



**Analysis of the wholesale market
for broadcasting transmission
services,
to deliver broadcast content to
end users**

28 September 2006

Contents

Summary and conclusion	4
1 Background and legal framework for the market analyses.....	7
1.1 Background.....	7
1.2 Legal framework for the market analysis	8
1.3 General - market definition.....	10
2 Description of the broadcasting market	12
2.1 Introduction.....	12
2.2 The broadcasting market.....	13
2.2.1 Developments in the market	13
2.2.2 Broadcasting legislation.....	13
2.2.3 Operators.....	15
2.2.4 The broadcasting networks in general	18
2.2.5 The terrestrial networks	22
2.2.6 Cable TV networks	25
2.2.7 Satellite	27
3 Further information regarding the definition of the relevant product market	28
3.1 Market definition in the Recommendation	28
3.2 Introduction to NPT's assessments.....	29
3