO access with Telenor, but has yet to launch services on this platform. eRate is a so-called MVNE (Mobile Virtual Network Enabler) that facilitates mobile services for other operators. The company is therefore also a provider of wholesale access, but since the company itself is dependent on purchasing access to networks, it is not a provider in the wholesale market in line with the network owners. Until now, eRate has based its activities on an agreement for service provider access with Telenor.

177. A service provider agreement gives providers without their own network a non-exclusive right to offer, market and deliver services to end-users via pre-paid cards or subscriptions. The end-users only have a contractual relationship with the service provider. The service provider's calls are routed according to the network operator's or the MVNO's interconnection agreements and roaming agreements with other parties.

178. In the previous market analysis, there were 15 service providers in the market. There have since been mergers and acquisitions and new providers have become established. As of February 2020, the total number of service providers was 13⁵².

3.3 Summary concerning market operators

179. The table below summarises the development in the number of operators at various levels in the Norwegian market.

⁵¹ https://icegroup.com/assets/financia-reports/Ice-Group-ASA-Interim-Report-2019-Q3-FINAL_191114_064513.pdf

⁵² Atea AS, Chilimobil AS, Fjordkraft, Gudbrandsdals Energi, Happybytes, Hudya, Nortel, Phonet AS, Primafon AS, Tise Mobil AS, Saga Mobil AS, Unifon.og Xplora Mobil (PepCall)

	2006	2010	2015	2020
Network owners	Telenor Telia	Telenor Telia Mobile Norway	Telenor Telia Ice	Telenor Telia Ice
Providers with national roaming agreement	Teletopia	Network Norway	Ice	Ice
Providers with MVNO agreement	Tele2 TDC Ventelo	Tele2 TDC Ventelo	Com4 Lyca Mobile Phonero TDC	Com 4 ⁵³ Lyca Mobile eRate
Independent service providers	Less than 20	Less than 20	15	13

Table 3 Development in number of providers.

180. As in the previous analysis, it is still only Telenor and Telia that offer products in the wholesale market exclusively based on their own infrastructure. Ice has thus far not entered into agreements for access in the wholesale market. The table below shows the mobile networks used by the access buyers.

⁵³ COM4 is not an operator within the relevant market to the extent that the company purchases input factors for the production of M2M services.

<i>February 2020</i>	Telenor	Telia
National roaming		Ice
MVNO	eRate	Com4 Lyca Mobile
Service providers	Fjordkraft ⁵⁴ Atea Saga Mobil Hudya Phonect Prima fon Happybytes Nortel Gudbrandsdals Energi/mobil Unifon Zplora Mobil (PepCall)	Chilimobil Tise Mobile

Table 4 Distribution of access buyers on Telenor and Telia's mobile networks as of February 2020.

4 Three-criteria test

181. The market for access and call origination on mobile networks is not included in the ESA's current recommendation on relevant markets (the "Recommendation"). For a market that deviates from the Recommendation to be susceptible to sector-specific ex ante regulation, three cumulative criteria (the three-criteria test) must be fulfilled, cf. Article 2 of the Recommendation. The three cumulative criteria are:

1. High and non-transitory structural or regulatory entry barriers exist in the relevant market.
2. The market has characteristics that mean it will not tend towards effective competition within the relevant time horizon.
3. Ordinary competition law does not sufficiently address the objectives behind sector-specific regulation.

182. The starting point in assessing whether the three criteria are fulfilled will be based on a "Modified Greenfield Approach". This entails that the criteria must be assessed under the precondition that the market is not subject to ex-ante regulation. A key issue will thus be the extent to which the current market conditions can be attributed to current obligations. Regulation in adjacent markets must be taken into account.

⁵⁴ Atea, Fjordkraft, Happybytes, Nortel, Saga Mobil, Unifon and Xplora Mobil have a joint access agreement through eRate. eRate does not have its own retail customers.

183. According to Section 7 of the recitals to the Recommendation, the most important indicators in the assessment of the first and second criterion will be equivalent to those used in an analysis of whether there are operators in the market with significant market power.

184. If there is effective competition in the retail market from a forward-looking and long-term perspective without regulation of the wholesale market, then the wholesale market must not be regulated. However, a conclusion that the three criteria have been satisfied and indications of significant market power for one or more operators entail that the retail market will not be characterised by effective competition from a forward-looking and long-term perspective without wholesale regulation.⁵⁵

185. The following is an assessment of the three criteria and whether the relevant market justifies sector-specific ex ante regulation.

4.1 Further details of the performance of the three-criteria test

186. In 2008, BEREC published recommendations concerning the performance of a three-criteria test. One of the issues considered in the report is the evidence related to whether the criteria are fulfilled.⁵⁶ In the report, BEREC finds that the burden of proof in the three-criteria test cannot be deemed to be more stringent than the burden of proof to find significant market power in markets that have been part of a previous recommendation. BEREC furthermore points to how there is a mutual relationship between the first two criteria and analysis of whether there is a provider with significant market power, so that finding such a provider will often be sufficient to conclude that the first and the second criterion are fulfilled. BEREC also finds that the requirement of probability that the three-criteria test is fulfilled in previously recommended markets matches the requirement of the probability of finding, or not finding, providers with significant market power in markets that are still part of the Recommendation.⁵⁷

187. In BEREC's view, the burden of proof is lower for markets that were previously part of the Recommendation than for markets that were not included in the Recommendation. BEREC bases this view on how the reasons for removing a market from the Recommendation are not necessarily applicable at national level. BEREC furthermore assumes that in order to prove that the three criteria are fulfilled, in principle it is sufficient to show that the considerations which justified removing the market from the Recommendation do not exist at national level.⁵⁸

188. Nkom supports BEREC's understanding of the mutual relationship between the first two criteria in the three-criteria test and the analysis of significant market power. However, the purpose of a three-criteria test is best ensured by Nkom conducting an explicit and complete analysis of the three criteria.

189. On performing the three-criteria test, Nkom's starting point is the present market conditions with a forward-looking perspective. With regard to burden of proof requirements, Nkom assumes that on performing the three-criteria test there is no basis to deviate from the general starting point of a preponderance of probability.

⁵⁵ Section 13-15 of the recitals to the Recommendation.

⁵⁶ ERG (08) 21 ERG Report on Guidance on the application of the three criteria test. See: https://berec.europa.eu/doc/publications/erg_08_21_erg_rep_3crit_test_final_080604.pdf

⁵⁷ Page 5 of the Report.

⁵⁸ Pages 5 and page 18 of the Report.

4.2 First criterion: High and non-transitory entry barriers

4.2.1 General comments on the first criterion

190. Entry barriers limit competition by reducing the opportunities for new operators to enter the market. These kinds of entry barriers may have different characteristics and arise for different reasons. As part of the three-criteria test, there must be an assessment of whether there are high and non-transitory entry barriers and whether these are of a structural or regulatory nature.

191. To assess entry barriers, it will be necessary to state which type of establishment is relevant. In connection with this, reference is made to “Digital Agenda for Norway”⁵⁹, in which one of the principal objectives for electronic communications policy is to establish a minimum of three competing mobile networks.

192. The establishment in question must therefore be of a nature that it can influence the market dynamics in a way that is suitable for achieving the intentions behind the sector-specific regulation. Nkom finds that this suggests the establishment of an MNO. During an establishment phase, an agreement for national roaming outside the operator’s own coverage area will be necessary for being able to offer attractive services in the retail market. The extent of own coverage and the ratio of traffic that can be produced in the entity’s own network will, in this respect, be central to the competitiveness of any such operator. The relevant starting point for the assessment under the first criterion is therefore the entry barriers which a mobile provider developing its own infrastructure would encounter.

193. Below, Nkom will first discuss structural entry barriers and then regulatory entry barriers.

4.2.2 Structural entry barriers

194. In section 10 to the Recommendation, structural entry barriers are described as follows:

“Structural barriers to entry result from original cost or demand conditions that create asymmetric conditions between incumbents and new entrants impeding or preventing market entry of the latter. For instance, high structural barriers may be found to exist when the market is characterised by absolute cost advantages, substantial economies of scale and/or scope, capacity constraints and high sunk cost.”

195. In this context, Nkom is of the view that structural entry barriers principally relate to the following:⁶⁰

- Control over infrastructure that is not easily duplicated, including sunk costs,
- economies of scale and economies of scope, and
- access to financial resources.

4.2.2.1 Control of infrastructure that is not easily duplicated

196. If an operator controls infrastructure that is not easily duplicated, and this infrastructure represents an important input factor in the relevant market, this could represent a substantial entry barrier for potential competitors.

197. It is necessary to either own or otherwise control physical infrastructure in the form of mobile networks in order to be able to offer adequate, nationwide access and origination on

⁵⁹ Report no. 27 to the Storting (2015-2016).

⁶⁰ The criteria are based on the criteria in Section 58 of the Commission’s Guidelines on market analysis and the assessment of significant market power. (<hfile:///D:/ivo/Downloads/SMPguidelinesEnglish-pdfformat.pdf>). Particular mention of sunk costs is made in footnote 59 of the Guidelines.

mobile networks. Control over such physical infrastructure will involve significant investments and also requires control over the radio spectrum to activate the mobile network.

198. In this chapter, Nkom assesses factors relating to investments, while factors relating to spectrum are discussed in the chapter concerning regulatory entry barriers.

199. Sunk costs are one of the most central entry barriers and are particularly relevant in the electronic communications sector, where there are significant infrastructure investments. Sunk costs are costs that have accrued and which cannot be reversed. For a potential provider that wants to become established, the degree of irreversibility will depend on both how much of the investment can be recouped on the shutdown date and how long the company can expect to remain in the market. Sunk costs give the established operators a competitive advantage that also acts as a barrier to entry for new providers. In the electronic communications sector, sunk costs will, for example, consist of the costs of developing, building and establishing networks for mobile communication.

200. Sunk costs are often presented as the antithesis of avoidable costs, including variable costs. Variable costs can be attributed to the actual use of the network, such as the costs of producing and transporting mobile communication, and will cease when use of the network is discontinued.

201. With its distinctive topography and scattered dwellings, rolling out mobile networks in Norway requires very large investments. Within Europe, only Iceland has a lower population density than Norway.

202. By using the LRIC models, Nkom has calculated costs for voice call termination and has therefore obtained a good insight into relevant network costs. In previous periods, each individual operator was modelled, while during the most recent regulation periods⁶¹, Nkom has modelled costs for a hypothetical, effective network operator. In previous market decisions, Nkom has found that it costs approximately NOK 2 billion⁶² if an MVNO invests to become a national operator with its own radio network that covers 75 per cent of the population. During the period after Nkom made these calculations, there have been developments in costs and in assessments of the need for own coverage. There is reason to assume that the investment cost of gaining control over own infrastructure is more than NOK 2 billion. Ice has stated the expanding the 4G network from 83 to 95 per cent population coverage and costs for roaming and working capital while the network is being developed amounts to NOK 3 billion⁶³. Irrespective of this, investment costs of this magnitude will represent a significant barrier to entry.

203. The amount of sunk costs will increase in step with the scope of the network expansion because expansion often starts in cities and densely populated areas, while more sparsely populated areas are developed in later phases. In some cases, spectrum licences will set requirements for the expansion and thereby represent a lower limit on the extent of the network. Mobile customers' expectations of quality and coverage are still expected to have a major influence on how a new operator must dimension its mobile network. To be competitive, new providers of mobile communication must be able to offer a nationwide service from the launch date.

204. Establishing own access networks with base stations, masts and radio equipment requires a great deal of resources. Establishment of base stations can typically be divided into the following three categories: Own base station, co-location with other operators, and installation with a third party, for example on the roof of an existing building. Access to already

⁶¹ Cf. decision in the termination markets, 27 November 2017: <https://www.nkom.no/marked/markedsregulering-smp/anbefaling-2016/marked-2>

⁶² LRIC Model v 7.1, 2012 (2009 NOK).

⁶³ <https://www.insidetelecom.no/artikler/skal-bruke-1-5-milliarder-pa-nytt-nett/455993>

established locations will be of great importance to reducing time consumption and the costs of expanding one's own network. The need for co-location will naturally increase as the network is rolled out. A greater need for co-location will mean that already established operators will influence any new operator's rate of establishment. Established operators are expected to have incentives to shut out new competitors. Owners of buildings where installation is requested will also be important to the rate of expansion because these can, to a large degree, decide whether access is granted and the terms that apply.

205. Costs related to the establishment of a brand and marketing costs can, to a certain extent, also be considered irreversible costs. Building up a sufficient customer base for any new mobile network can be expected to entail considerable marketing costs.

206. Access to existing infrastructure can contribute to reducing entry barriers to some degree. Among other things, the EU Directive on measures to reduce the cost of deploying high-speed electronic communications networks⁶⁴ sets instructions on access to physical infrastructure, ditches, and in-building infrastructure. The Ministry of Transport and Communications conducted a consultation process in summer 2016 regarding a draft for a new act to facilitate the development of high-speed networks for electronic communications⁶⁵, however the act has yet to be adopted. The forthcoming European framework, which is expected to be implemented into Norwegian law after 2020, includes rules regarding co-investment that may simplify access to infrastructure in the long term. Even though proposed rules may contribute to some degree to reducing the costs of duplicating infrastructure, it is uncertain as to the extent to which this influences the above-mentioned and significant barriers to entry.

207. Telenor had already established the NMT mobile network in the 1980s. Much of the infrastructure in this network could be reused when establishing the GSM network and for subsequent network development. The company therefore had first-mover advantage when compared with Telia, who became established without existing infrastructure. However, both Telia and Telenor have achieved virtually nationwide coverage for mobile networks for mature technologies and therefore have an advantage over new network operators. The operators also continually carry out coverage boosts and technological improvements.

208. From 2010 to 2013, Mobile Norway constructed mobile networks with 2G and 3G technology and at the end of 2013 had achieved about 75 per cent population coverage. This expansion was largely funded by additional revenue from asymmetrical termination charges. The company left the market due to a lack of frequency resources.

209. Ice originally started with a network for mobile broadband based on CDMA technology in the 450 MHz band, see Chapter 3.2. The network was later replaced with 4G technology. The infrastructure on this network can be utilised through the company's development of the mobile network using other frequency bands. The fact that the company could acquire existing infrastructure after Mobile Norway left the market has also had a positive effect on the pace of development. Nkom is of the view that an acquisition such as this must be considered an extraordinary event and other providers cannot expect to have this option.

210. The aforementioned indicates that control of infrastructure is a significant entry barrier for new providers. It is theoretically possible to duplicate Telenor and Telia's existing infrastructure, but this involves sunk costs. End-users have very high expectations for coverage and quality and new providers must therefore be able to offer equivalent network quality to Telenor and Telia from the launch date. Ice's acquisition of infrastructure is a partial acquisition of a third mobile network. This is an unusual way for a new operator to ensure

⁶⁴ Directive 2014/61/CE, cf. for example: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.155.01.0001.01.ENG

⁶⁵ "The Broadband Development Act", cf. <https://www.regjeringen.no/no/dokumenter/horingsbrev---utkast-til-lov-om-tilrettelegging-for-utbygging-av-hoyhastighetsnett-for-elektronisk-kommunikasjon/id2502973/>.

control over infrastructure. Other potential operators will normally have to make step-by-step investments and will thereby be even more dependent on access to existing infrastructure to become established as a network owner.

211. When considering Telia's acquisition of Tele2's Norwegian activities, the Norwegian Competition Authority assessed irreversible investments and concluded, among other things, that the establishment of base stations in itself constitutes a significant entry barrier in the wholesale market.⁶⁶ The Norwegian Competition Authority's assessments of irreversible investments as part of entry barriers generally correspond to Nkom's assessments. Nkom believes that there is no doubt that the roll-out of a mobile network of sufficient size requires extensive resources and therefore represents a significant entry barrier.

4.2.2.2 Economies of scale and scope

212. Economies of scale exist when an increase in production leads to falling unit costs. This is characteristic of production with relatively high fixed costs and relatively low variable costs. Economies of scale tend to strengthen the market power of established operators and can thus function as an entry barrier for new network operators. Established network operators are expected to dimension the networks for optimal utilization. Over time, new network operators will build the customer base and during the start-up phase will not achieve the same level of economies of scale as the established operators. In this way, economies of scale contribute to creating an asymmetrical relationship between new and established providers, and this weakens the competitiveness of a new operator.

213. The economies of scale for a network operator are primarily triggered on the access network. The access network consists of costly elements such as base stations, masts and radio equipment. Norway's low population density may make it challenging to fully utilise economies of scale in all parts of the country. This also applies for established providers.

214. Economies of scope are a reduction in the average unit cost when more than one service is produced using shared means of production, for example, shared infrastructure or shared administration.

215. The work with the LRIC models has shown that Telenor and Telia's mobile networks are dimensioned in such a way that economies of scale can be utilized to largely the same degree. The modelling also shows that if realised traffic volume becomes lower than estimated, the unit costs increase significantly.

216. Nkom has not modelled the network structure with corresponding network costs for Ice and therefore does not have a detailed insight into the relevant factors associated with Ice's mobile network. However, the general aspects of mobile networks, with a high degree of fixed costs and incentives to fill the network with traffic, also apply for Ice's mobile network.

217. The impact of economies of scale on the mobile network can be reduced if development takes place in densely populated areas where the traffic base is highest. An operator that purchases access to another network in areas without own coverage may gradually be able to utilise economies of scale if a continually increasing share of traffic is produced on its own network. However, the structure of the access agreement may influence the access buyer's opportunities for utilising economies of scale. Conditions for volume commitments with host operators can reduce volumes on the access buyer's own network and planned reductions in unit costs may be delayed. Price elements that depend on the number of customers and are independent of traffic volume (normally this will be SIM charges or flat-rate elements) will not, in the same way, trigger avoidable costs and there is thus no reduction in the unit cost.

⁶⁶ <https://konkurransetilsynet.no/wp-content/uploads/2018/08/2014-0289-355-vedtak-v2015-1-offentlig-versjon.pdf>, see section 506.

218. Economies of scale and scope can also be achieved in connection with sales and customer-oriented activities and will presumably be of greatest importance to operators with business activities in multiple countries and/or within a wide range of services where costs associated with the above-mentioned activities can be distributed across multiple entities. However, Nkom does not expect that these types of economies of scale and/or scope have less scope and importance than benefits linked to networks and network costs.

219. Telenor and Telia are horizontally integrated and both offer services in the wholesale and retail markets. Both are established with an extensive product portfolio that enables them to achieve economies of scale that a new operator cannot achieve in the same manner. This may therefore act as a barrier to entry.

4.2.2.3 Access to financial resources

220. Access to financial resources will be decisive to an operator's ability to enter a market requiring both large initial investments and financing of access to frequency resources.

221. There is a comparatively high risk associated with financing a completely new mobile network. Like other commercial companies, an operator that builds a nationwide mobile network must normally also compete for venture capital. For example, this can occur through increased payments from existing or new owners, including through listing on the stock exchange or share issue.

222. In autumn 2018, Ice failed in its attempt to attract more investors through a stock exchange listing which had the goal of raising NOK 3 billion⁶⁷. However, the company was able to raise NOK 1.5 billion in a private placement at the end of January 2019⁶⁸. The company was also supplied with NOK 700 million in March 2019⁶⁹.

223. The assessments above show that it is extremely capital-intensive to establish viable alternatives to Telenor and Telia's nationwide mobile networks and there are large initial investments. A national roaming agreement can to some degree reduce the need for initial investments and may, from a more short-term perspective, reduce the importance of access to capital.

224. Nkom believes that good access to capital will be necessary to be able to become established as a genuine challenger in the market. Investing in a full-fledged mobile network has a relatively high degree of risk, and this underpins the fact that access to financial resources is a significant barrier to entry in the market.

4.2.2.4 Conclusion regarding structural entry barriers

225. The development and operation of mobile networks in Norway requires significant investments and costs that can largely be considered as fixed and not dependent on traffic. Taking into consideration the low population density in Norway and the need to develop a network with good coverage, the unit costs could become extremely high if the mobile network does not achieve the customer base it is dimensioned for. Some costs may also be irreversible. Nkom therefore believes that irreversible and high fixed costs, restrictions on access to financial resources and economies of scale and scope mean that there are significant barriers to entry for new operators.

4.2.3 Regulatory entry barriers

226. Regulatory entry barriers exist when market access and/or market positions of the operators is/are limited by regulatory conditions, for example, resource restrictions that apply

⁶⁷ <https://www.insidetelecom.no/artikler/ice-gar-pa-bors/451233>

⁶⁸ <https://www.hegnar.no/Nyheter/Boers-finans/2019/02/Ice-Group-hentet-1-5-milliarder-i-emisjon>

⁶⁹ <https://newsweb.oslobors.no/message/471237>

for frequency licences or different forms of price controls, cf. Section 18 of the recitals to the Recommendation.

4.2.3.1 Price controls

227. With respect to regulation of termination prices on mobile networks, the authorities have emphasised that existing infrastructure must be utilised efficiently through, among other things, price index adjustment for voice call termination based on pure LRIC. If termination prices are fixed that are higher than underlying costs, this will generally have the effect that there is a transfer from small to large providers, among other things, as a consequence of unequal ratios of on-network/off-network traffic. However, the financial effect for the providers depends on the level of termination charges and the continually decreasing termination charges indicate that the impact is becoming less important. It states in the applicable decision for the termination markets⁷⁰ that even if the financial impact will be different for the providers, depending on the connection between incoming and outgoing minutes to other mobile networks, the price changes have a modest impact.

228. However, the authorities have previously given weight to reducing entry barriers for new providers by them being able to demand higher termination charges during a start-up phase. Mobile Norway's mobile network was subsidised through asymmetrical termination rates. However, since 1 January 2013, termination charges have been symmetrically regulated for all operators and new operations cannot expect asymmetrical regulation of termination charges.

229. The regulation of termination charges has resulted in continually lower and symmetrical prices and price controls are not considered a barrier to entry.

4.2.3.2 Access to frequency resources

230. Spectrum access is a necessity for the production of mobile services. Frequency licences are considered to be a finite resource, and lack of access to frequencies can be a regulatory entry barrier.

231. Frequency licences will often be encumbered with conditions regarding frequency fees, duration and coverage requirements. Coverage requirements can be decisive to the development rate and require the licence holder to have the financial and actual capacity to undertake the required development.

232. The frequency bands have different characteristics in terms of range and penetration. The capacity and utility value of the frequency bands are also influenced by the access to equipment that can use the frequency band. It is therefore relevant to investigate both whether frequencies are available and what frequencies these may be.

233. In the document "Spectrum Roadmap for Mobile Communications"⁷¹, Nkom provides information about the management and allocation of frequency resources for mobile communication and 5G. The intention of the document is to provide operators in the industry with an insight into factors that are of importance for frequency management such that operators are well-informed about impending frequency allocations.

234. Due to coverage considerations, frequencies with long range and penetration will often be very attractive for service production on mobile networks. Frequencies below 1 GHz are of such a nature, and frequency bands below 1 GHz are often referred to as coverage bands. In

⁷⁰ Nkom's decision of 27 November 2017 in the wholesale markets for voice call termination on individual mobile communication networks.

⁷¹ <https://www.nkom.no/teknisk/frekvens/frekvensstrategi/frekvenskompass>

addition, the 1800 MHz, 2100 MHz and 2600 MHz bands have been established for mobile communication in Europe. These are especially well-suited for providing good capacity because the bandwidth is greater than for the frequency bands below 1 GHz and these are often referred to as capacity bands. There are also frequency bands in parts of the 700 MHz and 1500 MHz bands that are exclusively intended for increasing capacity in one direction⁷² (from mobile network to mobile phone). With regard to 5G, the frequency bands 700 MHz, 3400-3800 MHz and 26 GHz⁷³ have been identified by the EU as so-called pioneer bands for early introduction of 5G. The status of these bands is shown in the table below⁷⁴.

⁷² SDL – Supplemental Downlink.

⁷³ The new codex indicates that a minimum of 1GHz of the 26 GHz band will be assigned by the end of 2020.

⁷⁴ Source: "Spectrum roadmap for mobile communication", 2nd edition, 30 November 2018.

Frequency band	Allocated	New allocation expected	Bandwidth ⁷⁵	Blocks
450 MHz	100%	2040	5 MHz	1x5 MHz
700 MHz	100 %	2039	30 MHz 20 MHz	6x5 MHz 4x5 MHz
800 MHz	100 %	2032	30 MHz	6x5 MHz
900 MHz	100 %	2032	35 MHz	7x5 MHz
1500 MHz	Transmission licences	2020	90 MHz	18x5 MHz
1800 MHz	100 %	2027 ⁷⁶	75 MHz	15x5 MHz
2100 MHz	100 %	2032 ⁷⁷	100 MHz	20x5 MHz
2300 MHz	88%	Pending	100 MHz	20x5 MHz
2600 MHz	100 %	2021	70 MHz (FDD ⁷⁸) 50 MHz (TDD)	14x5 MHz 10x5 MHz
3400-3800 MHz	100 %	2021	400 MHz	80x5 MHz (TDD)
26 GHz	43%	Pending		

Table 5 Frequency bands for mobile services, overview of total resources and allocations.

235. A combination of coverage bands and capacity bands is necessary for being able to provide a nationwide service that satisfies user requirements. The table above shows that the 800 MHz and 900 MHz coverage bands will not be available until 2033. The 450 MHz band was allocated to Ice in May 2019. However, the band has limited equipment support and is used by Ice in the production of mobile broadband services.

236. The 700 MHz band has good coverage capabilities and can also provide improved capacity⁷⁹. The auction of the 700 MHz band concluded in June 2019 with the licences being valid until the end of 2039.

237. Future use of the 1500 MHz band (SDL) will probably entail it only being sent from the base station to the mobile phone. Such use will result in the coverage area increasing and that the coverage may be able to be compared with frequency bands below 1 GHz. The result will be better capacity in the coverage bands.

238. With regard to capacity frequencies, a quarter of the 2100 MHz band was allocated in June 2019 at the same time as the 700 MHz band was allocated. The licences in the 2100 MHz band together with other licences in this band will expire at the end of 2032. The 2600 MHz band together with the 3400-3800 MHz band are scheduled to be allocated in 2021. Both of these bands have good equipment support and are attractive capacity-resources for operators. The allocation of the 2300 MHz band and the 26 GHz band is pending.

239. Frequencies are a limited resource. However, the above overview shows that there are plans for the allocation of several new frequency bands in the coming years. This particularly applies to frequencies that are well-suited for capacity. Therefore, access to frequency

⁷⁵ The number of MHz is normally specified as double the bandwidth (sum total of upload and download capacity).

⁷⁶ Applies to 26% of the 1800 MHz band. The remaining licenses are valid until the end of 2033.

⁷⁷ Applies to 25% of the 2100 MHz band. The remaining licenses are valid until the end of 2032.

⁷⁸ FDD=Frequency Division Duplex and TDD=Time Division Duplex.

⁷⁹ Particularly applies to 700 MHz SDL.

resources is expected to represent a somewhat less insurmountable barrier to entry in the coming period. The authorities also use different methods such as frequency caps and coverage obligations with a view to efficient allocation and utilisation of the resources. By using these methods, the authorities seek to enable at least three operators to be able to establish and offer mobile communications based on infrastructure they control themselves. However, for other players than those who already have frequency resources, it would be challenging to access sufficient frequency resources in both coverage bands and capacity bands to be able to provide nationwide services that meet the requirements of end users.

240. The costs incurred from annual frequency charges for operators that use frequency resources are not inconsiderable. For example, depending on the frequency band, the frequency charge for 2018 was between NOK 1.3 and 1.5 million per MHz frequency duplex available to the licence holder. A study conducted by Oslo Economics⁸⁰ also shows that the frequency charges have not had any impact on the auction proceeds, which indicates that frequency fees are not necessarily a barrier in themselves.

241. The government's processing time for deciding on frequency permits may be of some importance to establishment in the market. Section 9-4 of the Electronic Communications Act states that the processing time is normally set at 6 weeks, but allows for up to 8 months in special circumstances, for example, if an auction is used as the allocation form. Experience has shown that it is a resource and time-intensive process to allocate frequency resources for mobile communication and that allocations in the form of an auction can take up to two years to complete.

242. Access to frequencies will often constitute a barrier to entry because radio spectrum is a limited resource. The degree of scarcity of frequency resources is still expected to be of importance to the terms set by the authorities when allocating frequencies. The use of frequency caps, minimum prices, coverage obligations and auction format have sought to ensure that at least three operators are allocated spectrum, and it is expected that this approach will be continued. The above-stated initiatives, combined with more frequency bands being planned for allocation in the coming years, mean that access to frequencies represents less of a barrier to entry than previously.

4.2.3.3 Conclusion concerning regulatory entry barriers

243. Price controls, including maximum prices for termination, are not considered to be regulatory entry barriers in themselves. Access to frequencies is still expected to be a barrier to entry, but to a more limited extent than previously. In the coming period, it is therefore expected that regulatory conditions will be of relatively little importance as barriers to entry.

4.2.4 Conclusion – first criterion

244. In order to become established as a genuine competitor in the market it is necessary to control own network infrastructure. This must be nationwide and be of high quality from the launch date. A nationwide radio network is time-consuming to establish, involves a considerable investment and entails irreversible costs. Telenor and Telia make significant and continuous investments in their mobile networks and utilize economies of scale, and these conditions indirectly contribute to increasing the establishment barriers for a new operator.

245. The scarcity of frequency resources is to some extent expected to be reduced in the coming years, which means that what can normally be considered significant barriers to entry will not be expected to have somewhat less negative effects on market entry than before.

246. Based on the above, Nkom concludes that it is particularly factors such as control of network infrastructure, economies of scale and scope and access to financial resources that

⁸⁰ <https://www.nkom.no/aktuelt/nyheter/samfunns%C3%B8konomisk-analyse-av-frekvensavgifter>

constitute high and non-transitory entry barriers in the relevant market. The first criterion is therefore fulfilled.

4.3 Second criterion: The market is not tending towards effective competition

4.3.1 Introduction

247. It states in Section 20 of the recitals to the Recommendation that other structural conditions may lead the market to move towards sustainable competition, even though the market is characterised by high, non-transitory entry barriers. The second criterion is thus whether the relevant market has characteristics which mean that it is not moving towards sustainable competition.

248. The assessment under the second criterion is forward-looking to a limited degree. The Explanatory Note states that the criterion is not fulfilled if there is sufficiently clear evidence⁸¹ of dynamics in the market during the analysis' time horizon which indicate that the market will tend towards sustainable competition without ex-ante regulation.

249. Whether the market can be seen to be moving towards sustainable competition without ex-ante regulation within this analysis' time horizon will have to be determined on the basis of a broad assessment of the market conditions. Neither the ESA's Recommendation nor BEREC's Guideline⁸² is exhaustive with regard to the elements to be assessed and it is therefore up to the national regulator to assess which elements best illustrate the second criterion, taking due account of the conditions in the national market.

250. The relevant market is a wholesale market (an upstream market). Since competition at retail level will to a certain degree reflect the competition at wholesale level/network level, elements of the analysis under the second criterion will be related to the competition situation in the retail markets (downstream markets) for mobile services.

251. In the following chapters, Nkom will assess whether the relevant market is tending towards sustainable competition. The assessment includes:

- Development in market shares
- Market concentration
- Price developments and usage patterns
- Importance of a third network
- Potential competition

4.3.2 Development in market shares

252. A natural starting point for the assessment of whether the market is tending towards sustainable competition will be an analysis of market shares and their development.

253. Since the mid-1990s, the Norwegian mobile market has been characterized by the presence of Telenor and Telia. The two established operators have, in total and over a long period of time, controlled a significant part of the retail market. After Tele2 left the market, the two established operators have together had just under 90 per cent of subscriptions and over 90 per cent of revenues in the retail market.

⁸¹ "clear evidence".

⁸² ERG's Report on Guidance on the application of the three-criteria test, April 2009.

254. In the following, Nkom assesses the development in market shares at retail and wholesale level, particularly with regard the development since the previous market analysis, which was based on statistics for 2015.

4.3.2.1 The development in market shares at retail level for bundled mobile services

255. At the end of first half 2019 there were just over 5.7 million mobile telephony subscriptions. The figure below shows the development in market shares based on subscriptions in the retail market for bundled mobile services from 2010 to first half 2019.

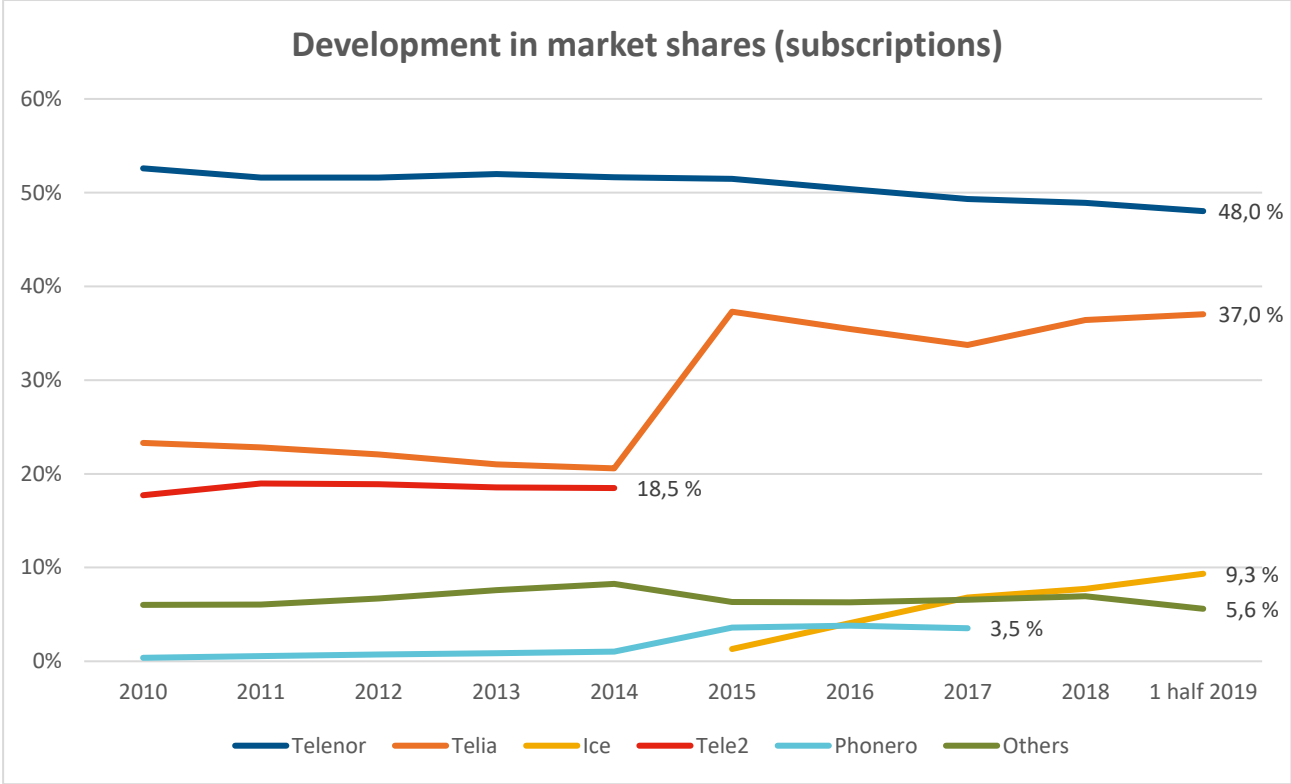


Figure 4 Market shares based on the number of subscriptions in the period from 2010 to first half 2019. Residential and business combined.

256. The figure shows that Telenor has had a relatively stable position in the retail market for bundled mobile services, measured by number of subscriptions. The company’s market share based on number of subscriptions was 48.0 per cent at the end of first half 2019 (residential and business combined).

257. In the previous market analysis, Telia had 37.3 per cent of subscriptions. Telia’s market share was calculated after Telia’s acquisition of Tele2. The company’s market share fell slightly until 2017, but then increased in 2018 as a result of the acquisition of Phonero. At the end of first half of 2019, Telia had a market share based on the number of subscriptions of 37.0 per cent, which is 0.3 per cent lower than the market share Telia had in the previous market analysis which formed the basis for the decision of 1 July 2016.

258. The two largest providers in the market had a combined market share of 85.1 per cent at the end of first half 2019. Their total market share has only decreased by about 3 per cent since the last analysis, in which their market share was 88.8 percent.

259. At the same time, Ice has had relatively strong growth during the same period. The company has grown from having around 1 per cent of subscriptions at the end of 2015 to 9.3 per cent at the end of first half of 2018.

260. However, the combined customer base of the other operators fell from 10 per cent to 5.6 per cent during the same period. The largest providers in the Other category are Lycamobile, Fjordkraft and Chilimobil, with 1.3, 1.4 and 1.1 per cent respectively, at the end of first half 2019.

261. The table below shows the development in market shares based on the number of subscriptions at the end of first half 2019, and in the three previous analyses of market 15.

	First half of 2005	2009	2015	First half of 2019
Telenor	56 %	53 %	52 %	48 %
Telia	27 %	27 %	37 %	37 %
Tele2	5 %	16 %		
Ice			1 %	9.3 %
Other	12 %	5 %	10 %	5.6 %

Table 6 Market shares at retail level based on number of subscriptions in the first half of 2005, and full year figures for 2009, 2015 and first half of 2019. Residential and business combined.

262. The figure below shows the development in market shares based on revenue in the retail market for bundled mobile services from 2009 until the end of 2018 (residential and business combined). In 2018, total revenue for bundled mobile services were approximately NOK 17.1 billion. The corresponding figures for the first half of 2019 were NOK 8.8 billion. The revenue figures comprise all services sold in connection with a subscription, including fixed and variable revenues for voice, text messaging and data. Revenue from termination and resale is not included.⁸³

⁸³ Also applies to revenue relating to content messages and bulk messages. From and including 2016, content messages will not be included as part of the end-user revenue for mobile services in the electronic communications statistics. Bulk messages, which involve the transmission of large quantities of text messages, for example, advertisements, pin codes for online banking, information about events etc., are included in the gross revenue in the electronic communications statistics from and including 2016.

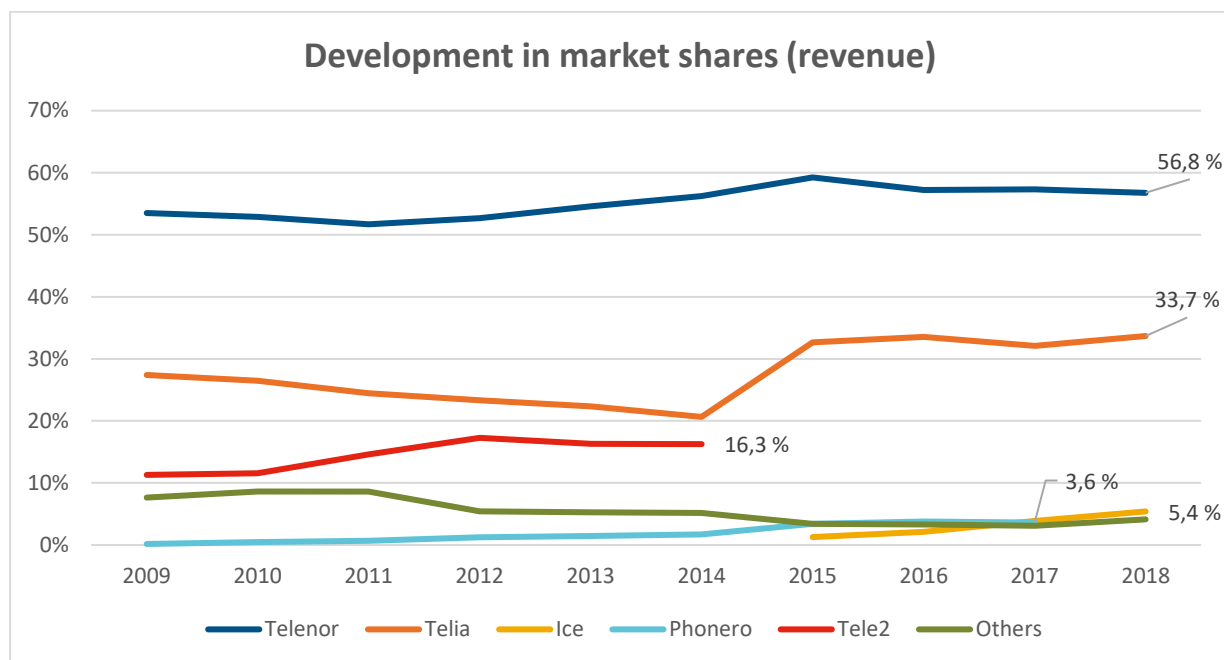


Figure 5 Development in market shares based on revenue in the retail market for bundled mobile services from 2009 to 2018. Residential and business combined.

263. Telenor's market share based on revenue was 56.8 per cent in 2018 and 57.4 per cent in the first half of 2019. Since 2015, Telenor's market share based on revenue has decreased by almost as much as the market share based on the number of subscriptions, i.e. by about 2 per cent.⁸⁴

264. Telia has maintained its market share when measured in revenue since the acquisition of Phonero in 2015. In 2018, Telia's market share measured in revenue was 33.7 per cent and 34.4 per cent in the first half of 2019.

265. The two established network owners together accounted for 90.5% of the revenue in the retail market for bundled mobile services in 2018. This amounted to 91.2 per cent in the first half of 2019.

266. Ice has increased its share when measured in revenue since the last analysis, but has a lower market share based on revenue compared with market share based on the number of subscriptions. The company had just over 5 per cent of total revenue in 2018. In the first half of 2019, this was 5.9 per cent.

267. Other operators accounted for 4 per cent of revenue in the retail market for bundled mobile services. In the first half of 2019, this was 3.2 per cent. The table below shows the development in market shares based on revenue in the retail market for bundled mobile services at the end of 2018 and for the three previous analyses of market 15.

⁸⁴ Telenor's drop in revenue from 2015 to 2016 was primarily due to the fact that revenue linked to content messages were separated from end-user revenue via mobile from 2016.

	First half of 2005	2009	2015	First half of 2019
Telenor	56 %	55 %	59 %	57 %
Telia	27 %	27 %	33 %	34 %
Tele2	5 %	14 %		
Ice			1 %	6 %
Other	12 %	5 %	7 %	4 %

Table 7 Market shares at retail level based on revenue in the first half of 2005, and full year figures for 2009, 2015, 2018 and first half of 2019. Residential and business combined.

4.3.2.2 Development in market shares for mobile broadband

268. In defining the market, Nkom has concluded that dedicated subscriptions for mobile broadband constitute an adjacent retail market to the market for bundled mobile services. The production of dedicated subscriptions for mobile broadband does occur in the same manner as data services for ordinary mobile subscriptions.

269. The number of subscriptions for mobile broadband amounted to 367,000 at the end of 2018. The number of subscriptions rose each year until 2012. This number has since declined every year. The trend of a reduction in the number of mobile broadband subscriptions may indicate that many end-users prefer to use their ordinary mobile subscriptions for data services rather than use a dedicated subscription for data services.

270. The figure below shows the total number of subscriptions and market shares measured by the number of subscriptions for mobile broadband.

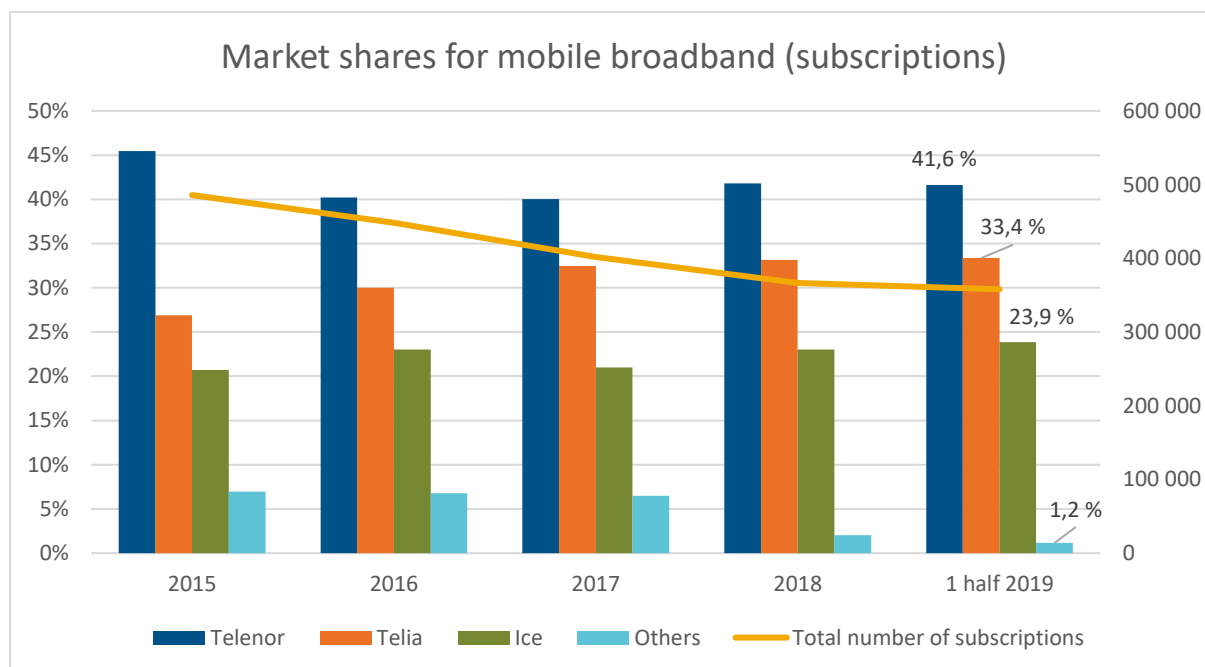


Figure 6 Development in total number of subscriptions and market shares, measured by the number of mobile broadband subscriptions for the period from 2015 to first half of 2019.

271. At the end of first half of 2019, Telenor had just over 41 per cent of mobile broadband subscriptions. Telia was the second largest operator with about 33 per cent, while Ice had almost 24 per cent. Telia has increased its share of subscriptions in the past four years. Telenor and Ice increased their market shares in 2018. In total, these three operators had over 98 per cent of subscriptions at the end of first half of 2019. Other providers have only gained a modest foothold in this part of the market.

272. Revenue of dedicated subscriptions for mobile broadband were close to NOK 1,259 million in 2018 and NOK 560 million in the first half of 2019. This market has a low level of revenue when compared with the revenue in the market for bundled mobile services.

273. Revenue from dedicated subscriptions for mobile broadband are divided among the operators as shown in the figure below. Telenor’s share was 39 per cent, while Telia’s share was 38 per cent in 2018. Telenor’s share in the first half of 2019 was unchanged, while Telia’s share was reduced to 36.2 per cent. Ice’s share has been relatively stable at just over 21 per cent. In the first half of 2019 it increased to 23.5 per cent.

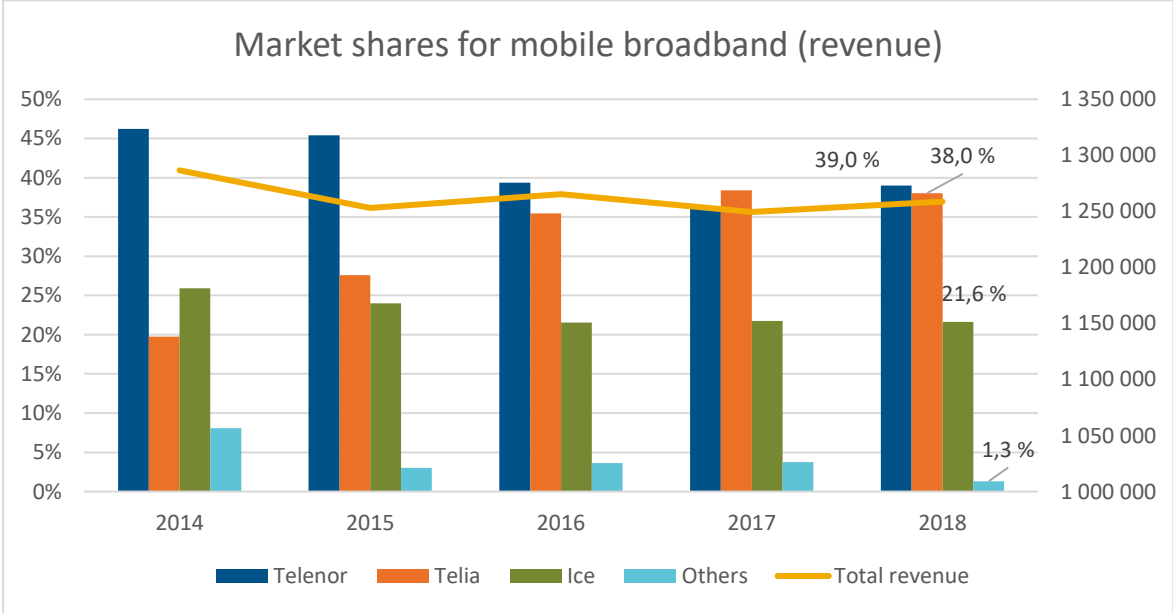


Figure 7 Development in total sales and market shares, measured by sales for mobile broadband for 2014 to 2018.

274. The distribution of market shares shows that all the three network owners are present in this market. However, Telenor and Telia also again have a much larger share of subscriptions and revenue than Ice in this market.

4.3.2.3 Development of market shares at wholesale level

275. In order to assess market shares at network level, Nkom's starting point is the operators that have their own mobile networks: Telenor, Telia and Ice.

276. Nkom believes that a relevant parameter in the assessment of the operators' relative strengths at wholesale level would be the network owners' shares measured in terms of revenue. However, Nkom does not have revenue figures at wholesale level for internal use and thereby uses markets shares measured as the number of subscriptions, which reflects the entire bundled product with voice, text messaging and data. However, the assessment of market shares at retail level has shown that Telenor has higher revenue per customer than Telia and Ice, and since most of the wholesale activity consists of internal sales, the same will most probably apply at wholesale level. This means that using subscriptions as a parameter

for market shares at wholesale level gives a conservative picture of the relative strengths of these operators.

277. When using the parameter of the number of subscriptions in the various networks, national roaming will not be taken into account. Ice purchases national roaming from Telia for traffic flows linked to own customers that are not produced over Ice's own network. This applies to voice calls, SMS and data. The share of data traffic on Ice's own network during the 4th quarter of 2019 was 80 per cent⁸⁵. Since data traffic constitutes an increasingly more important part of the relevant wholesale market, Nkom believes that market shares based on data traffic may be a relevant parameter for supplementing the assessment of the operators' relative strengths. Market shares based on data traffic have therefore also been included.

278. The shares are calculated for the period from 2015 to the first half of 2019, and both own retail activities and access buyers are included.⁸⁶ Internal traffic is included as part of the market and is therefore included in the calculation. The number of subscriptions and data traffic from MVNOs and service providers are included in the market shares of the network owners.⁸⁷

279. Out of the three network owners, only Telenor and Telia have external wholesale sales. Ice has no access buyers on its network, which means that its market shares at network level only include own retail operations.

280. The table below shows the distribution of the number of mobile telephony subscriptions on the networks.

Subscriptions	2015	2016	2017	2018	First half 2019
Telenor	58 %	58 %	51 %	52.4 %	51.0 %
Telia	42 %	38 %	42 %	39.8 %	39.7 %
Ice		4 %	7 %	7.8 %	9.3 %

Table 8 Market shares at wholesale level based on mobile telephony subscriptions for the period from 2015 to the first half of 2019.

281. At the end of first half of 2019, the share of mobile telephony subscriptions on Telenor's network was 51 per cent. Of this, 3 per cent can be attributed to 10 access buyers⁸⁸ with Telenor. Several of these are on Telenor's network through the access agreement eRate has with Telenor. Telenor's "self supply" corresponds to the company's market share measured as the number of subscriptions at retail level, which is 48 per cent.

282. Telia's share of subscriptions on the network increased from 2016 to 2017. This was principally due to the acquisition of Phonero in 2016, which was approved by the Norwegian

⁸⁵ <https://icegroup.com/investor/reports-and-presentations>

⁸⁶ Cf, including the Ministry of Transport and Communications' decision in the appeal of Nkom's decision on the designation of undertakings with significant market power and imposition of special obligations in the market for access and call origination on public mobile telephone networks, dated 9 March 2018, Chapter 6.2.1.5.

⁸⁷ For Telenor, the 2018 figures include subscriptions and data traffic with Komplett, Fjordkraft, PepCall, Telipol, Phonect, Atea, Saga mobil, Happybytes, Gudbrandsdal energi and Primafon. NextGenTel, Get, TDC, Chilimobil and Lycamobile are included for Telia. The figures for Telenor for the first half of 2019 include data traffic with Fjordkraft, PepCall, hudy, Phonect, Atea, Saga mobil, Happybytes, Gudbrandsdal energi, Sponz and Primafon. For Telia NextGenTel, Chilimobil and Lycamobile are included.

⁸⁸ Nortel and Unifon were established in September and October 2019 and thus are not included in the figures.

Competition Authority in April 2017. Of Telia's share of approximately 40 per cent at the end of the first half of 2019, 3 per cent can be attributed to 4 access buyers⁸⁹.

283. Ice's share of subscribers was 9.3 per cent at the end of first half of 2019. However, Ice purchases national roaming from Telia for traffic flows linked to own customers that are not produced over Ice's own network. This applies to voice calls, SMS and data. This will not be possible to take into consideration when calculating market shares based on subscriptions.

284. When calculating market shares at network level based on data traffic over mobile telephony subscriptions for 2018 and first half of 2019, it is possible to take into account that part of Ice's data traffic was national roaming. This traffic is attributed to the host network, i.e. Telia's network.⁹⁰ The table below shows the distribution of market shares in 2018 and first half of 2019 after national roaming is taking into account.

Data traffic	2015	2016	2017	2018	First half of 2019
Telenor	60 %	59 %	55.5 %	57.6 %	54.5 %
Telia	40 %	41 %	43.0 %	39.4 %	40.5 %
Ice			1.5 %	3.1 %	5.0 %

Table 9 Market shares at wholesale level for data traffic over mobile telephony subscriptions for the period from 2015 to the first half of 2019.

285. Telenor's share of data traffic on the network declined from 2015 and was 54.5 per cent the first half of 2019. Of this, 2.8 per cent can be attributed to access buyers. Telia's share of data traffic on the network increased until 2017, but then decreased in 2018 and increase again the first half of 2019. The reduction in 2018 was primarily due to Ice having increased its share of data traffic on its own network.

286. Access to data traffic in order to offer mobile broadband is also part of the relevant wholesale market. It is therefore relevant to see how the overall data traffic is distributed between the networks when data traffic via mobile broadband subscriptions is included. The table below shows the distribution of data traffic between the mobile networks of Telenor, Telia and Ice in 2015, 2018 and first half of 2019. Traffic from MVNO providers and service providers is again included in the traffic of network owners.

Data traffic	2015	2018	First half of 2019
Telenor	47 %	45.7 %	44.8 %
Telia	46 %	47.5 %	45.5 %
Ice	7 %	6.8 %	9.7 %

Table 10 Market shares at network level based on data traffic via traditional mobile telephony subscriptions and mobile broadband subscriptions in 2015, 2018 and first half of 2019.

287. The table shows that Telenor's market share declined by about 2 per cent from 2015 to 44.8 per cent the first half of 2019. Telia's market share declined by a half per cent during the

⁸⁹ Tise Mobile was established in April 2019, but did not report any subscriptions to the statistics for the first half of 2019. In addition comes Com4, which has only M2M subscriptions.

⁹⁰ According to Ice, the share of traffic on its own network was 41 per cent the 1st quarter 2018, 67 per cent the 4th quarter 2018 and 80 per cent the 4th quarter 2019.

same period, but the company has some larger share of the data traffic than Telenor at wholesale level. Ice's share has increased by almost three per cent from 2015 until 2018.

288. The production of dedicated subscriptions for mobile broadband does not occur in the same manner as data services for ordinary mobile subscriptions. Therefore, as a starting point, the wholesale market includes both data traffic for being able to offer traditional mobile subscriptions and mobile broadband. However, Ice largely utilises frequencies in the 450 MHz band for mobile broadband. These frequencies differ from other frequency bands that are used for mobile services because there is presently no handset for traditional mobile services that supports LTE on the 450 MHz-band. This frequency band is therefore not substitutable with other frequency bands that are used for traditional telephony. Nkom is thus of the view that subscriptions and data traffic for mobile broadband cannot be used as basis when assessing market shares at wholesale level in the relevant market. Therefore, in the following, market shares for data traffic over mobile telephony subscriptions will be used as a basis when assessing the relative strengths in the relevant market.

4.3.2.4 Overall assessment of the development in market shares

289. Over time, Telenor has had high and relatively stable market shares in the retail market for bundled mobile services. Telia's market share has varied more as a result of acquisitions and occasional decreases in the customer base. At the end of the first half of 2019, the two operators together had 85.0 per cent of the subscriptions and 90.8 per cent of the total revenue in the overall retail market (residential and business).

290. Ice has experienced relatively strong growth in recent years. The company has grown from having around 1 per cent of subscriptions at the end of 2015 to 9.3 per cent at the end of first half of 2019. The company's share of total revenue in the market amounted to just under 6 per cent. During the same period, other access buyers have decreased in size. The market share of this group at the end of first half of 2019 was only 5.6 per cent based on the number of subscriptions and only 3.2 per cent based on revenue.

291. The reduction in market share for external MVNOs and service providers is a factor that indicates that the wholesale market does not tend towards sustainable competition.

292. At network level, there are still only two providers of wholesale access to external buyers. The distribution of subscriptions between them has changed slightly since the previous analysis. This is primarily due to the mergers between Telia and Phonero. Telenor's market share based on the number of subscriptions at the end of first half of 2019 was 51 per cent, while Telia's market share amounted to 49 per cent (including Ice).

293. Even though Ice has grown in the retail market, only a small proportion of the total traffic in the retail market goes via the third network. During the first half of 2019, only 4.5 per cent of total data traffic in the retail market went via Ice's network. Almost all voice calls and SMS were on the established networks.

294. Overall, Nkom believes that the market shares of the two established network owners, both at retail and wholesale level, indicate that the market is not tending towards efficient competition. At retail level, in terms of revenue, Telenor and Telia cover the entire 91 per cent of the market, while at wholesale level, only these operators that have entered into agreements for access for wholesale customers are in the relevant market. Nkom does not expect Ice to gain a significant share of existing wholesale customers within the time horizon of this analysis. Viewed in the context of the development in market shares during the last five years, Nkom assumes that market shares at network level are not likely to change significantly during the analysis' time horizon. This indicates that the market will not tend towards sustainable competition within the analysis' time horizon.

4.3.3 Market concentration

295. In the assessment of the structural market conditions, various types of concentration indices are used. The purpose of the concentration indices is to give a picture of the intensity of the competition in the market. High market concentration will often be an expression of limited competition. The definition of high market concentration will vary between different markets.

296. Market concentration can be calculated according to different methods, of which the most common are the summary rate index, also called the concentration ratio (CR), and the Herfindahl-Hirschman index (HHI).

297. CR is typically used to indicate the scope of the part of the market which is controlled by the largest providers in the sector. CR1 represents the market share of the largest operator in the market and CR2 represents the market shares of the two largest operators. Generally, CR2 is assessed on the basis that the higher the value, the lower the competition pressure in the market is generally assumed to be.

298. On calculating CR2, however, no account is taken of the total number of providers in the market and the relative sizes of the two providers included in the index. In principle, it appears natural to assume that the competition can be stronger in markets with several equally large operators. Therefore concentration is also stated with the help of the HHI index.

299. HHI is calculated by squaring the market share of each company competing in a market. Squaring the market share gives relatively more weight to companies with large market shares than companies with small market shares. A market with a HHI of higher than 0.2 is considered to be a very concentrated market.⁹¹ If there are many providers with small market shares, the index will approach 0. If comparing HHI in two markets with equal numbers of operators, and the market shares in one market are unevenly distributed between the operators, while the operators in the other market are of equal size, HHI will be highest in the first-mentioned market. This market will thereby be most concentrated. A decline in the HHI index will generally indicate increased competition intensity and reduced market power for the largest operators.

300. When using market shares when calculating CR and HHI, it is necessary to consider which measurement parameters are most relevant for the purpose. The characteristics of the relevant market will be decisive to determining how market shares are measured.⁹² Market shares can be measured by revenue, number of customers (subscriptions) or volume.

301. Nkom believes that the operators' market shares based on revenue constitute a relevant parameter in the assessment of market concentration, where the size of the operator is of importance.

302. The table below shows CR2 and HHI in the retail market in the period from the previous analysis, calculated based on revenue. CR2 includes Telenor and Telia's shares of revenue in the retail market for bundled mobile services for residential and business together, while HHI includes all operators in the market. Operators with small market shares have little impact on the value of HHI.

⁹¹ Sections 19-20 of the Commission's Guidelines on the Assessment of Horizontal Mergers, EUT C 35 of 5 February 2004 and NOU 2012:7, page 107.

⁹² Section 76 of the Guidelines.

	2015	2016	2017	2018	First half of 2019
CR2	92 %	91 %	89 %	91 %	91 %
HHI	0.46	0.45	0.44	0.45	0.44

Table 11 Concentration indices CR2 and HHI in the retail market based on sales.

303. The table shows that the concentration in the market in 2018 and the first half of 2019 was high, with two operators accounting for 91 per cent of the revenue in the market. HHI is respectively 0.45 and 0.44, i.e. far in excess of the limit of 0.2 referred to above.

304. However, the relevant market is a wholesale market. It will therefore be relevant to evaluate market concentration based on market shares in the wholesale market. In this context, market concentration will be a measurement of the number of operators on the supply and/or demand sides in the relevant market, and their relative sizes. However, Nkom does not have revenue figures at wholesale level for internal use and revenue can therefore not be used as a measurement parameter in the assessment of the relative strength of the operators in the wholesale market.

305. The market analysis that forms the basis for the decision of 1 July 2016 shows the concentration indices of CR and HHI for the wholesale market based on originated traffic minutes. Ice relies on using national roaming for being able to offer a complete service in the retail market. Ice generally purchases voice call origination and SMS from Telia, but has started producing voice via LTE on its own network. In the 4th quarter of 2019, 30 per cent of the company's voice traffic went via its own network. Ice also purchases access to data in areas in which they do not have coverage themselves. Ice has not entered into agreements for the sale of wholesale access. The calculation of CR2 based on originated minutes will give a value roughly equal to 100 per cent because Telenor and Telenor have virtually all voice traffic. Originated minutes from Ice will be added to Telia's share. It is therefore not considered appropriate at present to calculate the concentration indices on the basis of the network owners' shares based on originated minutes.

306. Since Ice produces a larger share of data on its own network⁹³, based on data traffic, market concentration can be a relevant measurement parameter when assessing the intensity of competition in the relevant market.

	2015	2016	2017	2018	First half of 2019
CR2	100 %	100 %	98.5 %	93.9 %	87.8 %
HHI	0.52	0.52	0,49	0.49	0.46

Table 12 The concentration indices CR2 and HHI in the wholesale market based on data traffic.

307. In 2015 and 2016, all data traffic went via mobile telephony subscriptions in Telenor and Telia's networks, which makes CR2 equal to 100 per cent. In 2017, Ice started to transmit data traffic on its own network. This reduces the value of CR2.

308. HHI is also reduced as a result of Ice transferring traffic to its own network. However, the value of HHI in the first half of 2019 of 0.46 indicates that there is a high level of concentration in the market. As Ice transfers more and more data traffic to its own network, both CR2 and HHI will gradually be reduced, which will indicate that the intensity of competition in the market is increasing.

⁹³ On-net data traffic was 67 per cent for Ice for the 4th quarter of 2018 and 80 per cent for the 4th quarter of 2019.

309. In Sweden, where the regulatory authority concluded in 2005 that there was effective competition in the relevant market, HHI was about 0.35⁹⁴. In Denmark, the regulatory authority concluded in 2009 that there was effective competition in the relevant market. HHI had been steady at 0.35⁹⁵ until 2006 and then fell to 0.33 in 2007. In Iceland, the regulatory authority concluded in 2012 that there was effective competition in the relevant market. HHI had fallen steadily since 2008 and was 0.35⁹⁶ in 2010.

310. If the market share of three network owners had been evenly distributed, HHI would have been 0.33. However, Nkom assumes that during the analysis' time horizon, Ice will not achieve a market share that will make HHI get close to 0.33.

311. In summary, Nkom has registered that the concentration indices measured by CR2 and HHI have fallen since Ice transferred traffic to its own network, a factor that indicates the intensity of competition has increased. However, the relevant market is still characterised by high concentration when measured using both indicators. Overall, Nkom believes that the development in market concentration in the relevant market does not provide grounds to assume that the market is tending towards sustainable competition.

4.3.4 Price developments and usage patterns

312. Prices and the price development in the retail market can provide some information about the degree of competition in the market.

313. Previous analyses have shown that the retail market has been characterized by falling prices. However, prices have stabilised in recent years. Sales per customer can provide an estimate of the price development. Nkom's figures show that the providers have had an increase in sales per customer in the past three years. Average sales per customer per month increased from NOK 236 per month in the first half of 2016 to NOK 249 per month in the first half of 2019. However, the increase must be viewed in light of general data usage having increased during the period.

314. Telenor has the highest sales per customers among the Norwegian providers. Telia's sales per customer are slightly below the average sales, while Ice has the lowest sales per customer of the network owners⁹⁷. The table shows the development from the first half of 2016 until the first half of 2019, and includes all revenues the operators receive from their customers, combined for the four retail markets.

⁹⁴ HHI was roughly equal, irrespective of whether this was based on revenues, subscriptions or originated minutes for the three network owners.

⁹⁵ Based on the number of subscriptions at wholesale level, with four network owners.

⁹⁶ Based on the number of subscriptions at wholesale level, with three network owners.

⁹⁷ For Ice, the average number of subscriptions through the half-year and full-year has been used as a basis in the calculation that growth in the number of subscriptions shall not have an unreasonable impact on the calculation of the average sales per subscription.

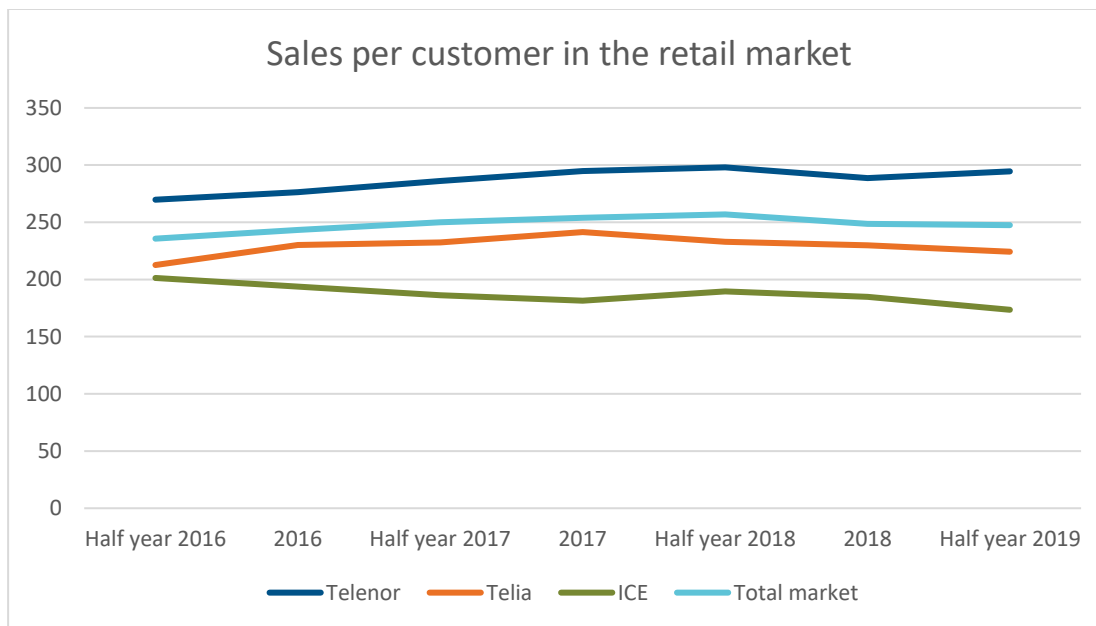


Figure 8 Sales in the retail market per customer per month from the first half of 2016 until the first half of 2019.

315. In the BEREC Benchmark Data Report, average revenue per user per month (ARPU) is compared for all EEA countries. The report states that the results must be interpreted with caution because there is some uncertainty about several parameters that is liable to influence the figures, for example, subsidising of handsets, calculation of number of active SIM etc. The figure below shows the average revenue per user per month in the EEA countries.

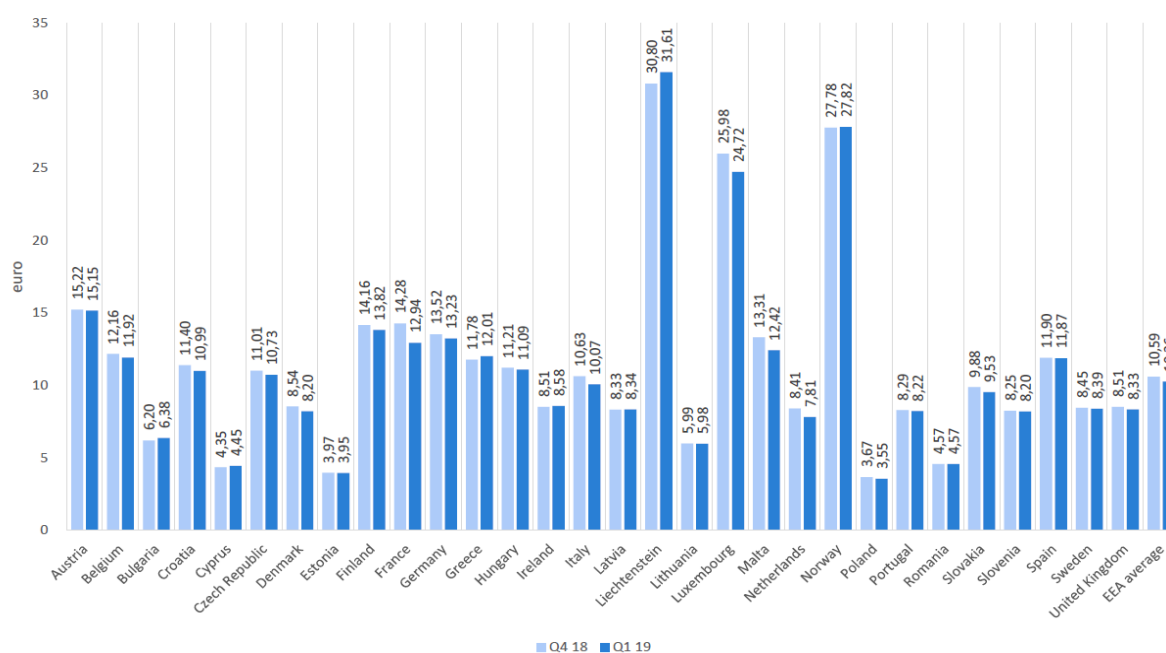


Figure 9 Average revenue per user per month. Source: BEREC International Roaming Benchmark report October 2018 – March 2019.

316. The report for the period from October 2018 to March 2019 shows that Norwegian providers have among the highest revenues per customer in the EEA⁹⁸. The same report also states that the data usage is lower in Norway than in many of the other countries⁹⁹. The figures are based on data from the largest providers in each country (providers with over 100,000 customers). Since the largest providers often have higher prices than smaller competitors, there is a risk that the figures provide a slightly overvalued picture of the actual average ARPU if all providers were included. However, it can be assumed that this effect will apply for all countries.

317. In Norway, there is a great deal of variation in the quantity of data that end-users have included in their mobile subscriptions¹⁰⁰. The figure below shows how subscriptions were distributed in 2017, 2018 and the first half of 2019 in relation to the different sizes of data packages. In the first half of 2019, the largest group of end-users had between one and five GB available per month. This group accounts for 36.7 per cent of subscriptions. At the same time, more than 15 per cent of all mobile subscriptions have 10 gigabytes (GB) or more, including in mobile subscriptions, while about 26 per cent do not have mobile data included. The development is towards subscriptions with large data packages included.

⁹⁸ https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8468-international-roaming-berec-benchmark-data-report-april-2018-september-2018 Figure 1

⁹⁹ During the same period, data usage in Norway was lower than in Austria, Denmark, Estonia, Finland, France, Ireland, Latvia, Lithuania, Poland and Sweden.

¹⁰⁰ <https://www.dn.no/telekom/nkom/mobil/telenor/hver-fjerde-nordmann-bruker-null-mobildata/2-1-344074>

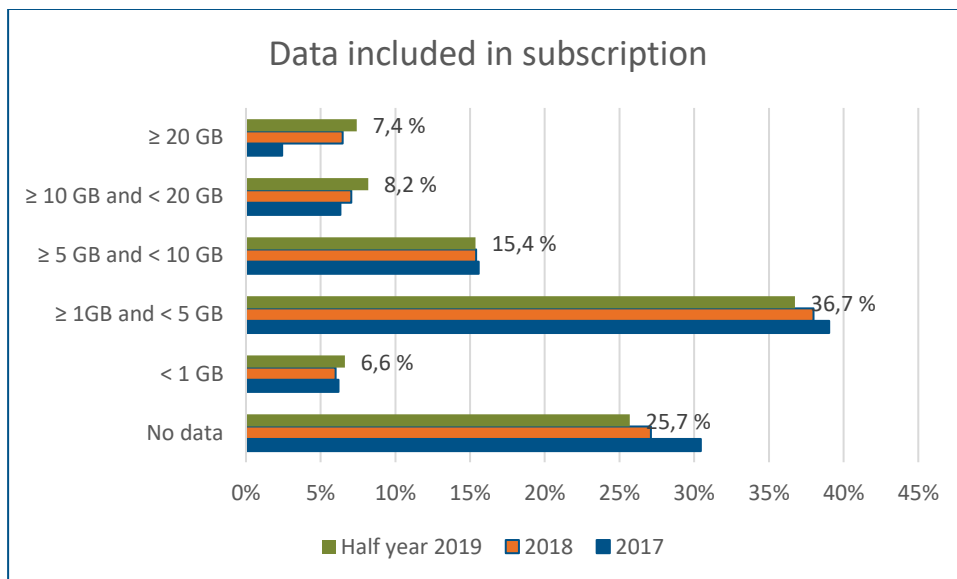


Figure 10 Amount of GB of data included in mobile subscriptions in 2017, 2018 and the first half of 2019.

318. By comparing the data usage with the population in our neighbouring countries, it is evident that Norwegian end-users have the lowest consumption of mobile data in the Nordic countries, cf. the overview below.¹⁰¹

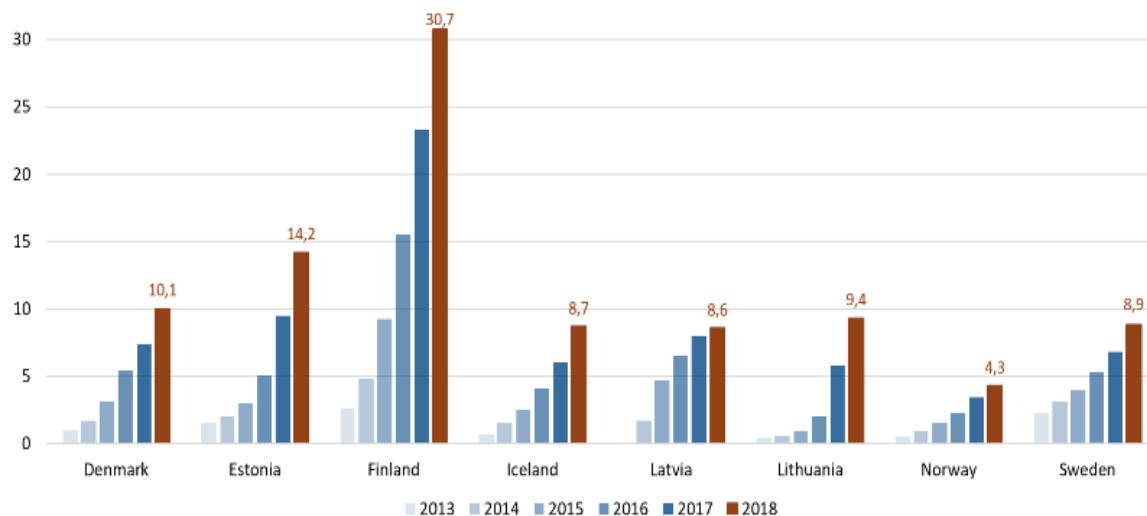


Figure 11 Number of gigabytes transferred over mobile networks per inhabitant per month.¹⁰²

319. The figure shows that, in 2018, Norway had the lowest amounts of data transferred per inhabitant compared with other Nordic and Baltic countries. The other countries also had comparatively equal usage amounts during the period. The exception was Finland, which has significantly higher amounts of data transferred per inhabitant. The reason that this figure is so

¹⁰¹ Taken from the source material for the Nordic Baltic comparison: <https://www.nkom.no/aktuelt/nyheter/h%C3%B8yt-investeringsniv%C3%A5-og-sterk-vekst-i-fiberutbygging-i-norden-og-baltikum>

¹⁰² Includes both downloads and uploads of traffic, while international roaming is not included.

high for Finland is that the operators in Finland largely offer mobile subscriptions with unlimited data packages,¹⁰³ as well as lower distribution of fixed broadband. A consumer survey of communication services conducted by the Finnish supervisory authority in autumn 2018 shows that only 60 per cent of Finnish households have access to fixed broadband.¹⁰⁴ In other countries, there is also a trend towards unlimited data packages.

320. In May 2018, Chilimobil was the first Norwegian mobile company that launched a mobile subscription with nearly unlimited data included in the subscription (a maximum limit of 1,000 GB per month). Telia launched the free use subscription Telia X in January 2019, but the speed is reduced to 3 Mbit/s when 40 GB has been used. Around the same time, Ice launched “Data Frihet (Data Freedom)” which included up to 100 GB as an additional package to existing mobile subscriptions within Ice’s own coverage area. The speed is limited to 10 Mbit/s. The new subscriptions are also exhibiting a trend towards larger and virtually limitless data packages in Norway, however these currently have certain restrictions (such as speed and coverage area).

321. The reason that Norwegian end-users use less data and pay more in the neighbouring countries is probably complex. The absence of sufficient competition is a natural reason. Even though there are many providers of mobile subscriptions in the retail market, several of the brands in the market are owned by Telenor and Telia, see Chapter 3.1. The established network owners control a significant part of the market and about 85 per cent of the subscriptions are in the retail market.

322. Norwegian network owners have also made major investments in the mobile networks in Norway. As described in Chapter 4.2, it is expensive to construct mobile networks in Norway, with its difficult topography and scattered population. Despite this, the Norwegian mobile networks are among the best in the world. However, Chapter 5.4 shows that the Norwegian network owners are very profitable, which means that the level of investment alone cannot justify why Norwegian mobile customers pay more for products and services than in other countries. High mobile prices, small data packages and low usage can indicate limited competition in both the retail market and the wholesale market.

323. In summary, Nkom is of the view that the Norwegian mobile market is characterised by relatively high retail prices and low data usage when compared with the other Nordic countries. There may be several reasons for this and the absence of sufficient competition is one natural cause.

4.3.5 Importance of a third mobile network

4.3.5.1 Background

324. Establishing a third mobile network that can contribute to promoting the objective of the Norwegian Electronic Communications Act by facilitating sustainable competition has long been a key objective of Norwegian mobile regulation. Among other things, the objective is expressed in the Ministry of Transport and Communications’ appeal decision in market 7 of 19 May 2009 to Network Norway, Section 3.13.1, in which the Ministry states:

“The Ministry of Transport and Communications refers to the telecom policy objective of affordable future-oriented services [...]. The remedy for achieving this objective is sustainable competition, and the third network is crucial for achieving sustainable competition. The Ministry of Transport and Communications therefore believes that it is

¹⁰³ <https://nrkbeta.no/2018/02/09/i-finland-far-du-ubegrenset-med-mobildata-til-under-250-kroner-i-maneden/>

¹⁰⁴ <https://www.traficom.fi/en/news/100mb-broadband-available-nearly-60-households>

important for the development of the Norwegian mobile telephone market to establish a third network that can be a real competitor to the current two network providers.”

325. The objective is also stated in the government's national plan for electronic communication (the Electronic Communications Plan) from 2016:¹⁰⁵

“The government will strive for:

Sector-specific competition rules shall accommodate at least three competitive mobile networks.”

326. This objective was most recently expressed in the Ministry of Transport and Communications' appeal decision in market 15 to Telenor dated 9 March 2018, in which the Ministry stated that:

“The Ministry also refers to the fact that the primary objective of the regulation of market 15 is to facilitate sustainable infrastructure-based competition. Among other things, this is done by accommodating the establishment of a third competitive mobile network [...]”

327. As stated in Chapter 4.2, there are high barriers to entry for becoming established as a network owner in Norway. Building a nationwide mobile network is both time-consuming and resource-intensive.

328. At the end of 2013, Mobile Norway had developed its mobile network to cover about 75 per cent of the population. At this point in time, the owners of the network (Tele2 Norge and Network Norway) had a customer base in the retail market that represented around 18 per cent of the total number of subscribers. About 50 per cent of the traffic for these customers went via Mobile Norway's network, while the remaining traffic was based on an agreement for national roaming. Mobile Norway did not have external wholesale customers. A lack of frequency resources meant that the company had to cease operations in 2014.

329. Ice acquired significant frequency resources in 2013 and then started developing its mobile network in Norway. Reference is made to Chapter 3 for a more detailed description of the company. Ice is in the process of building the third nationwide mobile network in Norway.

4.3.5.2 Status of the development of the third mobile network

330. Ice possesses frequency resources for mobile development. The frequency resources are presently distributed as shown in the figure below.

¹⁰⁵ Report no. 27 to the Storting (2015-2016): Digital Agenda for Norway, Chapter 25.3.

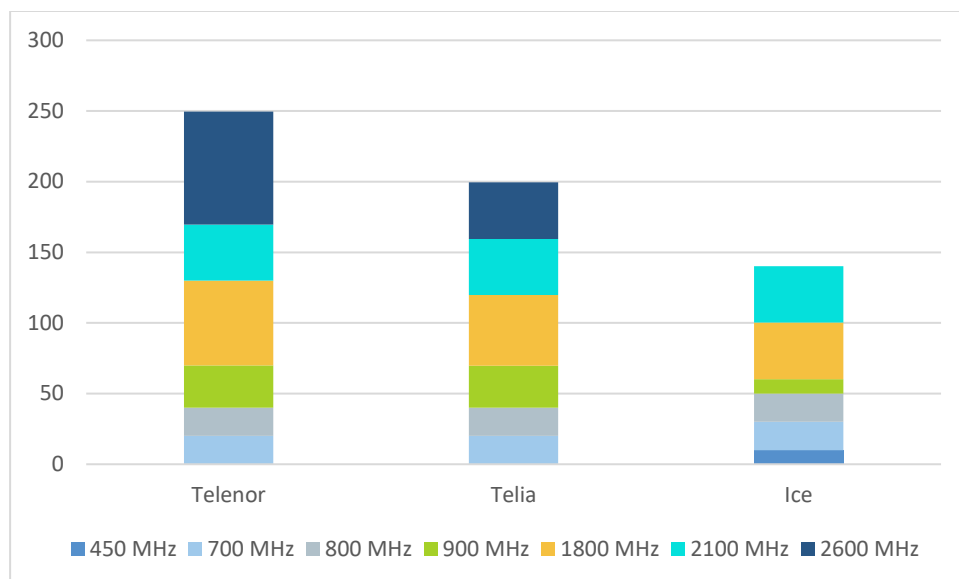


Figure 12 Distribution of frequency bands for mobile services of the network owners, specified by the number of MHz in each frequency band.

331. Ice has frequencies in the 450 MHz, 800 MHz, 900 MHz, 1800 MHz and 2 GHz bands. Telenor and Telia also possess frequencies in these bands, with the exception of the 450 MHz band, and also have frequencies in the 2.6 GHz band.

332. Ice's original licence for the 450 MHz band expired on 31 December 2019. Nkom re-allocated these resources to Ice in May 2019, applicable from 2020. In addition, the frequencies in the 700 MHz band of 2 x 30 MHz, which are new for mobile services¹⁰⁶, were allocated in June 2019, with new licences applicable from 1 November 2019. Available spectrum in the 2.1 GHz band of 2 x 15 MHz was also allocated in connection with the allocation of the 700 MHz band.¹⁰⁷ Ice was allocated 2 x 10 MHz in the 700 MHz band and 2 x 15 MHz in the 2100 MHz band.

333. Ice only uses the frequencies in the 450 MHz band for dedicated mobile broadband because there are currently no handsets for traditional mobile services that support LTE in the 450 MHz band, see Chapter 3. The number of broadband subscriptions with Ice is decreasing and represents an increasingly smaller share of the company's total sales. In 2017, 29 per cent of the company's revenues were from mobile broadband, while this share was 19 per cent first half of 2019. Sales from mobile broadband were a good and secure source of revenue for Ice during the development phase of the third mobile network. When Ice is referred to in the following as "the third network", this does not apply to the network based on the 450 MHz band, but the development of a network for traditional mobile services in the other frequency bands.

334. At the end of the first half of 2018, Ice had established about 2,000¹⁰⁸ sites/base stations. These sites largely originate from the option agreement the company entered into in 2014 to acquire infrastructure from Mobile Norway. See Chapter 3. Based on this

¹⁰⁶ The frequencies in the 700 MHz band have been used by Norges Televisjon for digital TV broadcasting. The government decided in 2017 to allocate the frequencies to ground-based mobile services. The frequencies were released for use for mobile services from 1 November 2019.

¹⁰⁷ https://www.nkom.no/aktuelt/nyheter/_attachment/38500?_ts=167643edce3

¹⁰⁸ <https://www.insidetelecom.no/artikler/skal-bruke-1-5-milliarder-pa-nytt-nett/455993>

development, the company covered around 80 per cent of the population, while the geographical coverage was lower. Ice then expected to establish a further 2,000 base stations.

335. As of October 2019, Ice covered 90 per cent of the population¹⁰⁹. Ice is planning further expansions to increase population coverage to [REDACTED] during the coming regulation period.

[REDACTED]. During the initial stage, the company has focussed on development in the most densely populated areas where they had taken over sites/locations from Tele2 through the agreement with Telia. The development that is now taking place is in more sparsely populated areas of the country. The traffic base is low in these areas, while the development costs are high. Access to co-location, i.e. installation of equipment in existing facilities (masts, cabins etc.) will be important for achieving the fastest possible development at the lowest possible cost.

336. The agreement for national roaming that was entered into as a remedial measure after the merger between Telia and Tele2 has now expired. However, Ice entered into a commercial agreement for national roaming with Telia in May 2018. This agreement is based on the previous agreement, but includes some amendments to the terms, including new price terms. These are discussed in more detail below. The agreement did have a two year duration with the option of one more year. [REDACTED]

[REDACTED] Ice will be dependent on purchasing national roaming from Telenor or Telia during the upcoming regulation period. Nkom assumes that this may also apply after the expiration of current agreement with Telia.

337. Ice's voice traffic principally takes the form of national roaming on Telia's network. However, Ice has started producing voice traffic on its own network (VoLTE). In December 2018, 6 per cent of the company's voice traffic was on the company's own network, while this share had increased to 30 per cent in December 2019. At the end of 2018, 67 per cent of data traffic was on the company's own network. This increased to 80 per cent the 4th quarter 2019.¹¹¹

338. Below, Nkom assesses the extent to which Ice will be able to discipline the established operators in the retail and wholesale markets during the time horizon of the analysis.

4.3.5.3 Significance of Ice's mobile network in the retail market

339. The national roaming agreement with Telia entails that, in coverage terms, Ice can offer a full and complete package in the retail markets. Pursuant to the agreement, Ice must have access to all services that are available on Telia's network at any time, on a non-discriminatory basis.

340. The opportunities for aggressive competition in the retail market will depend on the relationship between production costs and the price level in the retail markets. Ice's production costs consist of both costs for access and own network costs.

341. In its submission to Nkom on 21 September 2018, Ice stated that the agreement that was entered into with Telia in May 2018 was better than the company's previous agreement.

¹⁰⁹ https://icegroup.com/assets/financia-reports/Ice-Group-ASA-Interim-Report-2019-Q3-FINAL_191114_064513.pdf

¹¹⁰ Information from Ice in meeting with Nkom 6 Marsh 2020.

¹¹¹ <https://icegroup.com/assets/financia-reports/Ice-Group-ASA-Interim-Report-2019-Q4.pdf>

[REDACTED]

The overall effects of these mechanisms on the future price level for access and thus Ice's competitiveness in the retail market are difficult to predict. Production costs are further assessed below (Chapter 4.3.5.4).

342. Since launching in 2015, Ice has had competitive prices in the residential market, especially for smaller data packages. This has resulted in the company having had relatively strong growth in the residential market. In the years since its launch, the company achieved a market share of almost 12 per cent of the subscriptions in the residential market at the end of first half 2019.¹¹² However, Ice's share of sales is lower (7 per cent), and this is due to many of the customers having small data packages.

343. On the other hand, Ice has a much lower share of subscriptions and sales in the business market (only 2.6 per cent in both categories). Ice wrote the following in its submission to Nkom¹¹³:

[REDACTED]

344. Lock-in mechanisms in the business market, which can include high early termination fees and long lock-in periods make it complicated for businesses to switch mobile companies¹¹⁴. A market survey of the business market that was conducted by Nkom from October 2018 showed that almost half of the companies surveyed had a lock-in period in their current agreements for mobile telephony. There was also a group of about 20 per cent that did not know whether they had a lock-in period in their contracts. About half of the companies that had a lock-in period had a lock-in period for 24 months or longer. The survey supports the claim that the business market is characterised by "locked in" customers and that growth in this part of the market is therefore very difficult.

345. The business market is also characterised by customers wanting to purchase total packages consisting of multiple electronic communications services. See Chapter 2.3.6. In its consultation response, Ice wrote that its concern about Telia's acquisition of Get TDC was that the competitive power of smaller operators in the mobile market would be considerably weaker because there would be two large operators that can supply end-to-end deliveries of fixed broadband, mobile and content.

346. However, as of the present date, it is clear that Ice plays a key challenger role in the retail market and exerts competitive pressure on the other operators. In its decision¹¹⁵ regarding Telenor's appeal of the market 15 decision, the Ministry of Transport and Communications wrote that Ice exerts a certain amount of competitive pressure in the retail market:

"The Ministry acknowledges that Ice has become established in the Norwegian mobile market as a network operator and that the company exerts a certain amount of competitive pressure on the other operators in the retail market for mobile and mobile broadband. However, as mentioned above, the key area of assessment is whether the relevant wholesale market trends towards sustainable competition [...]."

¹¹² The acquisition of Komplett in March 2019 increased the company's share of subscriptions by just over 1 per cent when based on Komplett's market share at the end of 2018.

¹¹³ Consultative input to Nkom's assessment of new market 15 regulation, 21 September 2018.

¹¹⁴ <https://e24.no/teknologi/i/gP2Oek/ice-vil-ha-slutt-paa-gebyrpraksis-i-mobilmarkedet-det-verste-vi-har-sett-er-8000-kroner-per-abbonent>

¹¹⁵ Ministry of Transport and Communications: Decision in the appeal of Nkom's decision regarding designation of a provider with significant market power and orders in public mobile telephone networks, 9 March 2018.

347. However, the competitive pressure that Ice now exerts and will exert in the coming years will depend on the company having an agreement for access with existing mobile networks and the terms the company can achieve for such access.

4.3.5.4 Significance of Ice's mobile network in the wholesale market

348. The wholesale market consists both of traffic to own service provider and external resales. See the market definition in Chapter 2.6. In the following, Nkom highlights the degree to which it can be expected that Ice may discipline the two established network owners' external sales of wholesale access. This chapter therefore focusses on Ice's ability to offer competitive, external wholesale access within the time horizon of the analysis.

349. Ice does not presently have external wholesale customers on its network. In its submission to Nkom, Ice demonstrated that this was due to conditions in the access agreement with Telia.

350. However, Ice can theoretically offer resale based on the access agreement with Telia

351.

352.

Ice's costs for national roaming were NOK 394 million in 2017, NOK 434 million in 2018 and NOK 440 million in 2019. Therefore, increased own coverage does not appear to have contributed to lower roaming costs. On the contrary, customer growth has also resulted in increased roaming costs.

353.

354. High coverage demands from retail customers mean that Ice cannot release itself from the agreement for national roaming until the network has virtually the same degree of coverage as the established network owners. Nkom expects that the company will be dependent on access to national roaming within the time horizon of this analysis.

355. However, Ice can withdraw from the agreement with Telia within the analysis' time horizon. At this point in time, the company may be able to negotiate access with both Telenor

¹¹⁶ Reference is made to Ice's submission of 21 September 2018, page 1 and 7.

and Telia. It is uncertain as to what negotiating power Ice will have at this point in time. Based on the company's present customer base, and probably some annual growth added to this, Ice will have a volume that indicates a certain degree of negotiating power in relation to the above-mentioned providers. As a buyer of access, Ice may therefore have some opportunity to discipline what they offer. On the other hand, Ice will attempt to retain as much traffic as possible on its own network and it can therefore be expected that the share of traffic on the visited network will abate during the coming period. This reduces the expected revenue to the visited network and thereby their incentive to offer access.

356. In its submission to Nkom, Ice wrote that the company has the objective of being able to become an effective competitor in the wholesale market

357. In order to become an efficient competitor in the wholesale market, Ice must have a network that can compete with the established network owners. As described in Chapter 4.2 of this analysis regarding barriers to entry, it is very difficult to build mobile networks in Norway. In the coming years, Ice will be dependent on being able to install equipment with other operators (co-location) and with third parties, for example, on the roofs of existing dwellings. In both instances, it can be time-consuming to obtain access to co-location.

358. The share of traffic on their own network will also most probably be lower than the coverage suggests until the company can fully release itself from the agreement for national roaming. As mentioned, the network currently covers around 90 per cent of the population, while around 80 per cent of the company's data traffic is on this network. In terms of voice, about 30 per cent of the company's total voice traffic goes as VoLTE on its own network at the end of 2019. To reduce the unit costs for traffic on its own network it is important to increase the share of traffic on the network.

359. Buyers of access are also of the opinion that since the two existing mobile networks are among the world's best and most robust mobile networks, it makes it exceptionally tough for Ice to be a third entrant. On this background, it will take several years for Ice to be in a position to compete effectively in the wholesale market.

360. Customer preferences for mobile networks will also play a vital role in being able to fill the network with traffic. Perceptions regarding coverage and preferences for networks can take longer to change than the actual development. The perception that Telenor has the best network has been well-established among many customer groups, particularly in the business market. When considering the amount of time it has taken for Telia to challenge this perception, it must be expected that Ice will also face challenges in becoming established as a competitive network, especially for business customers. This probably applies even after the company has achieved a nationwide network.

361. As mentioned, developing a nationwide network requires good access to capital. Ice's initial plan was a stock exchange listing in 2018 to raise NOK 3 billion through share subscriptions. However, turbulence in the global financial markets caused the board to postpone the listing.¹¹⁷ The company was, however, able to raise NOK 1.5 billion in a private placement at the end of January 2019 and received an additional NOK 700 million¹¹⁸ in March 2019. The purchase of Komplett mobil's customer base is expected to have a cost of around NOK 105 million¹¹⁹. Challenges relating to financing also contribute to uncertainty associated

¹¹⁷ <https://www.insidetelecom.no/artikler/ice-gar-pa-bors/451233>

¹¹⁸ <https://newsweb.oslobors.no/message/471237>

¹¹⁹ <https://newsweb.oslobors.no/message/472342>

with when Ice could have developed a nationwide network and be a full competitor in the wholesale market. .

4.3.5.5 Conclusion regarding the importance of a third mobile network

362. Ice is presently a competitor in the total retail market, principally the residential market. Ice will most probably be able to continue to grow in this market in the coming years. However, it may be challenging in the short-term to achieve significant growth in the business market. Irrespective of this, Ice's competitive power in the retail market is conditional upon access to a nationwide network and the conditions for such access. The need for access to a nationwide network is expected to continue within the analysis' time horizon.

363. However, becoming established as a competitive operator in the wholesale market takes longer than in the retail market. The proportion of own coverage and share of traffic on its own network, as well as the future terms of access, will be decisive to the company's ability to compete in the wholesale market throughout the period. However, there are several uncertain factors associated with these elements, including the ability to install equipment and the financing of the network expansion. Experience also indicates that customer preferences for mobile networks take time to change. This will have an impact on how quickly Ice's mobile network will be perceived as a competitive host network for external wholesale access.

364. In Nkom's assessment, the prevailing market conditions do not give sufficiently clear evidence that within this analysis' time horizon the third network would be able to discipline the established operators on the supply side.

4.3.6 Potential competition

365. In this context, potential competition relates to whether operators that are not in the applicable market today can contribute to increased market dynamics within the relevant time horizon.

366. High prices and good profitability in a market will make new establishment more attractive. The threat of increased competition from new operators will thereby be able to exert a disciplining effect on the pricing of the established operators. Nkom assumes that in this context potential competitors are operators that can offer access to the mobile network, or alternatives to access to the mobile network. In principle, access to mobile networks can be offered by network owners with nationwide networks, operators with national roaming agreements, or MVNO providers.

367. At MNO level, Ice is presently the only potential competitor to Telenor and Telia for offering access to mobile networks. The significance of the company's mobile network to the dynamic in this market is considered in Chapter 4.3.5. Nkom concludes that there is not sufficiently clear evidence that the third network would be able to discipline the established operators on the supply side within this analysis' time horizon.

368. Based on this, the question will be whether other operators than these three can enter the market or otherwise challenge existing competitors. As described in Chapter 4.2.3.1, the frequency management enables at least three operators to receive access to spectrum on the applicable frequency bands. For operators other than those that already hold frequency resources, it will be challenging to obtain access to adequate frequency resources in both coverage bands and capacity bands to be able to supply nationwide services that satisfy user requirements.

369. Operators that do not have their own frequencies will have to fully base an offer of access on leased infrastructure. Nkom believes that a provider that is highly dependent on buying access has limited opportunity to itself offer an attractive access product.

370. Operators that utilise leased infrastructure must often differentiate themselves or offer something extra in ways other than solely access to the network. eRate is an example of a so-called enabler of mobile services. In addition to access to mobile networks, the company also facilitates other services for its customers, such as invoicing, web services, management of regulatory changes etc. This enables the company to provide an attractive wholesale offer based on leased infrastructure. However, like other buyers of access, companies such as eRate are dependent on an access agreement with Telenor or Telia. Even though eRate combines purchases from multiple service providers and can thereby make “bulk purchases”, Nkom has no evidence of eRate having been able to significantly discipline the wholesale offer from the established providers.

371. Potential competition may also come from new technology, such as from OTT services. With these services, voice and messaging services can be delivered irrespective of network and by operators other than the traditional mobile operators. The OTT operators generally have different business models to the traditional telecom companies, which among other things is significant to how they price their services. There are typically no current charges related to their voice and messaging services. Global operators such as Google, Apple and Microsoft can thus take over services that have previously been important sources of revenue for mobile providers. The range of OTT services is expected to continue to grow. This threat has undoubtedly exerted pressure on mobile operators with regard to future pricing and revenue.

372. Nkom does not have available data showing how many call minutes and messages are realised via OTT services. However, flat-rate packages appear to have been a successful strategy on the part of the network owners in order to maintain ARPU in a market in which growth in traffic for traditional services is diminishing. Flat-rate packages ensure that providers have a minimum income per subscription while at the same time the customers can achieve greater predictability for the costs related to the subscription. Since end-users mostly do not use all of the traffic included in the flat-rate packages and most of the packages have unlimited call minutes and text messaging (domestic), the end-users will only to a limited extent be able to achieve lower costs by realising parts of their traffic as OTT services, for example, international calls. The flat-rate products have thereby, to a great extent, been able to reduce the retail user's incentives to use OTT services.

373. In summary, Nkom does not expect that new providers will be able to establish a competitive offer based on own infrastructure in the relevant wholesale market. Furthermore, experience indicates that providers that must base their offers solely on leased infrastructure can only discipline the established network owners' own wholesale offers to a limited extent.

374. In terms of potential competition from new technology in the form of OTT services, Nkom believes that such services have first and foremost contributed to an orientation towards the sale of flat-rate products. OTT services can therefore be said to have a disciplining effect in the retail market and however, Nkom has no basis for concluding that competition from OTT providers will discipline the established operators in the wholesale market.

375. In Nkom's view there is no basis to conclude that potential competition will discipline the established operators in the wholesale market to a sufficient degree within the analysis' time horizon.

4.3.7 Conclusion - second criterion

376. Under the second criterion Nkom has examined whether the market has characteristics which mean that it does not trend towards sustainable competition. In the assessment, Nkom analysed market conditions with special emphasis on changes during the period after the

previous market analysis, and in order to identify which indications this gives of the market's development in the future.

377. Telenor's total market share in the retail markets for bundled mobile services has been relatively stable over many years. At the end of first half 2019, the company had 48 per cent of subscriptions. At the same point in time, Telia had 37 per cent of subscriptions. The two established network owners therefore had a combined share of 85 per cent of subscriptions. The two network owners also accounted for 90 per cent of sales.

378. Ice has experienced relatively strong growth in the past few years and has established itself as a challenger in the retail market, particularly the residential market. The company achieved a market share of 9.3 per cent of subscriptions at the end of first half 2019. However, the share of sales was much lower and amounted to 5.9 per cent at the same point. Ice is therefore still a long way from the established network owners in terms of size. Furthermore, the company's presence and competitive power in the retail market are dependent on access to a nationwide network and this is expected to continue within the analysis' time horizon. The company's agreement for national roaming with Telia will expire within this period and the company will therefore be dependent on having negotiated a new access agreement to be able to offer nationwide services in the retail market.

379. The other operators in the retail market consist of 14 access buyers¹²⁰. The other operators together account for 6 per cent of subscriptions and 3 per cent of sales in the retail market at the end of first half 2019. Operators with MNVO or service provider agreements have therefore only managed to build up a customer base to a very limited extent. However, Phonero was an operator with a reasonable size customer base and at the end of the first half of 2016 the company had a market share of 4.5 per cent (residential and business) when the company was acquired by Telia. The acquisition of Phonero has resulted in a significant reduction in the group of access buyers during the current decision period.

380. The market shares for mobile broadband are somewhat more evenly divided between the three network owners. Telenor and Telia had a combined total of 75 per cent of subscriptions and 77 per cent of sales at the end of first half 2019. Ice had 24 per cent of subscriptions and 22 per cent of sales, while other providers had a total of approximately 1 per cent of subscriptions and about the same share of sales.

381. At network level, it has long been a central objective of mobile regulation to establish a third network that can compete with the established network owners on offering access. However, there are still only two providers of access to infrastructure for external operators in the relevant wholesale market, i.e. Telenor and Telia. Ice offers data traffic on its own network for own retail operations and around 70 per cent of the company's total data traffic is produced on its own network. Voice and SMS are largely produced on Telia's network even though the share of voice on its own network is increasing. Of the total data traffic in the market, around 54 per cent was on Telenor's network, 41 per cent on Telia's network and only 5 per cent on Ice's network. Ice therefore has a very small share of the total mobile-originated traffic on its own network.

382. The Norwegian mobile market is therefore still highly concentrated, even though HHI has fallen slightly since the previous analysis due to Ice now carrying a share of the data traffic on its own network. The concentration level in Norway far exceeds the levels measured in Denmark, Sweden and Iceland when equivalent markets were "cleared" in these countries.

383. The prices in the Norwegian retail market have been decreasing over time. However, in the past few years the prices have stabilised and the operators' sales per customer have increased in the past two years. Telenor has the highest sales per customer and therefore increases the average in the market. At the same time, data usage among Norwegian retail

¹²⁰ 13 service providers and 1 MVNO, cf. Chapter 3.2.

customers is lower than in the other Nordic countries. The reasons for this are no doubt complex, but relatively high prices for data packages must be considered an explanatory factor.

384. Becoming established as a competitive operator to be able to offer wholesale access to external operators takes longer than becoming established in the retail market. Whether or not the company will be able to establish itself as a provider to external buyers in the wholesale market towards the end of the analysis' time horizon will depend on the terms for access that it can achieve, the degree of own coverage and share of traffic on its own network, as well as customer preferences for choice of network. There are thus a number of elements of uncertainty associated with the third network's role in the relevant market within the time horizon of the analysis. Nkom cannot assume that Ice will be sufficiently able to discipline the established operators on the supply side in the relevant wholesale market within the analysis' time horizon.

385. Nkom also cannot see that potential competition from other operators or new technology will be able to sufficiently discipline the established operators in the wholesale market within the analysis' time horizon.

386. On this basis, Nkom believes that there is not enough clear evidence of dynamics in the market within the analysis' time horizon which would indicate that the market will trend towards sustainable competition without ex-ante regulation. The second criterion is therefore fulfilled.

4.4 Third criterion: General competition law alone is insufficient

4.4.1 General comments on the third criterion

387. The third and final criterion that must be considered is whether general competition law alone is sufficient to remedy market failures in the market for access and origination on mobile networks. The assessment is based on existing and potential competition problems. Sector-specific regulation can only be applied when general competition law alone is not sufficient to avert competition problems in the market.¹²¹ An assessment must thus be made of the relative efficiency between two regimes, respectively sector-specific ex ante regulation pursuant to the Electronic Communications Act, and follow-up on infringements of the provisions of competition legislation in the wake of any infringement.

388. The Recommendation's Explanatory Note states that ex-ante regulation will be necessary if general competition law does not have instruments to achieve sustainable competition, or the instruments available under competition law are not sufficiently effective.¹²² The Explanatory Note and the ERG Report on Guidance on the application of the three-criteria test¹²³ identify elements which indicate that competition legislation will not be sufficiently effective to alleviate the competition problems, including whether:

- there is a need for frequent or rapid regulatory intervention;
- there is a need for comprehensive/detailed regulation;
- non-competitive behaviour brings about irreparable damage in related or connected markets; and

¹²¹ Cf. Recommendation no. 2 (c).

¹²² Page 10.

¹²³ ERG (08) 21, pages 12-15. See

https://berec.europa.eu/doc/publications/erg_08_21_erg_rep_3crit_test_final_080604.pdf

- it is particularly important to create regulatory predictability in the market.

389. According to the Recommendation and Explanatory Note, the assessment of whether available instruments pursuant to competition legislation are sufficiently effective should be based on an assessment of appropriateness. The crucial aspect is thus whether the general competition law will be able to remedy the structural problems in the market on a sufficiently effective, appropriate and predictable basis.

390. The fact that ex-ante regulation can be less resource-intensive to achieve than intervention under competition legislation is not a relevant element of the assessment of whether general competition law is sufficiently effective to address the competition problems.¹²⁴

4.4.2 Relationship between sector-specific regulation and competition legislation

391. The sector-specific regulation is based on any findings of a provider or providers with significant market power in the relevant market. The assessment of significant market power is based on competition law methodology and the competition law concept of “dominant position”. At the core of the concept of dominant position is that the operator has a market position in the relevant market which entails that the operator can act independently of other operators to a significant degree.

392. Section 11 of the Norwegian Competition Act prohibits one or more undertakings from abusing their dominant position. The two main categories of abuse of dominant position that are affected by the prohibition are exploitative and exclusionary behaviour, respectively. Nkom believes that in the market for access and call origination on mobile networks it is most relevant to consider the prohibition of exclusionary behaviour in the form of denial of access, or actions that can be equated to denial of access. A dominating operator's refusal to give competitors access to its own mobile network is a type of behaviour that would be applicable under Section 11 of the Norwegian Competition Act. Unreasonable prices or unreasonable terms related to access may also be considered to be denial of access affected by Section 11 of the Competition Act.

393. Pursuant to Section 12 of the Competition Act, the Norwegian Competition Authority can impose any measures necessary to end the infringement of Section 11. The provisions in the Competition Act may therefore also be used to resolve competition problems in the relevant market.

394. The Recommendation's Explanatory Note¹²⁵ states that sector-specific ex ante regulation and general competition legislation are complementary tools for achieving the objective of sustainable competition in the relevant market.

395. Intervention pursuant to the competition legislation assumes the existence of abuse of dominant position.¹²⁶ Orders pursuant to competition legislation are thus conditional on the occurrence in the market of behaviour which infringes Section 11. The prohibition of abuse of dominant position must, however, be assumed to have a preventive effect that can be appropriate to disciplining dominating operators from engaging in unlawful behaviour.

396. Ex-ante regulation is based on pre-defined markets with the possibility of defining deviating markets on a national basis. The prohibitory provisions of the competition legislation will apply in the electronic communications sector as such and may be applicable in all electronic communications markets. On assessing the need for ex ante regulation it will not be sufficient that the competition legislation can avert one or more specific competition problems

¹²⁴ Cf. The Recommendation's Explanatory Note, page 11.

¹²⁵ Explanatory Note, page 7.

¹²⁶ There is also a right relating to measures that promote competition in Section 14 of the Norwegian Competition Act, however this is not often applied in practice.

in the market. The crucial consideration for the assessment is whether during the analysis' time horizon the competition legislation is likely to rectify the competition issues that may arise in the relevant market, to the extent that the objective of sector-specific regulation is achieved.

397. Effective handling of the actual and potential competition issues in the market assumes that the authorities are able to intervene quickly and effectively. In order to intervene against a competition problem within competition law, it is necessary to define the relevant market and to find that one or several undertakings have a dominating position. It must also be determined that the dominating operator has abused its position. An assessment of whether specific behaviour actually entails abuse of dominant position might thus be extensive and time-consuming. Under the sector-specific regulation, the market is defined and any designation of a provider with significant market power is made in advance. The conditions for rapid and thereby effective intervention to resolve competition issues in the market for access and call origination on mobile networks are therefore far more extensive pursuant to electronic communications legislation than pursuant to competition legislation. Nkom believes that the opportunity for rapid intervention might be of great significance in the period covered by this analysis, in order to achieve the objective of sustainable competition.

4.4.3 Assessment of whether general competition law is sufficiently effective in the market

398. The analysis of the first and second criteria shows that there are structural problems in the market for access and call origination on mobile networks. As a general starting point, the competition legislation will be less suitable than sector-specific regulation to achieve competition in markets that are characterised by structural problems which require rapid and frequent intervention, because the obligations can, as stated, only be imposed ex post.

399. As stated above, denial of access and behaviour with an equivalent effect might be affected by Section 11 of the Norwegian Competition Act. On the assessment of whether general competition law is sufficiently effective, it will be relevant to assess whether extensive, detailed regulation is necessary, whether there is a need for rapid intervention, whether insufficient regulation can lead to irreversible damage, and whether predictability is of great significance.¹²⁷

400. In Nkom's view, denial of access in the relevant market will be likely to impair the ability to achieve sustainable infrastructure-based competition in the market. In Nkom's assessment, this indicates that it is important to ensure access buyers reasonable and predictable terms for achieving the objectives behind the regulation. Nkom believes that denial of access or other misuse with the equivalent effect as denial of access might lead to irreversible damage in the market. If a provider in an unregulated market is denied access to infrastructure, it will potentially take a long time for an infringement to be found under competition law. With ex-ante regulation, clear obligations can be imposed in advance, which are suitable to effectively prevent denial of access. If the obligations are nonetheless infringed, rapid intervention will be possible, so that regulation is effective.

401. For new operators to become established as network operators, it is vital to have predictable access to national roaming and co-location. Ice has entered into a national roaming agreement with Telia, see Chapter 4.3.5, but this will expire within the time horizon of the analysis. When the agreement expires, the decisive factor for Ice will be that the company has the security to be able to continue its services on a nationwide network. Such a need and predictability for this can be better addressed through ex-ante regulation than by competition law alone. This will also give Ice better negotiating power in relation to Telia. Based on this, Nkom believes that ex-ante regulated access to national roaming is vital for the third network to be able to continue its network expansion.

¹²⁷ Cf. The Recommendation's Explanatory Note, pages 10-11.

402. National roaming must also be offered on terms that enable effective competition in the retail market. If vertically integrated providers place buyers of access in a margin squeeze situation, this may have a very negative impact on the market and entail a form of denial of access¹²⁸. Nkom believes that ex-ante regulation, in contrast to competition law, can set up obligations in advance to limit the risk of margin squeeze arising. This creates predictability for both buyer and seller of access, since the obligation is specified in advance. In addition, the regulation will make it possible to determine margin squeeze at an early stage and to react promptly to limit the negative consequences as much as possible. Nkom will also have greater flexibility on designing margin squeeze tests than is the case for general competition law, when the competition authorities must normally consider the principle of "equally efficient operator". In Nkom's assessment, the aforementioned indicates that any margin squeeze found in the market for access and call origination on mobile networks could be handled more effectively under an ex-ante regime than by follow-up ex-post.

403. During the current regulation period, Nkom has repeatedly established that Telenor has placed access buyers in a margin squeeze situation. Reference is made to the discussion in Chapter 5.9. Nkom considers this to express a need for close follow-up of the market, with the possibility of frequent intervention. Nkom believes that general competition law is less suited to effectively following up the terms for access and to prevent buyers of access being placed in a margin squeeze situation.

404. With regard to co-location, a network operator normally requests co-location from several providers, depending on which locations are needed, in terms of the overall radio planning. It is expected during the time horizon of the analysis that the number of applications for co-location will increase due to Ice, in the time ahead, expanding its network in areas where it does not generally have access to co-location. This supports the claim that there may be a need to have clear pre-defined requirements, rather than an ex-post assessment.

405. In Nkom's view, the assessment of whether general competition law will be sufficient to avert the consequences of denial of access must be considered in the light of the potential damage caused by any such behaviour. A lack of access and margin squeeze as described above, and other conduct with the effect of denial of access, could lead to irreversible damage, and, at worst, that buyers of access disappear from the market. In Nkom's view, denial of access in the market will thus be to the likely detriment of the opportunity to achieve sustainable, infrastructure-based competition in the market for access and call origination on mobile networks. Nkom therefore believes that it is important to ensure that access buyers have reasonable and predictable terms for achieving the objectives behind the regulation. If a provider in an unregulated market is denied access to infrastructure, it will potentially take a long time for an infringement to be detected under competition law. With ex-ante regulation, clear obligations can be imposed in advance, which are suitable to effectively prevent denial of access. If the obligations are nonetheless infringed, rapid intervention will be possible, meaning that regulation is effective. In the light of the aforementioned, Nkom considers it vital that the market operators are ensured the regulatory predictability that is provided for via ex-ante regulation. In Nkom's view, this special need for predictability is not covered by general competition law alone.

406. Section 12, fifth paragraph, of the Norwegian Competition Act gives the authority to hand down a provisional decision to terminate the assumed infringement of Section 11 of the Act, and can thus alleviate some of the problems with ex-post regulation described above. However, the provision has a narrow scope and is rarely used in Community law and in Norway. Even if a decision in accordance with Section 12, fifth paragraph, can be handed down before an infringement is deemed to exist, Nkom believes that there are better conditions for rapid follow-up by using ex-ante regulation with obligations that are defined in

¹²⁸ In its Guidance Paper the Commission expresses how margin squeeze can be a form of denial of access.

advance. Nkom therefore considers the competition authority's opportunities to take temporary decisions pursuant to the provision to be limited.

4.4.4 Conclusion concerning the third criterion

407. Nkom assumes that in order to achieve sustainable competition, it is very important to ensure predictable access to the infrastructure for providers in the market for access and call origination on mobile networks. On the basis of the aforementioned, Nkom finds that general competition law is not in itself sufficient to create sustainable competition in the market for access and call origination on mobile networks. The third criterion is therefore fulfilled.

4.5 Conclusion concerning the three-criteria test

408. In Chapter 4 Nkom has shown how there are high, non-transitory entry barriers in the market for access and call origination on mobile networks, that the market does not trend towards non-transitory competition without regulation, and that general competition law is not sufficient in itself to create sustainable competition in the market. The three criteria for ex ante regulation are therefore fulfilled.

5 Analysis of the market – assessment of dominance

5.1 Legal basis

409. In accordance with Section 3-3 of the Norwegian Electronic Communications Act, the authority must regularly¹²⁹ perform market analyses of relevant product and services markets in order to examine whether the markets are subject to effective competition. If the markets are not subject to effective competition, Nkom must identify providers that alone or together with other providers hold significant market power.

410. In paragraph 19 of the Guidelines, the ESA writes:

“In respect of each of these relevant markets, NRAs will assess whether the competition is effective. A finding that effective competition exists on a relevant market is equivalent to a finding that no operator enjoys a single or joint dominant position on that market. When NRAs conclude that a relevant market is not effectively competitive, they will designate undertakings with SMP on that market”

411. The preparatory works to the Electronic Communications Act also state:

“Sustainable competition is defined as a situation where no operator has significant market power and/or is able to exploit its position to the detriment of competition.”

412. Thus, according to the regulatory framework, there will be a necessary correlation between the absence of effective competition in a relevant market and the existence of significant market power.

413. Significant market power is defined in Section 3-1, first paragraph, of the Electronic Communications Act, as follows:

“A provider has significant market power when the provider individually or jointly with others has economic strength in a relevant market affording the provider the power to behave to an appreciable extent independently of competitors, customers and consumers.

¹²⁹ Cf. also section 9.3, second paragraph, of the Electronic Communications Act.

Significant market power in one market may result in a provider having significant market power in a closely related market."

414. According to competition theory¹³⁰, a company with a high degree of market power is characterised by the fact that it is not exposed to effective competition pressure. Market power is defined as the opportunity to influence prices, innovation, selection of goods and services, or other parameters of competition during a relevant period of time.

415. Above, Nkom has defined a relevant wholesale market and concluded that the relevant market is susceptible to ex-ante regulation¹³¹. Below, Nkom will assess whether there is a basis for designating one or several providers with significant market power.

5.2 Method and indicators of significant market power

416. Section 3-1 of the Electronic Communications Act states that a provider "individually or jointly with others" may have significant market power. When a provider has significant market power alone, this is often referred to as single dominance, while if several providers together can act independently of their customers, competitors and consumers to an appreciable extent, this is referred to as joint SMP.¹³²

417. Telenor was identified as a provider with single dominance in Nkom's decisions of 23 January 2006, 5 August 2010 and 1 July 2016.

418. In the three-criteria test, Nkom has concluded that there is no basis to assess that the relevant market will tend towards sustainable competition in the absence of ex-ante regulation. In the assessment, Nkom has, among other things, analysed market shares at retail level and wholesale level. It shows that Telenor has had a stable market share of around 50 per cent in the retail market and over 50 per cent in the wholesale market. Such a high market share, i.e. over 50 per cent, is a strong indicator of single dominance, cf. Section 76 of ESA's Guidelines, cf. Chapter 4.3.2.

419. On this basis, when assessing significant market power, Nkom will apply the criteria in the Guidelines for single dominance and Nkom's method document, and assess whether Telenor still holds significant market power alone. Based on updated Guidelines and the market development, Nkom has also assessed whether Telenor and Telia collectively have significant market power (joint SMP). This assessment is covered in Chapter 5.13.

420. In the analysis of single dominance, Nkom assessed the following indicators:

- Market shares
- Profitability
- Access to sales channels
- Access to information, switching costs and lock-in effects
- Vertical integration
- Economies of scope
- Cases under the current regulation

¹³⁰ DG Competition, Discussion Paper on the application of Article 82 of the Treaty to exclusionary abuses, page 23.

¹³¹ Chapter 2 on the definition of the relevant market and Chapter 4 on the three-criteria test.

¹³² The terms joint dominance and dominant position are used in ordinary competition law. However, the Guidelines use the term joint SMP (Significant Market Power) within sector-specific regulation. Nkom will therefore use this term in the analysis.

- Buyer power/countervailing buying power
- Entry barriers and potential competition

421. Several of the elements for assessing single dominance correspond to the elements considered under criteria 1 and 2 in the three-criteria test. In this analysis, the elements that are also considered in the three-criteria test are assessed in order to discover whether any provider has significant market power.

422. The relevant market is a wholesale market, cf. the market definition in Chapter 2. The competition at retail level will, however, to a significant degree reflect the competition at wholesale level. Most of the wholesale sales for both Telenor and Telia are internal sales to own retail activities, cf. Chapter 2.4.1. This means that factors relating to the retail markets will also impact the competition in the wholesale market. One example of such factors at retail level is the switching costs for retail users, for example in the form of change in coverage.

423. As shown above, Nkom's analysis has a time perspective of two to three years.

5.3 Market shares

424. The Guidelines stipulate that market shares are the starting point for the assessment of market power.¹³³ Nkom's analysis of significant market power is based on the providers' market shares.

425. High and stable market shares over time may indicate significant market power. It states in Section 55 of the Guidelines that if a provider has a stable market share exceeding 50 per cent, there is a presumption of significant market power.

“According to established case-law, very large market share held by an undertaking for some time - in excess of 50% - is in itself, save in exceptional circumstances, evidence of the existence of a dominant position. Experience suggest that the higher the market share and the longer the period of time over which it is held, the more likely it is that it constitutes an important preliminary indication of SMP.”

426. Section 56 of the Guidelines provides additional guidance regarding developments and fluctuations in market shares:

“[...] the fact that an undertaking with a strong position in the market is gradually losing market share may well indicate that the market is becoming more competitive, but does not preclude a finding of SMP. Significant fluctuation of market share over time may be indicative of a lack of market power in the relevant market. The ability of a new entrant to increase its market share quickly may also reflect that the relevant market in question is more competitive and that entry barriers can be overcome within a reasonable timeframe.”

427. It also states in section 57 of the Guidelines that if market shares are below 50 per cent, an assessment of significant market power must also be based on other relevant criteria to market shares:

“If the market share is high but below the 50 % threshold, NRAs should rely on other key structural market features to assess SMP. They should carry out a thorough structural evaluation of the characteristics of the relevant market before drawing any conclusions on the existence of SMP.”

428. When using market shares as an indicator of significant market power, it is necessary to consider which measurement parameters are most relevant for the purpose. Both volume and sales are relevant measurement parameters. For coupled products in the market, the

¹³³ Section 54 of the Guidelines. Commission Staff Working Document, page 23.

market share based on sales will better reflect the market position and strength of the operators than market share based on volume, i.e. subscriptions or one type of traffic. The Commission also makes reference to the fact that several measurement parameters can be included in the assessment, either individually or in combination with one another.¹³⁴

5.3.1 Market share at retail level for bundled mobile services.

429. In 2018, total sales for bundled mobile services were approximately NOK 17.1 billion. This includes all services sold in connection with a subscription, including fixed and variable revenues for voice, SMS and data. Revenue from termination and resale are not included.¹³⁵

430. The figure below shows the development in market shares based on revenue in the retail market for bundled mobile services from 2009 to 2018 (residential and business combined).

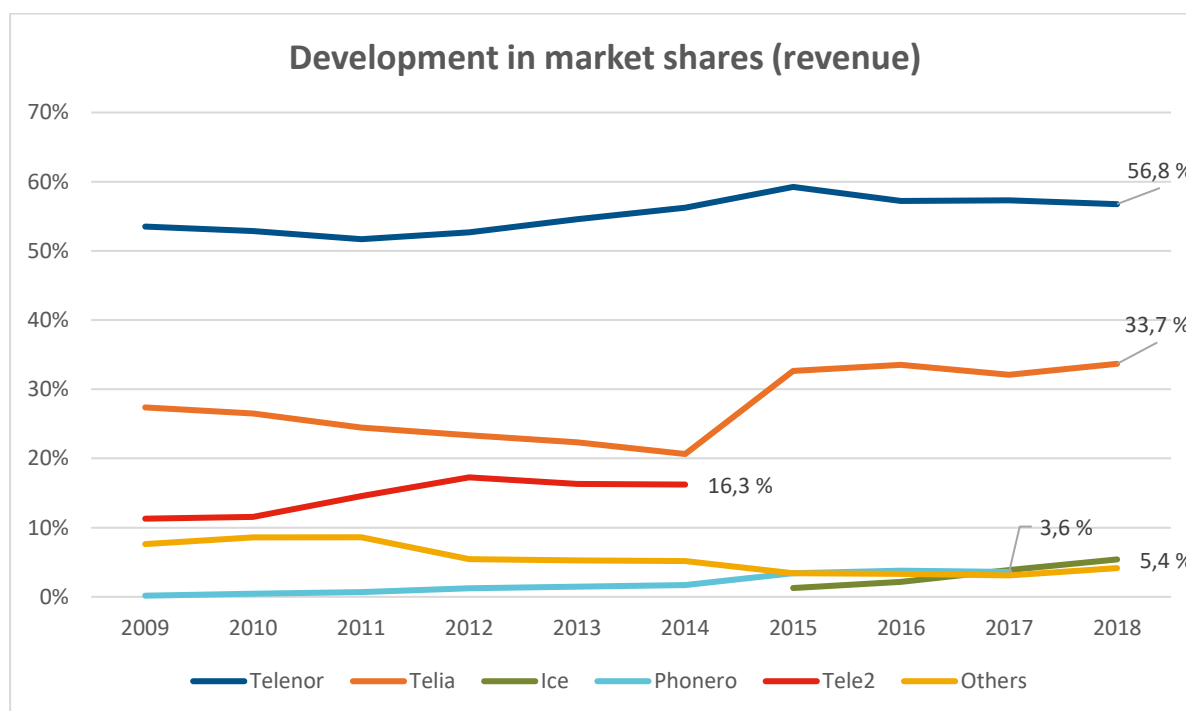


Figure 13 Development in market shares of bundled mobile services measured in revenue. Residential and business combined.

431. Telenor's market share when measured in revenue has been stable and above 50 percent for the entire period. The figures for 2018 and the first half of 2019 show a market share of respectively 56.8 per cent and 57.1 per cent. Since the previous market analysis in 2016, Telenor's market share based on revenue has decreased by about 2 per cent.

432. Telia's market share experienced a steady decline until 2014, but then increased in 2015 as a result of the acquisition of Tele2. In 2017, Telia had a slight fall in market share based on revenue, but this increased again following the acquisition of Phonero in 2017. The market share was 33.7 per cent both in 2018 and the first half of 2019.

¹³⁴ Commission Staff Working Document, page 25.

¹³⁵ Revenue linked to content messages are not included from and including 2016. Revenue from bulk messages are included in wholesale level revenue from and including 2016.

433. Since launching mobile subscriptions in 2015, Ice increased its market share based on revenue to 5.4 per cent in 2018 and 5.9 per cent in the first half year of 2019. However, Ice has a significantly smaller share of sales than the two established network owners.

434. At the end of the first half of 2019 there were just over 5.7 million mobile telephony subscriptions. The subscriptions were distributed between the providers as shown by the figure below.

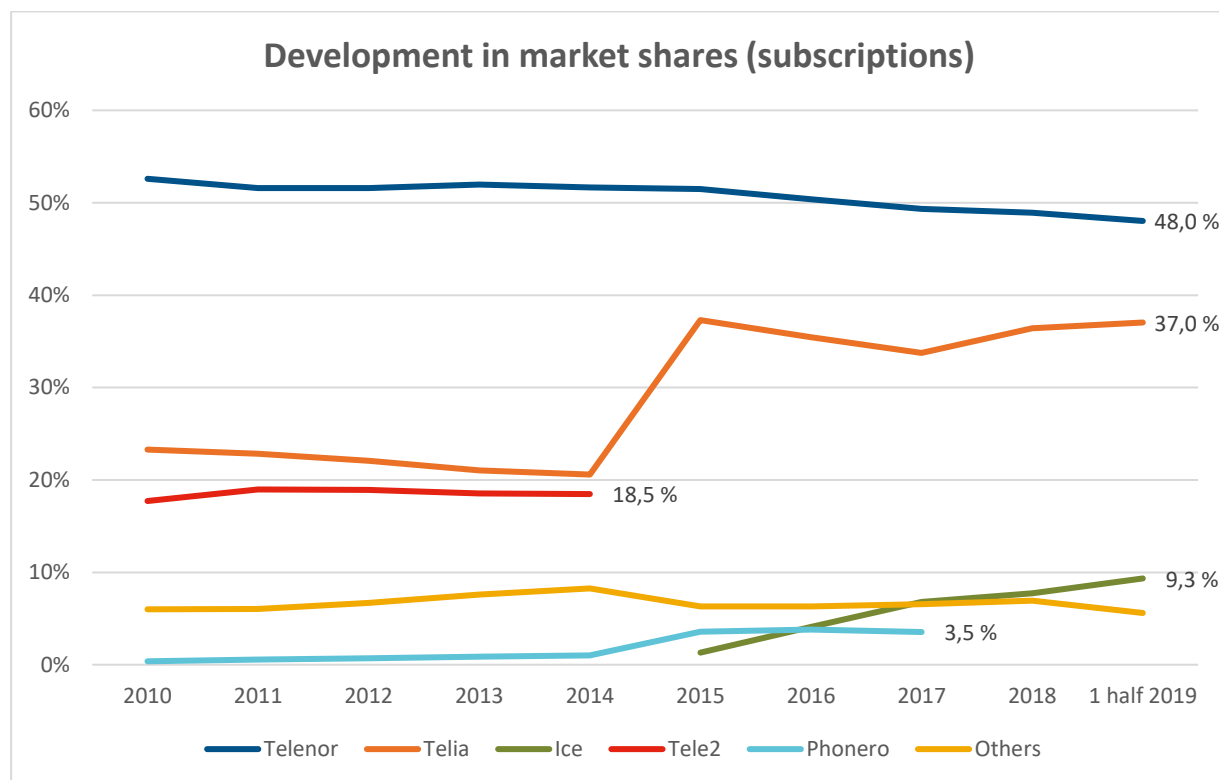


Figure 14 Market shares based on the number of subscriptions for bundled mobile services for the period from 2009 to the first half of 2019. Residential and business combined.

435. With regard to the number of subscriptions for mobile telephony at retail level, the difference between the established network owners is somewhat smaller than market shares based on revenue. The figure above shows that Telenor's share of subscriptions has experienced a steady, slight reduction and amounted to 48.0 per cent at the end of the first half of 2019 (residential and business combined). The market share was 51.5 per cent in the previous market analysis¹³⁶ and thereby fell by 3.5 per cent.

436. In the previous market analysis, Telia had 37.3 per cent of subscriptions. Telia's market share was calculated after Telia's acquisition of Tele2. The company's market share fell slightly until 2017, but then increased in the first half of 2018 as a result of the Phonero acquisition. At the end of the first half of 2019, Telia had a market share of 37.0 per cent, which is roughly equivalent to Telia's market share in the previous market analysis that formed the basis for the decision of 1 July 2016. This development shows that Telia increases its customer base through acquisitions and not organic growth.

437. Ice has had an increasing market share based on the number of subscriptions from 2015 to 9.3 per cent at the end of first half of 2019.

¹³⁶ The analysis for the decision of 1 July 2016 was based on full-year figures for 2015.

438. A characteristic feature of the distribution of market shares at retail level is that Telenor has a significantly larger market shares based on revenue than measured by the number of subscriptions. This shows that Telenor achieves higher revenue per subscription than the other operators, which is also supported by the assessment of the price development and user patterns in Chapter 4.3.4. This indicates that Telenor has a customer group with greater willingness to pay than Telia and the other operators. In Nkom's view, market shares measured by revenue give a better picture of the relative strengths of the providers in the mobile market than market shares measured by subscriptions.

439. The table below shows the market shares for bundled mobile services for the residential and business market respectively, measured according to the number of subscriptions at the end of 2018 and revenue in 2018. The residential market is the largest, with about 75 per cent of all subscriptions and 68 per cent of revenue in the total market.

		Telenor	Telia	Ice	Other
Residential	Subscriptions	43.8 %	38.2 %	11.6 %	6.3 %
	Revenue	52.6 %	36.8 %	7.2 %	3.4 %
Business	Subscriptions	60.5 %	33.5 %	2.6 %	3.4 %
	Revenue	68.1 %	25.8 %	2.5 %	3.6 %

Table 13 Market shares for bundled mobile services measured by number of subscriptions at the end of first half of 2019 and revenue in the first half of 2019, divided according to residential and business markets.

440. The table shows that Telenor has a very high share of the business market both in terms of subscriptions and revenue.¹³⁷ This market is characterized by less mobility and higher earnings per subscription than the residential market. Telenor is more than double the size of Telia in the business market when measured in terms of revenue.

441. Compared with the previous analysis, Telenor's share of subscriptions in the business market has been stable, respectively 60.3 per cent in 2015 and 60.5 per cent at the end of first half of 2019. On the other hand, in the residential market, Telenor's share of subscriptions has fallen by 5.0 per cent from 48.8 per cent in 2015 to 43.8 at the end of first half of 2019. However, since the previous analysis, Telenor's share of revenue in both the residential and business markets has remained stable at the 2015 levels of 52.2 per cent and 67.7 per cent respectively.

442. Telia has primarily grown through acquisitions. Since the previous analysis, Telia's share of subscriptions in the business market has doubled and reached 33.5 per cent at the end of first half of 2019. The market share measured in terms of revenue was 15 per cent in 2015 and has therefore not increased as much. Telia's share in the residential market has decreased when measured in relation to both revenue (44.0 per cent) and subscriptions (43.5 per cent) in 2015. At the end of the first half of 2019 Telia's market share of subscriptions in the residential market was 38.2 per cent.

5.3.2 Market shares for mobile broadband

443. Nkom has concluded that dedicated mobile broadband subscriptions constitute an adjacent, separate retail market, cf. Chapter 2.3.9.6. In the assessment of the relative strength of the operators it is also relevant to look at how the market shares for mobile broadband are

¹³⁷ The business market accounts for 24 per cent of subscriptions and 32 per cent of sales.

distributed. At the end of the first half of 2019, there were a total of approximately 338,000 subscriptions for mobile broadband.

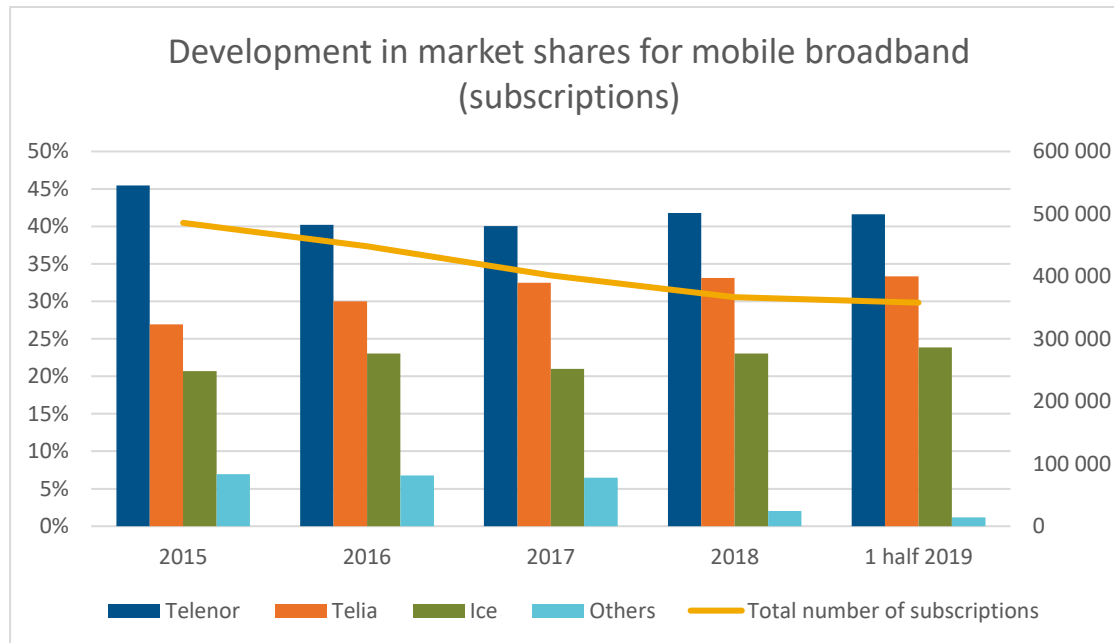


Figure 15 Development in market shares measured by number of mobile broadband subscriptions for the period from 2015 to the first half of 2019.

444. The figure above shows that Telenor’s share has stabilised at around 40 per cent of mobile broadband subscriptions. Telia’s share has increased steadily since 2015 and was 33.4 per cent at the end of the first half of 2019. At that time Ice had a market share of about 24 per cent. In addition to standard frequencies for mobile services, Ice uses frequencies in the 450 MHz band for dedicated mobile broadband.¹³⁸

445. In terms of market share measured by revenue from mobile broadband, Telenor and Telia are roughly the same size. See Chapter 4.3.2.2. In 2018, Telia’s market share measured by revenue was 38 per cent, while Telenor had a market share of 39 per cent. Ice’s share has been relatively stable at just over 21 per cent.

446. The table below shows market shares based on subscriptions and sales for residential and business subscriptions for mobile broadband.

¹³⁸At present, there are no handsets for traditional mobile services that support LTE in the 450-MHz band.

		Telenor	Telia	Ice	Other
Residential	Subscriptions	32.8 %	36.2 %	30.3 %	0.7 %
	Revenue	30.2 %	43.7 %	25.8 %	0.3 %
Business	Subscriptions	54.9 %	29.1 %	14.1 %	1.9 %
	Revenue	55.1 %	23.0 %	19.5 %	2.3 %

Table 14 Market shares for mobile broadband measured by subscriptions at the end of the first half of 2019 and revenue for the first half year of 2019, divided according to residential and business markets.

447. The three network owners are present in both the residential and business markets, albeit to varying degrees. More than half of all mobile broadband subscriptions in the business market at the end of the first half of 2019 were with Telenor, while Telia had the largest share of residential subscriptions. Ice is the network owner with the lowest share, but has a significant share of residential subscriptions. Nkom expects that Ice's position in the residential market for mobile broadband will remain relatively stable, because in May 2019 the company was again allocated the frequencies in the 450 MHz band.

448. The table shows that Telenor has a strong presence in the part of the market where earnings per subscription are highest.

5.3.3 Market shares at wholesale level

449. In order to assess market shares at network level, Nkom's starting point is the operators that have their own mobile networks: Telenor, Telia and Ice. In the assessment of the parameters that should be used as a basis for the assessment of the relative strengths of the operators at wholesale level, reference is made to Chapter 4.3.2.3.

450. The table below shows market share at wholesale level for 2015, which was used as a basis for the decision in 2016 and for the first half of 2019. Detailed information about the development during the period is provided in tables 8 and 9 in Chapter 4.3. Both own retail activities and buyers of access are included. Internal traffic is included as part of the market and is therefore included in the calculation. Number of subscriptions and data traffic from MVNOs and service providers are included in the market shares of network owners. Ice has no access buyers in its network, which means its market shares only include own retail activities.

	Abonnement, mobiltelefoni		Datatrafikk, mobiltelefoni		Datatrafikk, mobiltelefoni og mobilt bredbånd	
	2015	1H2019	2015	1H2019	2015	1H2019
Telenor	58 %	51.0 %	60 %	54.5 %	47 %	44.8 %
Telia	42 %	39.7 %	41 %	40.5 %	46 %	45.5 %
Ice		9.3 %		5.0 %	7 %	9.7 %

Table 15 Market shares at wholesale level based on subscriptions and data traffic for mobile telephony and mobile broadband for 2015 and the first half of 2019.

451. The table shows that Telenor is the largest provider at wholesale level, with a market share of more than 50 per cent, calculated based on both the number of subscriptions and data traffic from bundled mobile services. Telenor was also the largest provider in the wholesale market in 2015. Conversely, Telenor's share is less than 50 per cent when data traffic from mobile broadband is included. The market share for Telenor measured based on subscriptions fell by 7 per cent during the period. At the end of the first half of 2019, this share

was 51 per cent. The decrease was primarily due to Telia's acquisition of Phonero and TDC Get, which previously used Telenor's network, but was also due to a drop in the number of own retail customers.

452. In the coming years it is expected that Ice will produce more traffic on its own network. Moving forward, it is therefore expected that Telia will carry a smaller share of Ice's traffic.

5.3.4 Summary concerning market shares

453. Telenor is the largest provider in the retail market for bundled mobile services when measured by subscriptions and has had a stable market share over time. Telenor has a higher market share when measured in sales (57 per cent) than when measured in subscriptions (48 per cent) and the market share for sales exceeds the threshold value for significant market power.

454. Telia has increased its market share through acquisitions and not as a result of organic growth. Telia has lost customers following acquisitions and has grown again as a result of new acquisitions. The company's market share when measured by subscriptions is 37 per cent, which is unchanged since 2015. The company's market share measured in sales is 34 per cent, which is approximately 1 per cent higher than in 2015. There will be limited opportunities for new acquisitions in the future. Telenor is particularly strong within the business market and has a significantly larger market share than Telia. Telenor's share of bundled mobile services in the business market when measured in sales is 68 per cent, compared with Telia's share, which is 26 per cent.

455. In the adjacent retail market for mobile broadband, Telenor's share of subscriptions is greater than Telia's share (42 per cent and 33 per cent respectively in the residential and business markets combined). However, when measured in terms of sales, Telenor and Telia's market shares are more equal at 39 and 38 per cent respectively. It is particularly in the business market that Telenor has a strong position. In the residential market, the share of subscriptions and sales for mobile broadband is relatively evenly spread among the three network owners.

456. However, at network level, Telia has a higher share of external wholesale customers than Telenor. At network level (both internal sales and external sales included), Telia's market share based on the number of mobile telephony subscriptions is 48 per cent. Of this, 7.8 per cent consists of retail customers with Ice. However, the share of traffic that uses Telia's network is expected to fall as Ice increases the development of its network.

457. If data traffic from mobile telephony subscriptions is used as a basis for the calculation of market shares at the network level, Telenor's market share was 55 per cent, while Telia's market share amounted to 41 per cent in the first half of 2019. If data traffic from mobile broadband is included, Telia's share is 47 per cent, while Telenor's share is 45 per cent.

458. Telia's mergers and the subsequent transfer of traffic from Telenor's network to Telia's network, have resulted in Telenor's market share at wholesale level being reduced since the previous decision. However, Telenor's market share is still greater than Telia's market share due to the high proportion of own retail customers. It can also appear as if Telenor has placed more emphasis on retaining its own retail customers than acquiring wholesale customers, because there is increasingly more profitability in the retail market. At the end of the first half of 2019, Telenor had a 512 per cent market share at wholesale level based on subscriptions, i.e. above the threshold for significant market power.

459. The shift in market shares for the established network owners is largely a result of acquisitions and not organic growth through competition for end-users in the market. This indicates that Telenor's market power vis-à-vis Telia has not necessarily been reduced since the previous market analysis.

460. The relatively even distribution of subscriptions and sales in the residential market for mobile broadband is largely due to Ice's access to 450 MHz frequencies. However, the sale of mobile broadband in the residential market represents a very small part of the total number of subscriptions and revenues that are generated based on wholesale access in the relevant market.

461. Telenor's overall market share, both at retail and wholesale level, is still very high. The ability shown by Telenor to maintain market shares indicates that the company will, to a significant degree, be able to retain its positions at both retail and wholesale level within the analysis' perspective. The assessment of market shares thus provides evidence of the presumption that Telenor has significant market power. However, a conclusion concerning significant market power would have to depend on an overall assessment of several criteria besides market shares.

5.4 Profitability

462. High profitability over time may be an indicator of significant market power in that the operators have been able to maintain prices that are higher than they would have been in a market with effective competition. However, high profitability can also be related to other factors, such as rationalisation gains or innovation.

463. The table below provides an overview of the development in sales, operating profit before depreciation (EBITDA) and EBITDA margin in the period from 2013 to 2019 for Telenor's overall Norwegian operation.¹³⁹ Both the mobile and the fixed-network activities are included in the figures. The last line of the table shows the mobile operation in isolation.

		2013	2014	2015	2016	2017	2018	2019
	Mobile sales			15 082	15 021	15 072		
Telenor (MNOK)	Total sales	25 071	26 186	26 542	26 035	25 965	25 909	25 612
	EBITDA	10 758	11 255	11 088	10 967	11 117	11 004	11 212
	EBITDA margin	42,90 %	43,00 %	41,80 %	42,10 %	42,82 %	42,47 %	43,80 %
	EBITDA margin mobile							

Table 16 Sales and EBITDA in NOK million, including the EBITDA margin for Telenor's overall Norwegian operation and the mobile operation in isolation.

464. The EBITDA margin for Telenor's overall Norwegian operation, including mobile and fixed network activities, was relatively stable from 2013 to 2019 at around 42-43 per cent. The figures for 2019 shows an increased EBITDA margin of close to 44

465. Nkom has also obtained an EBITDA margin from Telenor for the mobile operation alone for the period from 2015 to 2018. The figures show that the EBITDA margin for the mobile operation has been relatively stable and higher than for Telenor's overall activities.

¹³⁹ <http://www.telenor.com/no/investor-relations/rapporter/>

466. Table 14 provides an overview of the development in sales, EBITDA and the EBITDA margin in the period from 2013 to 2019 for Telia's Norwegian mobile operation.¹⁴⁰ The figures are from Telia's interim reports without conversion to Norwegian kroner. [REDACTED]

		2013	2014	2015	2016	2017	2018	2019
Telia (MSEK)	Omsetning	7 056	6 864	9 165	9 057	10 087	11 898	14 666
	EBITDA	2 144	2 130	2 761	3 125	3 531	4 492	6 394
	EBITDA-margin	30,40 %	31,00 %	30,10 %	34,50 %	35,01 %	37,75 %	43,60 %
	EBITDA-margin mobil							

Table 17 Sales and EBITDA in NOK millions, as well as the EBITDA margin for Telia's Norwegian operation.

467. From 2013 to 2015, Telia's EBITDA margin was stable at around 31 per cent. Following the acquisition of Tele2, the company's EBITDA margin increased to just over 34 per cent in 2016 and then 35 per cent in 2017. According to the company's reports, the acquisition of Phonero in 2016 also made a positive contribution to the EBITDA margin from and including 2017. The EBITDA margin of almost 38 per cent in 2018 was attributed to good cost controls and synergies from the acquisition of Phonero.

468. Get TDC was formally merged with Telia in the first quarter of 2019. The EBITDA margin for the overall operation was improved to above 43 per cent in 2019 and is thus at a level like Telenor.

469. ICE Group reported negative EBITDA for its Norwegian operation in 2016, 2017, 2018 and 2019¹⁴¹.

470. The figure below shows the development in ARPU¹⁴² for Telenor and Telia's Norwegian mobile operations. Telenor has had regular growth in ARPU since 2013. Telia had fluctuating ARPU until 2015, but has since had regular annual increases. The table shows that Telenor has had much higher ARPU than Telia over time. In the past three years, Telenor's ARPU has been around 25-29 per cent higher than Telia's ARPU. Ice reported ARPU¹⁴³ of NOK 234 for the fourth quarter of 2019. Telenor's customers thereby seem to generate more revenue per subscription than Telia's customers, which is reflected in Telenor's profitability.

¹⁴⁰ <http://www.teliasonera.com/en/investors/reports-and-presentations/>

¹⁴¹ <https://icegroup.com/investor/reports-and-presentations>

¹⁴² ARPU – average revenue per user. Calculated as an average of quarterly ARPU during the year.

¹⁴³ Smartphone ARPU

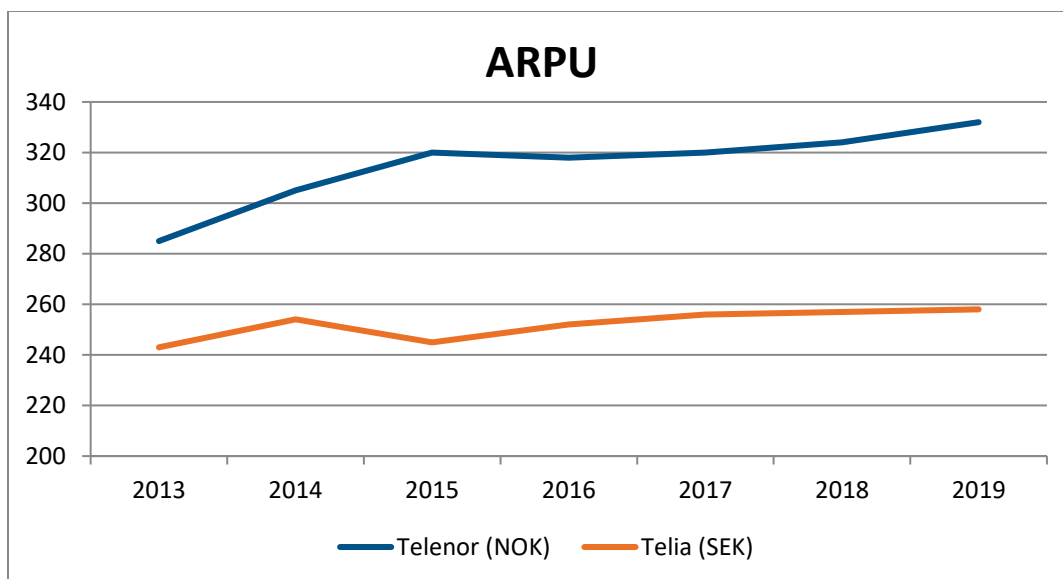


Figure 16 Development in ARPU for Telenor and Telia in the period from 2013 to 2019.

Summary and conclusion

471. Telenor has reported very solid profitability for its operations in Norway for many years. Over time, Telenor has had significantly better profitability than Telia. Figures for Telenor's mobile operation alone reinforce this. Telia has had a positive development in the EBITDA margin since the acquisitions of Tele2, Phonero and Get TDC. The so-called "coverage pledge," in which Telia made significant investments in improving coverage, may also have contributed to the positive development. In 2019, Telia achieved the same EBITDA margin as Telenor for the total business. EBITDA margin for mobile operations for 2019 were not available from both companies at March 2020, however it can be expected that these figures also will become more equal between the two than in previous years. However, Telenor still reports far higher revenue per customer than Telia.

472. The assessment of profitability over time supports the presumption that Telenor has significant market power, however, it seems that this is a situation where the players have become more equal over the last couple of years.

5.5 Access to sales channels

473. Providers of wholesale access on mobile networks are normally integrated such that the most important part of the operation is linked to the retail market. Access to distribution and sales channels is necessary for gaining customers and is therefore of decisive importance to the operation. It is therefore relevant to assess how access to these sales channels impacts on market power.

474. Relevant sales channels for mobile services can be both physical and online and the end-users will often combined use of different sales channels before the purchase is made. There are relatively low costs associated with establishing and operating online sales channels and these can be fully controlled by the provider itself. The companies' own websites are examples of this. However, the establishment and operation of physical sales outlets will require higher costs, most probably a higher share of fixed costs, and the stores are not necessary controlled by the provider.

475. The customers in the retail market are not homogeneous and it is expected that residential customers have purchasing preferences that differ from business customers. While

online sales channels and distribution through electronics chains are well-suited for the residential market, business customers will require services that are more tailored to their needs. However, telephones are generally becoming increasingly more complex and smart telephones constitute the largest share of sales. It is therefore reasonable to assume that many customers require purchasing assistance and services from a physical sales outlet.

476. The large electronics chains, including Elkjøp¹⁴⁴ and Power sell telephones for which customers can select a subscription from either Ice, Telenor or Telia. The two largest mobile operators also control their own stores. Telenorbutikken (Telenor Store)¹⁴⁵ has 85 own sales outlets, while Telia¹⁴⁶ has reported having 58 stores and 5 commercial centres. Mobile services are also sold through dealers, including through the nationwide chain Mobit¹⁴⁷, which sells business solutions on behalf of both Telenor and Telia. Ice has established own stores at Sandvika Storsenter and at Strømmen Storsenter.

477. Based on the above, there do not appear to be significant differences in access to online sales channels. There also do not appear to be differences when concerning access to the large electronics chains. Telenor and Telia differ from Ice in that they have a well-developed network of own stores and their products are also sold in other nationwide chains. Telenor has the strongest presence in terms of physical sales outlets, but Telia also has a significant presence. Access to sales channels therefore does not appear to be a separate factor that strengthens the presumption that Telenor has significant market power.

5.6 Access to information, switching costs and lock-in mechanisms

478. The competitive intensity at retail and wholesale level is reduced if different forms of restrictions or costs are established or in place in connection with the right to switch provider. Access to information, switching costs and lock-in mechanisms are key elements in the assessment of whether such mobility restrictions exist in the markets and may be of importance to a provider's ability to maintain its market position. In the following, these factors are discussed in relation to the residential and business markets and the specific relevance these have for the assessment of the competition situation in the market, including the assessment of Telenor's position as a dominant operator.

479. There are a number of commercial price comparison services in the retail market which end-users can use to compare providers and products.¹⁴⁸ In general, Nkom is of the view that end-users in the residential market have good access to information. However, the subsidising of handsets, linking mobile subscriptions to other services (for example, BankID and zero rating services), and the providers' marketing of coverage and capacity, contribute to complicating the end-user's ability to compare products. Telenor's launch of a number of additional services for younger mobile customers in March 2019 has also contributed to making such a comparison more complicated.¹⁴⁹

¹⁴⁴ Elkjøp and Lefdal merged on 18 January 2018.

¹⁴⁵ <https://www.telenor.no/telenorbutikken/>

¹⁴⁶

https://www.telia.no/butikk/?gclid=EAlaIqobChMlnOOKt_TT3wIVSomyCh1W6AXWEAAYASAAEgIc5fD_BwE&gclid=aw.ds

¹⁴⁷ Mobit is a merger of Telering and several IT and mobile chains such as the Telehuset, Mobidata, Comunit and Nordialog. See: <https://mobit.no/om-oss/>

¹⁴⁸ Nkom launched an approval scheme for comparing subscription prices on 10 May 2016:

<https://www.nkom.no/forbruker/prissammenlikning/veiledning-og-krav/prissammenlikning>

¹⁴⁹ https://www.insidetelecom.no/artikler/telenor-lanserer-godbiter/460127?utm_source=newsletter_2019-03-12

480. Smaller operators do not necessarily have the same opportunities to offer additional services as part of the mobile subscriptions. These types of additional services can be expensive and also require a customer base of a certain size to be in a position to enter into agreements with external partners. Nkom believes that such additional services can both have lock-in effects for end-users and contribute to raising the threshold for smaller operators to achieve further growth.

481. Nkom is also of the view that there are no direct switching costs that significantly hinder the mobility of end-users in the residential market. The costs associated with switching provider are low and the procedures for number porting are not complicated or particularly time consuming.¹⁵⁰ The ability to set a lock-in period in agreements between providers and end-users in the residential market is also restricted to a duration of 12 months, cf. Section 2-4 of the Electronic Communications Act. Despite this, the number of residential customers who switch providers is relatively limited. The data collected by Nkom shows that 63 per cent of residential customers have not switched provider in the past two years¹⁵¹.

482. However, in the business market, a longer lock-in period than 12 months can be agreed pursuant to Section 2-4 of the Electronic Communications Act, which means there is a greater lock-in effect on end-users. A market survey of the business market that was conducted by Nkom from October 2018 showed that almost half of the companies surveyed had a lock-in period in their current agreements for mobile telephony. There was also a group of about 20 per cent that did not know whether they had a lock-in period in their contracts. Around half of the companies that had a lock-in period, had a lock-in period of 24 months or more.

483. Most providers also operate with early termination fees for premature cancellation of the subscription. At Telenor an early termination fee of around NOK 2,000- 4,000 per subscription has been common¹⁵². The early termination fee depends on how long the lock-in period has been running for. Longer lock-in periods and early termination fees mean less mobility for the customer and a stronger lock-in effect compared with the residential market.

484. The business market is also characterised by customers often wanting to purchase total packages consisting of multiple electronic communications services, see Chapter 2.3.6. If a company has a total package that includes several electronic communications services, it may often be resource-intensive and less attractive to switch provider for one or more of the services.

485. Based on this, Nkom is of the view that the business market is characterised by some strong lock-in mechanisms.

486. The buyer's access to information in the wholesale market is more limited than in the retail market. In accordance with Nkom's decision in market 15, Telenor has been ordered to publish standard agreements for MNVO access and national roaming, but this obligation does not include information on prices. However, the fact that there are few providers in the wholesale market means that the market is still relatively transparent.

487. Coverage is one of the most important parameters when selecting a provider in the residential market and the most important factor for business customers. Switching host network in a wholesale agreement would therefore be a factor that could have major consequences for access buyers and thereby create uncertainty regarding a possible switch and make this less attractive. Nkom otherwise makes reference to the discussion of perceived quality and coverage on the network in the analysis in Chapter 5.7.1.

¹⁵⁰ The continued spread of eSIM is expected to further simplify porting.

¹⁵¹ Market survey conducted by Respons Analyse in October 2018.

¹⁵² Cf. Telenor's terms and conditions for business customers, <https://bedriftsbutikk.telenor.no/nettbutikk/vilkaar>

488. Furthermore, at the request of an access buyer, the network operator may have improved coverage on specific parts of the network. This typically applies for MVNO providers in the business market with a need for coverage in given areas in order to fulfil their customers' requirements. In order to make the changes, the host network may require compensation and a lock-in period.

489. Host operators potentially also have different technical profiles due to different equipment suppliers, which creates a need for adaptations in the event of a switch. This increases the switching costs for access buyers. For service providers, such a switch will also entail that the end-users will have to change SIM card. This can be an extensive process that also results in lost customers.

Summary and conclusion

490. Nkom believes that several factors referred to above suggest that Telenor will be able to maintain its position, particularly in the business market. The use of lock-in periods and early termination fees make it less likely to switch provider. In addition, customer perception of quality and coverage is a factor that contributes to Telenor being able to maintain its strong position in the business market and in the retail market more generally.

491. At wholesale level, there are also different forms of switching costs. Even though developments in this area have been positive in terms of reduced use of lock-in periods, there are still factors relating to coverage and customer perception of coverage, as well as technical factors, that can prevent an operator from switching host network.

492. For Telenor, which has the majority of its customer base in the retail market, this would suggest that the company will, on the whole, be able to maintain its strong position and supports the presumption that Telenor has significant market power.

5.7 Vertical integration

493. A vertically integrated undertaking is characterised by having gathered several production levels in its activity that could have been controlled by different undertakings. The company can thereby, via its position in various input factor markets, or in the retail market, keep competitors out or behave in an anti-competitive manner towards existing competitors, and in this way strengthen its market power. Achieved market power can be transferred both from the wholesale market to the retail market, and vice versa.

494. In principle, a vertically integrated company can make it difficult for new operators at retail level to gain the network access required at a competitive price, in the absence of regulation. It can therefore be challenging for a new operator in the retail market to compete effectively with an integrated company, unless it has its own rolled-out radio network.

495. In the analysis of significant market power, the question is whether, and to what extent, providers can derive specific advantages from being vertically integrated that can strengthen their market power in the relevant wholesale market.

496. Both of the established network operators in the Norwegian market are vertically integrated providers. This entails that the companies' wholesale activities via internal sales offer wholesale services to their own retail activities. Their retail activities therefore have a very different approach to input factors than other competitors in the retail markets that are not vertically integrated. The third network is also vertically integrated, but the company is in a slightly different position to the two established network owners because it cannot exclusively base its activities on internal wholesale access and is also dependent on external access to input factors.

5.7.1 Significance of quality and coverage in the mobile network as input factor

497. The traditional perception in the market has been that Telenor has the best developed network. Upon the acquisition of Tele2, Telia also stated that there was "significant asymmetry between Telenor and TSN"¹⁵³:

"Today there is significant asymmetry between Telenor and TSN when it comes to coverage, capacity and speed - the 'quality' in the networks. This is probably part of the explanation for why Telenor appears to have the most loyal customers - the most quality-conscious customers are loyal to Telenor."

498. However, Telia argued that the acquisition would make the company more equal to Telenor and increase incentives to develop a network equivalent to Telenor's network in terms of capacity, coverage and speed.

499. Telia invested much more in its mobile network in 2015 and 2016 than the company had done in the previous years¹⁵⁴. However, Telia's level of investment decreased again in 2017 and 2018. Telenor has maintained a relatively high level of investment since 2012 and, on the whole, invested much more in its mobile network than Telia during these years. The table below shows investments in mobile networks from 2012 to 2018. In 2018, investments were also lower for Telenor when compared with previous years. This was most probably due to the majority of 4G upgrades having been completed by the end of 2017. For Telenor, the figures also include investments in so-called backhaul and this may explain some of the difference between the companies.

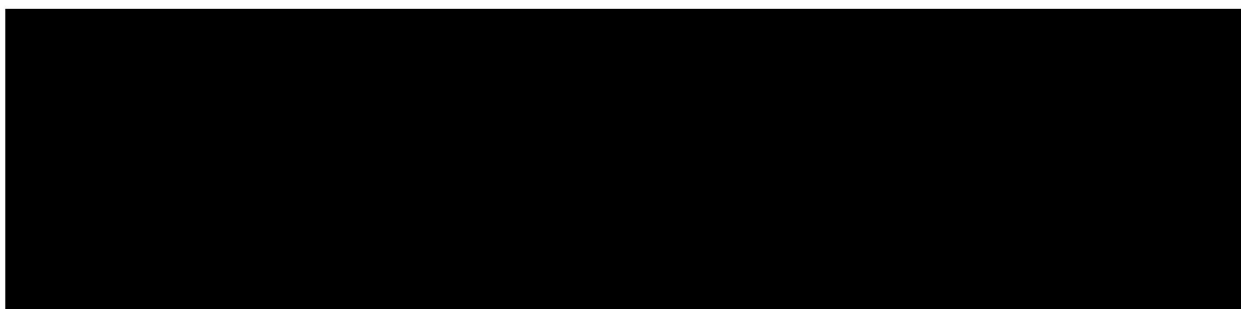


Table 18 Telenor and Telia's investments in their mobile networks from 2012 to 2018.

500. In 2016 and 2017, Telia won Tek.no's test of 4G coverage on the Norwegian mobile network.¹⁵⁵ The test involved 4,000 tests at 566 measurement points around the country. For its part, Telenor can refer to having won the Ookla Speedtest in 2018, which involves the fastest download speed on the 4G network compared with operators from around the entire world¹⁵⁶.

501. The fact that both providers invest heavily in their networks can be viewed as a sign that neither of them can act independently of one another, not even Telenor. However, the key aspect in relation to market power is how customers experience and place weight on quality and coverage.

502. Nkom's market surveys from autumn 2018 show that coverage is important for both residential and business customers when selecting provider. Price is the most important factor

¹⁵³ Notice of merger, TeliaSonera AB/publ/Tele2 Norge AS and Network Norway dated 18 July 2014.

¹⁵⁴ Figures collected for electronic communications statistics.

¹⁵⁵ <https://www.telia.no/magasinet/telia-har-norges-beste-4g-nett-igjen/>

¹⁵⁶

https://www.telenor.no/privat/dekning/?s_kwid=ALI2851101153639944971142069458150&ef_id=W9yBewAADVPnp xN_:20190121092630:s#tab2=0

for residential customers and is ranked ahead of coverage, while for business customers, coverage is most important when selecting provider¹⁵⁷.

503. In response to the question of which operator has the best coverage and data speed, 35 per cent of the customers in the residential market said Telenor. 10 per cent responded that Telia has the best network. There was also a group of an entire 53 per cent who responded that they did not know. It can be assumed that a certain proportion of this group considers the two networks to be the same in terms of quality and coverage.

504. The preferences for Telenor's network are even stronger in the business market. A full 51 per cent of those surveyed said that they believed Telenor has the best coverage. 19 per cent of those surveyed were of the view that Telenor and Telia have about the same coverage, while only 5 per cent believed that Telia has the best coverage. The results are supported by Epsi's measurement of customer satisfaction from October 2019 where the customers perceive Telenor's coverage ahead of Telia and Ice¹⁵⁸. Dipper/Telenor receives the highest score on customer satisfaction in the business market, while both Telia and Ice are behind¹⁵⁹. In submissions to Nkom in September 2018, access buyers also stated that there is still a strong perception among retail customers that Telenor has the best coverage¹⁶⁰.

505. Phonero's customers were transferred from Telenor's network to Telia's network during the first half of 2018. In connection with this, Telia stated that the company had spent over NOK 150 million to build extra coverage for business customers who experienced poorer coverage as a result of the network switch¹⁶¹. Despite this, Epsi's customer satisfaction poll from October 2018 showed that Phonero's customers were far less satisfied than in the previous year¹⁶². Telia then stated that there had been challenges associated with the migration of Phonero customers.

506. A market perception that Telenor has the best network gives Telenor's retail and wholesale activities an advantage with regard to gaining and retaining customers.

507. In the previous analysis from July 2016, Nkom found that it was uncertain as to the extent to which Telia would succeed within the analysis' time horizon in challenging Telenor's position as preferred mobile network. The information collected by Nkom and the results from the market surveys in autumn 2018 show that there is still asymmetry in the perception of coverage between the two networks.

508. Nkom considers end-user preferences for Telenor's to be a factor that give the company advantages with regard to retaining and gaining customers at both retail and wholesale level.

5.7.2 Significance of ownership and control of the network for leased lines and other input factors

509. Telenor has ownership and control over networks used in several markets. The company owns a large part of the networks that are used for leased lines in Norway. Until December 2018, the company was designated as an undertaking with significant market power in the wholesale market for leased lines with capacities up to and including 8 Mbit/s

¹⁵⁷ Results from market surveys conducted by Respons Analyse and Kantar on behalf of Nkom in autumn 2018.

¹⁵⁸ https://www.insidetelecom.no/artikler/kundene-mener-telenor-nettet-er-best/476704?utm_source=newsletter_2019-10-18

¹⁵⁹ <https://www.insidetelecom.no/artikler/fjordkraft-mobil-og-dipper-er-best-liket/476340>

¹⁶⁰ Public versions of the operators' submissions: <https://www.nkom.no/marked/markedsregulering-smp/anbefaling-2004/marked-15/sp%C3%B8rsm%C3%A5-til-akt%C3%B8rane>

¹⁶¹ <https://www.insidetelecom.no/artikler/har-brukt-150-millioner-pa-dekning-til-phonero-kundene/425873>

¹⁶² <https://www.insidetelecom.no/artikler/misfornoyde-phonero-kunder-etter-telia-bytte/448639>

(formerly Market 6). Since 2012, leased lines with capacities above 8 Mbit/s, including dark fibre, have not been subject to special regulation after Nkom terminated the previous regulation for Telenor in this part of the market for leased lines.¹⁶³

510. On 20 December 2018, Nkom handed down a decision in the wholesale market for high-quality access to fixed access networks (market 4). The market is based on the previous market 6, but also includes capacity products such as leased lines and optical channel (wave lengths), as well as data transmission services such as IP-VPN and Ethernet-VPN. Since Market 4 is a new market in the Recommendation and it is only leased lines with capacities up to and including 8 Mbit/s that have been subject to sector-specific regulation in Norway since 2012, Nkom conducted a separate assessment of whether there are grounds for regulating this market in Norway.

511. Even though the barriers to entry are still high for operators that wish to establish a nationwide service, Nkom found that the Norwegian retail market for high-quality access products is characterised by effective competition between multiple providers. Telenor is the largest provider in the retail market with a market share of 24 per cent, but four other providers have a market share of between 20 per cent and 9 per cent each. Based on this, Nkom concluded that there are no grounds for regulating market 4 in Norway. The regulation of Telenor in the former market 6 was also ended.

512. Leased lines are a necessary input factor in the production of mobile services. Telenor could have incentives to discriminate between its own mobile activities and other network operators on the sale of leased lines in the wholesale market. However, the analysis of market 4 shows that Telenor's opportunities for vertical transfer of market power are more restricted than previously because the competition for offering leased lines is increasing. At the same time, there will be areas in the country where Telenor will, in practice, be the only provider that can supply leased lines services.

513. To achieve high data speeds in mobile networks, the development is towards a larger share of fibre to base stations. Telenor is making considerable investments in fibre to base stations, including to more remote base stations for which laying fibre is very expensive.

514. Telenor has been Telia's largest supplier of access to fibre for transport from the base stations to the core network. However, in the past few years Telia has had a strategy to become less dependent on Telenor by cooperating with multiple fibre operators. Among other things, the company has entered into agreements with TDC (prior to the merger), BKK Digitek, GlobalConnect¹⁶⁴ and Eidsiva Bredbånd.

515. By acquiring Get TDC, Telia also obtained access to its own fibre network. This enables Telia to use its own infrastructure for leased lines in the areas where Get TDC had expanded. Access to its own fibre network also resulted in Telia in March 2019 launching a service to small and medium-sized businesses in which a separate router combines broadband both from a fixed connection and the mobile network. The router switches seamlessly between fixed and mobile broadband such that the customer does not notice if one of the connections is cut.¹⁶⁵ By utilising access to infrastructure in this manner, Telia can strengthen its position in the market, particularly the business market.

516. However, no other operators in Norway have such a well-developed fibre network as Telenor. For some sections, Telenor is the only provider. Telia will therefore continue to be

¹⁶³ Nkom: Termination of obligations for Telenor in the wholesale market for leased lines with capacities above 8 Mbit/s, 20 April 2012.

¹⁶⁴ Former Broadnet

¹⁶⁵ <https://e24.no/digital/telia/telia-tar-det-foerste-steget-etter-oppkjoepet-av-get-legger-ned-tdc-og-smelter-sammen-fiber-og-mobilnettene/24586066>

dependent on access to Telenor's fibre network at many locations¹⁶⁶. Ice is also dependent on purchasing access to networks for leased lines. Ice primarily purchases this access from GlobalConnect and Telenor.

517. From January 2020, Telenor gathered all infrastructure in the company called Telenor Infra AS. At the same time, Norkring's base stations were transferred to this company, which in future operates Telenor's passive infrastructure.¹⁶⁷ Norkring, which was owned by Telenor, owned and operated transmitter stations for terrestrial broadcasting in Norway.¹⁶⁸ Norkring offered installation (co-location) of antennas and equipment in its transmitter stations to Telenor and other mobile operators. However, the company's offer of co-location for mobile telephony has been covered by the obligations imposed on Telenor in accordance with the regulation in market 15. Without sector-specific ex ante regulation, Telenor's ownership of Norkring and this company's infrastructure would be liable to give Telenor advantages through the expansion and densification of the mobile network.

5.7.3 Summary and conclusion concerning vertical integration

518. There are presently two vertically integrated network operators in the Norwegian mobile market with coverage in the entire country. Ice is also vertically integrated, but is currently dependent on purchasing access to nationwide networks at the locations where the company itself does not have coverage.

519. Telenor's retail activities and their wholesale customers have access to a network that is still considered by many customers to be the best network. This particularly applies in the business market. Telia's investments in coverage during the past few years have not evened out in the perception of coverage. Nkom therefore believes that coverage is a competition parameter that gives Telenor's retail activities, as well as the company's wholesale activities, an advantage in relation to other vertically integrated operators.

520. Nkom also believes that Telenor's ownership and control of underlying input factors (infrastructure for leased lines, location sites, etc.) are liable to give the company advantages that no other operators can achieve.

521. Overall, Nkom believes that vertical integration is a factor which supports a presumption that Telenor has significant market power.

5.8 Economies of scope

522. Economies of scope are achieved in cases where it is cheaper to produce two or more products or services together than to produce them separately (in different operations). Production costs per unit can be reduced, for example, when more than one service is produced using shared means of production, such as infrastructure or administrative systems. In the retail market, marketing and customer service are activities which can lead to economies of scope. A provider that is present in several markets will be able to spread the shared costs among multiple products/services.

523. Both Telenor and Telia have activities in several Nordic countries, and this can give the companies a certain synergy effect.

¹⁶⁶ <https://www.insidetelecom.no/artikler/kan-bruke-get-nettet-til-a-gi-deg-5g-i-sofaen/442189>

¹⁶⁷ <https://www.insidetelecom.no/artikler/beholder-basestasjoner-skiller-ut-mobilmastene/483212>

¹⁶⁸ Norkring owned just over 2,000 transmitter stations for terrestrial broadcasting that are spread throughout Norway, which were transferred to Telenor Infra AS from 1. January 2020. Norkring provided installation of antennas and equipment from broadcasters, mobile operators, broadband customers, public bodies, etc. at these stations.

524. Telenor is a market leader in most electronic communications infrastructure markets in Norway, including the broadband, cable and satellite TV markets, terrestrial broadcasting and digital broadcasting (Telenor owns one third of Norges Televisjon). Telenor thus holds a unique position compared with former monopolists in other countries and, as stated in Chapter 5.7, can benefit from elements of this infrastructure in the production of mobile telephony.

525. In addition to being a market leader at the infrastructure level in most electronic communications markets, Telenor is also present in the associated retail markets. Upon acquiring TDC Get, Telia gained access to infrastructure and, like Telenor, will also be able to offer several end-user products such as TV, broadband and mobile telephony. Following the acquisition, Telia's combined customer service has been focussed on the business market, including mobile telephony, IoT and broadband.¹⁶⁹ However, Telia does not hold market positions in other Norwegian retail markets that can be compared with Telenor. Telenor is a market leader in the retail markets for both fixed-line telephony and broadband. The massive presence of Telenor's brands in various retail markets can create economies of scale that no other operators can achieve.

526. Telenor's presence and position in the retail markets can give synergy gains in relation to administration, customer service, etc. In addition, Telenor's market position in several retail markets could give advantages related to brand awareness and thereby a reduced need for marketing compared to other operators that only operate in one or a small number of markets.

Summary and conclusion

527. Nkom believes that no other operators in the relevant market have the same broad array of services as Telenor has in Norway. The company controls the infrastructure in several electronic communications markets and also has a strong position in related retail markets. This gives Telenor a unique basis for economies of scope and synergy benefits.

528. Even though both network owners are vertically integrated and can benefit from their presence in several Nordic countries, Nkom believes that Telenor's breadth in the Norwegian market distinguishes this company from Telia. The criterion supports a presumption that Telenor has significant market power.

5.9 Cases under the current regulation

529. As mentioned, Telenor has been designated as a provider with significant market power in three previous decisions and has had obligations imposed with regard to offering access on non-discriminatory terms and regulated prices from 2016. The purpose of the obligations is to alleviate actual and potential competition problems due to Telenor, as a provider with significant market power, being able to act independently of competitors and customers. It is therefore relevant to assess the company's compliance with the obligations imposed as well as other market behaviour during the applicable regulation period. This behaviour can provide some indication of the company's ability to act independently of competitors and customers. Nkom has examined issues under the current regulation that apply to Telenor's offered access prices and contract terms.

5.9.1 Development and follow-up of access prices

530. Under the current regulation, Telenor is obligated to accommodate reasonable requests for access for service provider, MNVO and national roaming, with prices that prevent margin squeeze for access buyers. Nkom monitors the price obligation by conducting margin squeeze tests at six month intervals.

¹⁶⁹ <https://www.insidetelecom.no/artikler/telia-naer-tredobling-av-bedriftssatsingen/461345>

531. The first test was concluded in February 2017 and Nkom found that access prices that applied until the end of January 2017 resulted in margin squeeze. On the date of Nkom's conclusion, Telenor had already given notice of new terms from 1 February 2017, which meant that further changes were not required.

532. The second time Nkom concluded the margin squeeze test was in July 2017. Again it was found that prices that applied until 15 June did not satisfy the requirements, but that Telenor's price reductions from 15 June and from 1 July 2017 were sufficient to avoid further orders.

533. The third round of the margin squeeze test in December 2017 resulted in an order to change access prices for both MVNO and service provider access. The decision was appealed by Telenor, who were of the view that Nkom had based its decision on incorrect assumptions, particularly costs for retail activities. The Ministry of Local Government and Modernisation is currently considering this appeal.

534. Nkom's fourth round of margin squeeze tests was concluded in May 2018 and the Nkom again found that access prices until the end of May 2018 gave a negative margin for service provider access. However, Telenor's new prices, which were to enter into force from 1 June 2018, gave positive margins such that it was not necessary to order corrective actions ahead in time.

535. Both the fifth and the sixth round of the margin squeeze tests showed negative results and Nkom gave notice of a price reduction decision respectively in November 2018 and May 2019. As a result of the notification of the decision, Telenor arranged the access prices in such a way that a formal order to reduce prices was not necessary.

536. In the seventh round, the margin squeeze tests showed positive results for both MVNO and service provider access, and in November 2019 Nkom concluded that the tests were passed.

537. Information that Nkom is aware of indicates that the access prices for Telia are lower than the access prices from Telenor. Access buyers have reported this on many occasions and have also placed emphasis on them not finding that they have sufficient negotiating strength vis-à-vis the network owners.

538. The statements above are a strong indication that Telenor's access prices are primarily disciplined by regulation and the periodic margin squeeze tests and not by either other wholesale providers or by access buyers.

5.9.2 Follow-up of non-discrimination requirements

539. The access obligation that Telenor has been subject to over many years entails that access buyers must have the same opportunities as Telenor to compete in the retail market. Telenor's wholesale offer must therefore have the types of features that, in terms of technology, quality and price, the access buyer can offer equivalent products in the retail market. During the present regulation period, Nkom has formally contacted Telenor in connection with two cases to ensure compliance with this obligation.

540. In March 2017, Telenor launched the product portfolio "Yng" which enables subscribers to stream music without using their data allowance. On the basis of non-discrimination requirements, Nkom asked Telenor questions about service providers on Telenor's network being able to offer similar products. Telenor had not discussed the opportunities for this with access buyers prior to the launch of "Yng", but stated that the company would develop the necessarily functionality if they received a request.

541. On 31 May 2017, Nkom gave notice of an order to take corrective action based on the non-discrimination requirements. Telenor submitted remarks to the notice on 20 June 2017 in which the company reported that information and terms for the wholesale offer had been sent

to service providers on 19 June 2017. Nkom then concluded the matter, but informed Telenor of what the non-discrimination requirements entailed for future product development.

542. Furthermore, in a letter of 13 September 2017, Telenor was asked to provide an overview of the functionality that Telenor uses for realising data control products for own end-users and whether Telenor has made it possible for service providers to offer similar products to their own retail customers.

543. Nkom's assessment of Telenor's existing wholesale offer was that this did not provide service providers with the opportunity to offer similar data control products to Telenor. Nkom was of the view that service providers had to be offered a solution without undue delay that would give them the same opportunities as Telenor. Telenor complied with Nkom's request and started developing a satisfactory solution for service providers.

544. Nkom's follow-up of the non-discrimination principle shows that there is a need for regulatory requirements against discrimination in order for access buyers to have the same opportunities to compete as Telenor's own retail operations. Even though there was no need to hand down a decision in either of these two cases, the overview above indicates that it was not wholesale customers that had much of a disciplinary effect on Telenor, but rather regulatory requirements.

5.9.3 Follow-up on requirements for the standard offer

545. On the basis of modified obligations in the decision of 1 July 2016, Telenor submitted revised standard offers for MVNO access and service provider access to Nkom 15. September and 31. October 2016, respectively. After a careful consideration of parts of the standard offers, on 14 July 2017 Nkom gave Telenor an advance notification that Nkom would order Telenor to make changes. The order applied to several terms of the standard offers that Nkom considered to be in breach of the decision of 1 July 2016. Telenor then changed some terms in the standard offer for service provider access, with effect from July 1, 2019.

546. The case was decided by Nkom on 12 July 2019. The decisions were for the standard offers for MVNO access and service provider access, respectively. In the decisions, Nkom ordered Telenor to make changes to the standard offers' provisions regarding exclusive dealing, provisions regarding migration, provisions regarding right of termination if breach of exclusive dealing and the provisions regarding unconditional and unilaterally right to modify the agreement. Nkom also ordered Telenor to include certain provisions in the standard offer. This applied to provisions to comply with request to modify coverage/ improve indoor coverage and the right of the access buyer to have the access agreement modified on the basis of the non-discrimination obligation (most favoured clause).

547. The decisions were appealed by Telenor on 23 August 2019. As part of the appeal process, Nkom forwarded its recommendation to the Ministry of Local Government and Modernisation (the appellate body) the 14 November 2019.

5.9.4 Summary and conclusion

548. Following the 2016 decision, Nkom's monitoring of access prices and margin squeeze tests has documented that Telenor's access prices have been higher than the regulation permit. Telenor has also offered services to own end-users without equivalent functionality being available to access buyers. Furthermore, there are several terms in Telenor's standard offers for MVNO access and service provider access that Nkom considers to be in breach of the decision 1. July 2016. Nkom is of the opinion that the follow-up of price regulation, the non-discrimination obligation and standard offers indicate that Telenor has the power to behave independently of customers and competitors and thus supports a presumption of significant market power.

5.10 Buyer power/countervailing buying power

549. Countervailing buying power is a factor that can discipline a provider's market behaviour. Buying power may be said to exist when a defined buyer or group of buyers of a product or service is of such important to the seller as to be able to influence the price the seller charges for the product or service.

550. Buying power is not an absolute concept; rather it refers to the relative power of a buyer in negotiations with a seller for specific goods or services. The degree of buying power will thus vary according to the particular constellation of buyers and sellers. The question here is whether, in the short or medium term, one or several existing buyers will be able to exert sufficient influence on prices and other terms for Telenor to nonetheless not be considered to hold significant market power.

551. The buyers of access and call origination on public mobile telephone networks are described in Chapter 3.2 as operators on the demand side. At present, Telenor has no buyers of national roaming. As mentioned, eRate has entered into an MVNO agreement with Telenor, but thus far has not launched services on this platform and therefore does not purchase traffic as an MVNO. Telenor has no MVNO agreements other than this agreement. However, eRate is a major buyer of service provider access. The company resells access to a number of other service providers that together account for just under 3 per cent of subscriptions in the retail market. Telenor also sells access to certain other service providers which together account for less than 1 per cent of the market.

552. A threat not to buy can be a strong bargaining tool on the part of the buyer. The effectiveness of this bargaining tool will depend on how attractive the buyer is to the seller, and whether there are alternative providers with which to enter into agreements, and how attractive they are.

553. eRate is presently the largest buyer of access from Telenor, with a market share of around 3 per cent based on the number of mobile telephony subscriptions with their customers. Phonero had just under 4 per cent of subscriptions when the company was acquired by Telia at the end of 2016. As of the present date, Nkom has not experienced that Phonero, eRate or other access buyers have been able to exert buyer power vis-à-vis Telenor to a sufficient degree to be able to discipline the company's wholesale services. None of the operators have succeeded in negotiating agreements other than the standard contract terms. This is despite Nkom having stipulated in the current decision that the non-discrimination requirement does not prevent Telenor from being able to offer multiple access agreements, provided that all access buyers have equal opportunities to enter into such agreements. The cases referred to in Chapter 5.9 in connection with the access regulation under the current decision also indicate that access buyers have not had sufficient buyer power. However, the question in this respect is more about whether providers can exert sufficient buyer power in the future.

554. Nkom assumes that the degree of buyer power will depend, among other things, on the revenue potentially generated by an access agreement, which in turn will depend on the access buyer's customer base. As mentioned, eRate has agreements with service providers that together have a market share of around 3 per cent. The company can continue to grow either by existing customers/service providers growing or by linking with multiple service providers. However, following several acquisitions in the market there are very few independent service providers and thus limited opportunities for linking with new, large wholesale customers. Experiences with organic growth in the Norwegian market also suggest that a certain amount of growth for the existing customers/service providers will, at best, take time. Nkom therefore finds that neither eRate nor other service providers on Telenor's network will experience growth in the next two to three years that would indicate that their buyer power will be changed significantly.

555. At present, only Telia is an alternative for the purchase of MVNO access. For various reasons, Ice has no wholesale customers on its network (see Chapter 4.3.5.4). The purchase of access from eRate can be an alternative to purchasing directly from Telenor for wholesale customers that are not already with eRate. However, loss of a wholesale customer from Telenor to eRate will still mean that traffic and wholesale revenues remain with Telenor.

556. A threat to purchase access from Telia instead of Telenor must be expected to be genuine on Telenor's part. During the current period, both Chilimobil and TDC¹⁷⁰ have switched to purchasing access with Telia. On the other hand, it must be assumed that Telenor is aware that many customer groups, particularly in the business market, prefer Telenor's network. Customer perceptions of coverage take time to change, (see Chapter 5.7.1), and it is therefore probable that the preferences certain customer groups have for Telenor's network will continue to some degree in the next two to three years. It is also the case that a switch of network will always entail a risk of losing customers. Nkom therefore finds that, within the next two to three years, the competition from Telia will not discipline what Telenor offers to a greater degree than it does at present.

557. Telia presently has two buyers of MVNO access on its network, Com4 and Lycamobile, in addition to Ice as a buyer of national roaming and buyers of service provider access. Ice will be able to withdraw from the agreement within the analysis' time horizon. Their buyer power will thus also to a certain extent depend on the volume which the company can offer. Ice can still be expected to have growth, particularly in the residential market. On the other hand, the fact that the share of roaming traffic is expected to be reduced as the company expands its own coverage, while the company becomes a stronger competitor for the established network owners, will also indicate that the company will have limited buyer power. Nkom thus also has no basis on which to claim that Ice will be able to discipline Telenor's access terms to a sufficient degree within the analysis' time horizon.

558. With regard to Com4 and Lycamobile, these are access buyers that can be attractive for Telenor, but both of these companies also have limited volume¹⁷¹, which makes it unlikely that they will have stronger buyer power than other equivalent providers. This also applies to service providers on Telia's network.

559. Telenor's wholesale sales make up a relatively small share of the company's total sales. Of the total number of subscriptions for bundled mobile services, Telenor has 48 per cent as own retail customers and around 3 per cent as wholesale customers. Wholesale revenues constitute a relatively small share of the company's total revenue when compared with the retail sales revenue. Telenor also has a very high EBITDA margin, cf. Chapter 5.4. Telenor's incentives to pursue and achieve competitive advantages in the retail market, rather than selling wholesale access, must thus be assumed to be strong. Since Telenor has an extensive presence in different retail markets (bundled mobile services, mobile broadband, both business and residential), access will in most cases entail direct competition with its own retail operations. On this basis, Telenor must be assumed to have limited incentives to compete with Telia on providing access, since terms that are too attractive will increase the competitiveness of access buyers at retail market level.

Summary and conclusion

560. The assessment of buyer power shows that access buyers have had and are expected to have limited opportunities to exert buyer power in the relevant wholesale market. Nkom also

¹⁷⁰ Get TDC had an access agreement with Telia prior to the merger which, independent of the merger, involved TDC being in the process of switching network.

¹⁷¹ Lycamobile had approximately 1 per cent of the number of mobile telephony subscriptions at the end of the first half of 2018, while Com4 had around 20 per cent of the number of SIM cards for machine-to-machine communication.

has no evidence that, within a period of two to three years, the competition from Telia will be significantly stronger than before.

561. On this basis, Nkom believes that access buyers will not be able to exert buyer power towards Telenor which can discipline the company to such a degree that the company cannot act independently of competitors, customers and consumers within the analysis' time horizon. This reinforces the presumption that Telenor has significant market power.

5.11 Entry barriers and potential competition

562. In a market with considerable entry barriers, established operators will, to a great extent, be protected from potential competition. The disciplining effect that the threat of competition could otherwise have will consequently be dramatically reduced or absent. The existence of high entry barriers will thereby be central to the analysis of significant market power from a forward-oriented perspective.

563. In the assessment of the first criterion in the three-criteria test in Chapter 4.2, Nkom concluded that there are high and non-transitory structural entry barriers. The conclusion is primarily based on the fact that the mobile network infrastructure is not easily duplicated, as this will require considerable investments and entail a high level of irrevocable (sunk) costs.

564. In the assessment of the second criterion, Nkom assessed the importance of the third mobile network and potential competition from operators that are not currently in the market and the extent to which these can contribute to disciplining the established network owners. Nkom thereby concluded that there is no clear evidence that the third network would be able to sufficiently discipline the established operators on the supply side in the relevant market within the analysis' time horizon. Furthermore, Nkom did not find there to be grounds for potential competition from other operators that are not providers within the relevant market being able to discipline the offers from the established operators in the wholesale market within the analysis' time horizon.

565. With regard to the analysis of whether Telenor has significant market power within the relevant market, the assessments of entry barriers and potential competition mean that within the next two to three years the company will very probably not be disciplined by operators that are not currently providers in the relevant market. In Chapter 5.10, Nkom also assessed whether the competition from Telia will be liable to discipline Telenor's offer within the same period and concluded that it cannot be expected. The absence of sufficient buyer power strengthens the presumption that Telenor has significant market power.

5.12 Summary and conclusion concerning significant market power

566. Telenor is the largest provider in the retail markets for bundled mobile services when measured by sales and subscriptions. At the end of the first half of 2019, the company accounted for 57 per cent of sales in the total retail market and 48 per cent of the total number of subscriptions. The share of subscriptions has fallen by about 4 per cent since the previous market analysis, while the share of sales has only declined by 1 per cent. Telenor's market position in the retail market has been stable over a long period and is characterised by the company selling more per customer than other market operators.

567. Telia has roughly the same share of subscriptions as in Nkom's previous market analysis, i.e. around 37 per cent of the total number of subscriptions in the retail markets for bundled mobile services. In the period since the previous market analysis, Telia increased its market share through acquisitions, then lost customers, but then grew again due to new acquisitions. Telia accounted for around 34 per cent of sales in the retail market in 2018.

568. Telenor has a particularly strong presence in the business market for bundled mobile services, a market in which they have almost more than double as many subscribers and more than double the sales of Telia. This market is characterized by less mobility and higher earnings per subscription than the residential market. A strong position in this market is therefore difficult for other operators to challenge.

569. Telenor is also the largest provider in the retail markets for mobile broadband when measured both in sales and subscriptions. At the end of the first half of 2019, Telenor accounted for close to 42 per cent of subscriptions and 39 per cent of sales for the residential and business markets combined. In comparison, Telia had 33 per cent of subscriptions and 38 per cent of sales, while Ice had 24 per cent of subscriptions and close to 22 per cent of sales.

570. At the network level, Telenor is also still the largest provider both in terms of subscriptions and data traffic, with 51 per cent of subscriptions and close to 55 per cent of data traffic from mobile subscriptions on their mobile network. However, Telenor's share of subscriptions has fallen by around 7 per cent since the previous market analysis. This is principally due to Telia's acquisition of Phonero and TDC Get, but also a slight decrease in the number of own customers.

571. Telia has around 49 per cent of the total number of subscriptions on its network. If Ice's subscriptions are removed, Telia has around 40 per cent of the subscriptions. In the previous decision, Telia had 42 per cent of subscriptions. Ice is expected to transfer increasingly more traffic over to its own network. When measured by data traffic, Telia has approximately 41 per cent of the data traffic on its network, while Ice had almost 5 per cent of the total data traffic on its network at the end of the first half of 2019.

572. Telenor has had excellent profitability over time, significantly better than Telia, particularly if one looks at mobile operations in isolation. Telia has had a positive development in its EBITDA margin since the acquisitions of Tele2, Phonero and TDC Get, and possibly also due to major investments in coverage during the period around 2015. The two operators had approximately the same EBITDA margin in 2019. However, Telenor reports far higher revenue per customer than Telia.

573. The assessment of market shares shows that Telenor still has a stronger market position than Telia. However, an analysis of significant market power must also be able to be justified from a forward-looking perspective. Telia has had a goal of evening out the differences in coverage, capacity and speed on its own mobile network in relation to Telenor. However, it takes time to change customer perceptions. Information Nkom has obtained indicates that there is still a perception, particularly among business customers, that Telenor has the best network in terms of coverage. This provides Telenor with advantages both in the retail markets and wholesale markets with regard to attracting and retaining customers. Nkom considers this to be a factor that supports the claim that Telenor's strong position in the market will continue within the next two to three years.

574. Telenor also has ownership and control over underlying input factors that cannot be compared with other providers in the relevant market. Even though the acquisition of Get TDC has given Telia access to a fibre network and thereby infrastructure for leased lines, there is no operator other than Telenor that has such a well-developed fibre network. Telenor also has good access to infrastructure for the installation of equipment, through the ownership in Telenor Infra.

575. No other operators have a breadth in their array of services like Telenor does in Norway. The company controls the infrastructure in several electronic communications markets and also has strong positions in related retail markets. This provides a basis for economies of scope to an extent that no other operators can achieve within the analysis' time horizon, and thus strengthens the assessment of significant market power for Telenor.

576. With regarding to buyer power, Nkom has thus far not experienced that access buyers with Telenor can exercise buyer power to a degree that is liable to discipline Telenor's offer in this market. Nkom does not expect this to be a factor that will be changed within the coming regulation period. Ice will be able to switch host network within the analysis' time horizon. Their buyer power will therefore depend on the volume which the company can offer. However, the fact that the share of roaming traffic is expected to be reduced as the company expands its own coverage, while the company becomes a stronger competitor for the established network owners, also indicates that Ice will have limited buyer power.

577. Nkom has also assessed whether potential competition from other operators can discipline Telenor's offer in the wholesale market within the analysis' time horizon. In Nkom's view, neither competition from Telia, Ice nor other potential operations will be liable to discipline Telenor's offer in the wholesale market to a sufficient extent within the analysis' time horizon.

578. Based on the factors described above, together with the conclusion from the three-criteria test, the conclusion is that Telenor can, to a great extent, act independently of competitors, customers and consumers in the period covered by the analysis.

579. Telenor's very strong profitability figures for the Norwegian mobile operations confirm that the company is retaining its strong position in the relevant market and the profitability figures can also be seen as confirmation that Telenor has, to a large degree, been able to act independently of competitors, customers and consumers. As the profitability figures show, the company's strategy for retaining its position in the mobile market has been a success.

580. On this basis, Nkom has concluded that Telenor still has significant market power in the market for access and call origination on mobile networks.

581. In theory, the existence of single dominance precludes the possibility of ascertaining joint SMP¹⁷². However, Nkom has still assessed whether the conditions exist in the Norwegian market for such a conclusion to be drawn. A summary of this assessment is given in Chapter 5.13.

5.13 Assessment of joint SMP

582. When assessing joint SMP, the Commission and ESA's Guidelines¹⁷³ are of key importance, cf. Section 3-3 of the Electronic Communications Act and the preparatory works.

583. A first step in an assessment of joint SMP will be to assess whether the market is characterized by conditions that are suitable for facilitating coordinated behaviour. The guidelines indicate that the following elements are relevant to consider.

- Market concentration and number of participants (Guidelines section 70-72 and 78)
- Past behaviour of market participants (Guidelines section 71)
- Relative symmetry, particularly in terms of cost structures, market shares, network capacity/coverage, vertical integration, profitability, ARPU, the possibility to replicate bundles (Guidelines section 72 and 78)
- The degree of transparency of prices and homogeneity of products (Guidelines section 73 and 78)

¹⁷² Reference is made to Section 3-1 of the Electronic Communications Act and the preparatory works (Proposition No. 58 (2002-2003) to the Odelsting, pages 98-99) which list significant market power alone or together with others as alternatives that cannot exist at the same time.

¹⁷³ Reference is made to Chapter 1, which states that, for practical reasons, Nkom accepts the Commission's new guidelines from 8 May 2018.

584. Over time, the Norwegian mobile market has been characterized by a high level of concentration and the market is among the most concentrated in Europe. See Chapter 4.3.7 for further information. The two established network owners, Telenor and Telia, control over 90 per cent of the sales in the market. When it comes to the traffic on the two networks, the distribution is fairly equal, especially the data traffic.

585. Telenor and Telia's mobile operations also have a number of similarities, including the fact that both companies are vertically integrated network operators with nationwide coverage. Both companies are highly profitable and use the same technologies. Since the traffic is relatively equally distributed between the two networks, it can be assumed that they exploit economies of scale to almost the same degree and the underlying cost structure is relatively similar, cf. Chapter 4.2.2. On the other hand, the two networks have been rolled out with different number of base stations, and over the time the investment profiles have also been different, cf. Chapter 5.7.1. However, the companies' offers in the retail market are largely the same. In theory, a large degree of symmetry between the companies will be a factor that facilitate coordinated behaviour.

586. Both companies will want to protect their own customer base. They will therefore have incentives to refrain from strongly competing for each other's customers in the retail market. At the same time, both may benefit from not offering access buyers such favourable conditions that they become a competitive threat in the retail market. The duopolistic situation in the market makes it easier for the companies to benefit from coordinating their market behaviour.

587. Based on this, Nkom has found it necessary to look more closely at the possibility of there being joint SMP between Telenor and Telia in the market for access and call origination on the mobile network. In the following, Nkom will provide an overview of certain key factors when assessing potential tacit collusion.

5.13.1 Method for assessing joint SMP

588. As mentioned in Chapter 5.1, the legal starting point for assessing joint SMP will be an interpretation of Section 3-1 of the Electronic Communications Act and what is meant by the provider "jointly with others" having significant market power/a domination position.

589. The assessment is based on a «Modified Greenfield Approach». As mentioned in chapter 4, this means that the assessment should disregard ex-ante regulation, but may take other forms of sector-specific regulation into account. See Guidelines section 17:

"To this aim, NRAs should take into account existing market conditions as well as expected or foreseeable market developments over the course of the next review period in the absence of regulation based on significant market power; this is known as a Modified Greenfield Approach. On the other hand, the analysis should take into account the effects of other types of (sector-specific) regulation, decisions or legislation applicable to the relevant retail and related wholesale market(s) during the relevant period."

590. The assessment of joint SMP must be based on a focal point for coordination, i.e. behaviour that the operators agree to. Note 72 of the Guidelines provides a definition of the focal point:

"... the tacit understanding of the terms of the coordination between the jointly dominant undertakings, a solution that tacitly colluding operators will tend to adopt in the specific market circumstances and which requires market transparency to become established."

591. Furthermore, reference is made to both the preparatory works to Section 3-1 of the Electronic Communications Act and the new guidelines for *Airtours v. Commission* (T-342-99) which state that three cumulative conditions must be met to establish joint SMP:

- The market must be transparent enough for each member of the oligopoly to monitor each other's behaviour in a sufficiently detailed manner and in real-time. Each member acknowledging that coordination is profitable is not enough to meet the criteria.
- The tacit collusion must be possible to maintain over an extended period. This means that there are no incentives to deviate from this and that the benefits are only achieved if all members of the oligopoly maintain the coordinated behaviour and that there are credible recompense mechanisms. It is also presupposed that each member is aware that measures to increase one's own market share will be met with corresponding countermeasures from other members and that no actual benefits are gained.
- It must be proven that neither the current nor any future competitors or customers can prevent the goals of the coordinated behaviour from being achieved.

592. The cumulative criteria in the *Airtours* case were affirmed by the European Court of Justice in the *Impala II* case (C-413/06). The court also referred to factors that facilitate tacit collusion, including that the parties agree to how coordination shall occur. Particular emphasis was placed on parameters that are included when determining the focal point. The *Impala II* case clarifies the necessity of making an overall, financial assessment of the hypothesis of tacit collusion and not limiting the analysis to a mechanical verification of each of the criteria in the *Airtours* case.

5.13.2 Focal point for potential coordinated behaviour

593. As mentioned, an assessment of joint SMP must be based on the focal point of possible tacit collusion¹⁷⁴. The assessment will then be whether this is a credible focal point in the sense that it is rational for the operators to engage in tacit, permanent collusion based on such mutual agreement. As mentioned, the criteria from *Airtours* must be used as a basis for assessing whether the operators have incentives and possibilities to coordination on the relevant, identified focal point.

594. Denial of access is the core problem in the market for access and call origination on mobile networks. Denial of access can either be in an absolute sense or more indirect by using conditions that limit the ability of access buyers to compete on equal terms. See the description of competition problems in chapter 5 of the decision¹⁷⁵. A natural focal point in the market for access and call origination is therefore a form of denial of access. More specifically, the operators can, for example, tacitly collude to not grant access to certain services, new technology etc.

595. In Chapter 2.4.1, four different forms of access are defined: access via national roaming, MVNO access, service provider access and co-location. The first three forms of access involve different forms of access to radio networks including the core network for service providers that do not have this themselves. For an operator without, or with limited, own infrastructure, an agreement for one of these forms of access has to be entered into with a network owner in order to offer mobile services to end-users. Denial of such access can directly hinder the establishment of new operators or, in the worst case, force established operators out of the market. The fourth form of access, co-location, is a complementary form of access, particularly relevant for operators with national roaming agreements.

¹⁷⁴ Section 77 of the Guidelines.

¹⁷⁵ In section 84 of the Guidelines, denial of wholesale access on reasonable terms is described as a potential focal point in the markets for electronic communications.

596. When, in the following, Nkom assesses denial of access as a focal point for coordinated behaviour, this is based on denial of access to radio networks and core networks. Competition problems relating to co-location are discussed in more detail in Chapter 5 of the decision. However, Nkom refers to the fact that the Commission held an open consultation process until 10 May 2019¹⁷⁶ in which it asked for input regarding, among other things, whether a separate market for access to physical infrastructure should be pre-defined. It can therefore not be ruled out that Nkom will, at a later date, conduct an assessment of whether access to co-location on the mobile network can constitute a separate relevant market and, if so, whether there is an operator that has significant market power alone or whether several operators jointly have significant market power. Such an analysis will include more operators on the supply side than the network owners because Bane Nor, the Norwegian Public Safety Network, landowners and property owners offer co-location.

597. In principle, network owners have incentives to utilise available capacity on the network. This would, in isolation, argue in favour of competing to attract access buyers that can potentially provide many customers/high levels of traffic on the network. However, vertically integrated network owners also offer services in the retail market and will have a strong interest in the access buyers not being offered access that can weaken their own market position in the retail market. The connection between the retail and wholesale markets is therefore of key importance¹⁷⁷.

598. In a situation with only one network owner being available, this will provide incentives to deny access requests to strengthen own retail activities. Based on economic theory, a network owner will also have incentives to allow another operator to operate in the retail market if this can make it more cost-effective. This type of division of work entails that the vertically integrated operator sees benefit in not controlling the entire value chain itself. It therefore presupposes that the vertically integrated operator does not have a position in the retail market that provides greater predictability for future traffic on the network than wholesale. In addition, the vertically integrated operator with this will also allow external operators to utilise the price elasticity in different retail markets/segments, something that will most probably not be considered particularly attractive and will suggest that activities in the retail market should not be left to external operators.

599. In a situation with two network owners, the network owner in question risks access buyers that are denied access or offered access on terms that are less favourable in relative terms preferring to switch to the other network owner. In a situation with regulated access, this will be a certain outcome. The fact that the regulated operator will always have to grant a reasonable request for access will generally influence the other network owner's assessment of whether a request for access should or should not be accepted. Since Telenor has been subject to the obligation to grant access, it must be assumed that this has influenced Telia's incentives when Telia has chosen to grant access. However, the assessment of joint SMP shall be carried out in the absence of regulation ("modified greenfield approach").

600. In Nkom's view, both Telenor and Telia generally have incentives to better safeguard and obtain competitive advantages in the retail market ahead of selling wholesale access. Both have a much larger share of their revenues from sales to end-users than from wholesale. They are also both present in different parts of the retail markets, which means that access for external operators will in most instances entail direct competition with own retail activities. Furthermore, granting access to national roaming may result in the new operator being placed in a position to, in the long-term, compete in the wholesale market. The consequence will

¹⁷⁶ <https://ec.europa.eu/digital-single-market/en/news/synopsis-report-targeted-public-consultation-review-recommendation-relevant-markets-policy>

¹⁷⁷ Reference is made to Section 77 of the Guidelines which emphasise the importance of the link between the wholesale market and the retail market when assessing joint SMP.

again be that the established operators lose control of the value chain they previously controlled.

601. The incentives and opportunities to engage in tacit collusion must therefore be assessed in more detail to be able to conclude whether it is credible that Telenor and Telia would have considered it rational to permanently engage in such tacit collusion in the absence of regulation.

5.13.3 The incentives for the providers to coordinate

602. Despite Telenor and Telia having considerable similarities, the analysis of significant market power shows that there are several factors that differentiate the two operators and that influence their incentives to engage in tacit collusion to deny or prevent wholesale access.

603. Over time, Telenor has had a much more stable and strong position in the retail market for bundled mobile products than Telia. Since 2015, Telenor has had close to 60 per cent of sales in this market. The first half of 2019, the company had more than 57 per cent of the revenue from end-users. Looking at the retail markets in isolation, Telenor holds a particularly strong position in the business market close to 69 per cent of the revenue the first half of 2019. Telenor will have the incentive to protect its customer base and thereby maintain profitability. Telia has not had the same stability over time. The company significantly increased its market share in 2015 due to the acquisition of Tele2. The company then experienced a fall in market share (measured in both subscriptions and sales) until its market share increased in 2017 as a result of the acquisition of Phonero. Telia's share of revenue from end-users was 34 per cent in the first half of 2019. In other words, Telia has strengthened its position in the retail market through acquisitions and not through organic growth.

604. It now appears as if there will only be limited opportunities for growth through acquisitions in the coming years. Fjordkraft and Komplet mobil were the largest independent buyers of access at the end of 2018 with around 1 per cent each of subscriptions in the retail market for bundled mobile products and a somewhat lower share of sales in the market. However, Komplet sold its customer base to Ice in March 2019 which means there are now very limited opportunities for significant growth through acquisitions.

605. When concerning organic growth, Telia has, as mentioned, historically shown that this has been challenging. An important reason for this has most likely been that until now there have been differences in customer perceptions of the coverage provided by the two networks. Reference is made to Chapter 5.7.1 of the analysis for a more detailed overview of this. It takes time to change perceptions regarding coverage and relatively new information obtained by Nkom shows that there is still a perception among end-users that Telenor has the best network. This asymmetry is a factor that contributes to it being more challenging for Telia to maintain its position in the retail market and expectations of organic growth must also take this factor into consideration.

606. Over time, Telia has also had lower revenue per customer in the retail market, cf. chapter 5.4 and developments in ARPU. In other words, Telenor's customers generate more revenue, despite Telia's customers accounting for about the same volume of data traffic.

607. Telia also has significant wholesale revenues. Ice is Telia's largest buyer of access. The company's reports state that the cost of national roaming amounted to over NOK 468 million in 2019¹⁷⁸.

¹⁷⁸ <https://icegroup.com/assets/financia-reports/Ice-Group-ASA-Interim-Report-2019-Q4.pdf>

608. Telia has entered into several access agreements over the last few years, including with customers that were originally with Telenor (Chilimobil and TDC). Telia has also renegotiated the access agreement with Ice. Telia's access prices appear to be slightly lower than Telenor's prices and the access buyers have also stated that Telia follows Telenor's pricing and when Telenor reduces its prices, Telia reduces its prices to a level just under Telenor. This may indicate that Telia acknowledges that a price reduction is necessary to compensate for coverage preferences. Such a pricing strategy may thus be claimed to be a sign of coordination, but may also be due to a goal and desire for Telia to attract wholesale customers. Differences in quality in the service provided is regardless a factor that complicates coordination and indicates that the operators would not necessarily have incentives and the possibly to engage in such behaviour.

609. Nkom is of the view that the market conditions at retail level as they appear today, where further growth for Telia is challenging due to both an absence of companies of a certain size that are candidates for a takeover and the fact that it takes time to change customer perceptions about coverage, can indicate that Telia would be better served by selling access to wholesale customers than denying them access. Wholesale agreements make an important contribution to Telia's profitability and may continue to do so within the next two to three years.

5.13.4 Opportunities for the operators to tacitly coordinate

610. If it is the case that the parties have credible incentives for permanent coordination, there must be an assessment of whether they are able to do so. The market must be sufficiently transparent that each member can know what strategy the other operators are using and whether they are maintaining this.

611. The requirement for transparency, as this is stated in the Airtours case (quoted in Section 67 of the SMP guidelines), is as follows:

“First, each member of the dominant oligopoly must have the ability to know how the other members are behaving in order to monitor whether or not they are adopting a common policy. It is not enough for each member of the dominant oligopoly to be aware that interdependent market conduct is profitable for all of them but each member must also have a means of knowing whether the other operators are adopting the same strategy and whether they are maintaining it. There must, therefore, be sufficient market transparency for all members of the dominant oligopoly to be aware, sufficiently precisely and quickly, of the way in which the other members' market conduct is evolving”

612. Transparency is assessed in Chapter 5.6 of the market analysis, but in relation to whether the market is transparent for the customers (end-users and wholesale customers). The assessment here concerns whether the two operators that potentially engage in collusion can monitor each other's behaviour in relation to the conditions for this coordination.

613. As stated above, a form of denial of access is a natural focal point for coordinated behaviour in market 15. If the two operators tacitly coordinate their policies regarding denial of access in an absolute sense, it would be relatively simple for the other party to monitor a deviation or breach of this coordination. New providers that launch retail services must have received access on one of the existing networks. Even though Ice may also offer access to a network, it would be easy to identify which operator has provided that access and therefore determine whether the conditions for coordination have been breached.

614. However, Nkom is of the opinion that absolute denial of access is most probably unlikely. In a “modified greenfield approach”, the current market conditions must be taken into account. This means that the fact that access agreements already have been entered into must be taken into account. In this context, the relevant wholesale market is well-developed in

the sense that access agreements already have been entered into, also on commercial terms. The first service provider agreement was signed in 1999, while the first MVNO access agreement was signed back in 2002.¹⁷⁹ Since then, a number of agreements regarding access have been entered into both Telenor's network and Telia's network. Nkom therefore considers it unlikely that the established providers would deny access in the absolute sense.

615. Coordination that takes the form of denial of access in a more indirect sense is most probably a more likely scenario. This may involve providing an offer of access, but prices or other terms are not favourable enough for the external operator to be able to compete in the retail market. Telenor has on several occasions failed Nkom's margin squeeze test and as mentioned above, it seems that Telia has had a practice of offering a slightly lower price level than Telenor, including adjusting its prices when Telenor does. As mentioned, this behaviour could be considered as a form of coordination.

616. However, with a focal point linked to prices or terms of access, it will be far more difficult for the operators to agree on the conditions for coordination. Several market conditions make it difficult to tacitly agree on a limit for when prices and terms are "too good" and would entail a breach of the coordination agreement.

617. First, it is uncertain whether the market is sufficiently transparent for such behaviour to be monitored by the parties. However, Telia and Telenor "meet" with one another in different ways and in different situations, both directly and in a more derivative manner (including through negotiations with current and potential access buyers). This indicates that the market must still be assumed to be transparent to a certain extent. As mentioned, access buyers have also stated that Telia follows Telenor's pricing and that when Telenor reduces its prices, Telia reduces its prices to a level just below Telenor. However, in recent years, Telenor's price changes have mostly occurred in connection with Nkom conducting margin squeeze testing. The results of the tests are published and Telia therefore receives information about when Telenor reduces its prices. In an unregulated market, Telia would not have received the information in this manner.

618. Furthermore, the access agreements currently have relatively complex price structures. The agreements have a number of price elements and tiered models, discount scales and purchasing obligations are common. This makes it more complicated to compare the agreements, even when one has access to them. A comparison must often be based on a usage pattern to be able to assess what solution is most favourable. This indicates that a strategy that is based on coordinating conditions for access is difficult for the operators to precisely monitor.

619. In addition, as previously mentioned, there has been asymmetry in the perception of coverage that takes time to change. As of the present date, this inequality does not yet appear to have been evened out and contributes to the products not being able to be considered fully homogenous. Such asymmetry must therefore be taken into consideration in the pricing that is used as a basis for the coordination. The fact that Telia's prices for access are slightly below Telenor's prices can most likely be partly explained based on the asymmetry in the perception of coverage. Such a situation contributes to making a comparison of prices more complicated. This applies both if the market had been transparent, but even more in a market that was not fully transparent.

620. However, the Guidelines state that transparency is not an absolute requirement in all cases:

[...] "close alignment of prices over a long period, especially if they are above competitive level, together with other factors typical of a collective dominant position, might, in the absence

¹⁷⁹ This was a commercial agreement that gave Tele2 access to Telenor's mobile network in Norway, while Telenor gained access to Tele2's mobile network in Sweden.

of an alternative reasonable explanation, suffice to demonstrate the existence of a collective dominant position, even where there is no firm direct evidence of strong market transparency, as such transparency may be presumed in such circumstances. The investigation of such circumstances must be carried out with care, and, above all, should adopt an approach based on the analysis of plausible coordination strategies that may exist in the circumstances.”

621. A comparison of Telenor’s and Telia’s prices for service provider access against their wholesale prices for international roaming, shows that the national wholesale prices are higher than what they offer to MNOs from other countries and the prices are also higher than the results of the Commission cost model for mobile termination and international roaming. However, when assessing prices for wholesale access in Norway it should also be taken into account that the mobile networks are very well developed, both in terms of coverage and in terms of quality. According to the Guideline mentioned above, close alignment of prices above competitive level, should not be investigated isolated, it must rather be part of a plausible coordination strategy.

622. Based on the overview above, Nkom is of the opinion that it is uncertain whether current market conditions make it possible to tacitly agree on conditions for not granting access on sufficiently favourable terms. Firstly, it will be difficult to agree on clear terms for when the conditions of collusion have been breached, Furthermore, it is uncertain whether it can be claimed that the operators can adequately monitor each other’s behaviour sufficiently precisely.

5.13.5 Maintaining the cooperation

623. If the operators have incentives and sufficient opportunities for tacit coordination between them, it would be possible to maintain such cooperation over time. There must be credible retaliation mechanisms to ensure that the operators do not have incentives to deviate from the cooperation. Each member must be convinced that attempts at competition in order to increase their own market share will be countered by the other party, so that none of them will benefit.

624. Retaliation can take place in both the wholesale and retail markets. Retaliation may also take place in an adjoining market, or a market outside the affected retail and wholesale markets that are the basis for the SMP analysis, cf. item 77 of the SMP Guidelines. Retaliation can thus take place in many areas.

625. If one of the parties breaches the cooperation by granting access, including on sufficiently good terms, a possible retaliation mechanism might be to make a sufficiently attractive wholesale offer to other operators who either do not have an access agreement or have access under the other network owner. Telia and Telenor offer wholesale agreements that to a great extent can be viewed as comparable, but today there nonetheless seems to be some variation in how access buyers assess the two networks. The variations can be compensated for, however, with the help of price. This indicates that both parties will have the opportunity to retaliate against competition attempts from the other party.

626. On the other hand, in reality there are relatively few operators on the demand side, particularly of a certain size. Disregarding the restrictions set by the regulation concerning the lock-in period in wholesale agreements, it is likely that most existing access buyers would have been in wholesale agreements with a lock-in period. In addition, the threshold for changing network owner may be relatively high in some cases; cf. Chapter 5.6 of the analysis. The retaliation mechanism thereby loses some of its strength due to the fact that it can take a relatively long time before retaliation is actually possible. In such case, the lack of effective retaliation in the wholesale market will lead the operators to have incentives to deviate from tacit cooperation.

627. In the retail market, however, it will be possible to initiate retaliation mechanisms in the form of campaigns, for example. In such case, it can probably be assumed that both providers have the opportunity to respond with approximately the same type of offer. Reference is made to how both parties have previously responded to each other's offers in the residential market concerning free music streaming, "Roam Like At Home" before the international roaming regulations came into effect, and otherwise relatively similar subscriptions. End users, particularly in the residential market, have a short or no contract length for their subscriptions. This means that providers can offer campaigns in the course of a very short time. Any such retaliation could thereby relatively quickly be responded to by the other party and result in lower market prices and revenue for both providers. None of the providers is assumed to profit from such retaliation. The knowledge that deviations from the coordination can be subject to retaliation in a way that is in nobody's interest can thus weaken the incentives to deviate from the coordination.

628. In the business market, customers will often be bound by a certain agreement length and claims for breach fees, see Chapter 5.6. In addition, particularly in the business market there seems to be a preference for Telenor's network. In such case, for Telia this might mean that the certainty of possible retaliation in the business market would prevent them from deviating from the coordination. With regard to Telenor, the fear of retaliation in the business market will probably not be as strong.

629. It is thus somewhat uncertain whether sufficiently credible retaliation mechanisms exist that might prevent incentives to deviate from the coordination conditions. Retaliation in the wholesale market does not appear to be particularly effective, while retaliation in the retail market might presumably result in losses for both parties and thereby not give any incentives to break the coordination. It is thus uncertain whether the requirement for the cooperation to be maintained over time is fulfilled.

5.13.6 Threat from outside parties

630. The coordination must furthermore be permanent in the sense that outside operators may not be able to threaten the stability of the parallel market behaviour.

631. Ice is currently the only operator that in time will be able to challenge the established operators in the wholesale market on an independent basis. Enablers such as eRate can, to some extent, challenge the wholesale market, but nonetheless also themselves depend on access.

632. As described in the analysis, however, Ice will be dependent on national roaming during the next few years, and it will probably take time for any wholesale offer from Ice to be competitive with the established providers' offers. On the other hand, if both of the established providers refused wholesale access to their networks, it can be assumed that after some years Ice could make a sufficiently attractive wholesale offer. The timespan is uncertain, however, it could probably be assumed that Ice will be able to pose a threat to more permanent coordination.

5.13.7 Conclusion regarding joint SMP

633. The market development and current market conditions in Norway suggest that coordinated denial of access in the absolute sense is unlikely. Indirect denial of access in the form of unreasonable contract terms would therefore be more likely. Some factors may indicate that Telia is trying to adapt to Telenor's behaviour in the wholesale market, partly because access prices appear to follow Telenor's pricing. Nevertheless, there is still an

asymmetry between Telenor and Telia. Based on an assessment of what is economically rational, this makes it uncertain and points in a direction against both operators having incentives to engage in such tacit collusion. Tacit collusion based on the denial of access to reasonable terms will also be very challenging for the operators to monitor and possibly sanction in a timely manner. Nkom is of the view that it is uncertain whether any tacit collusion could be maintained over time.

634. On this basis, Nkom finds that there is insufficient evidence to claim that the economic test set out in the Airtours' criteria is fulfilled under current market conditions. Therefore, Nkom is of the view that there is not sufficient evidence to conclude that Telenor and Telia would consider it rational to permanently engage in tacit collusion to deny access.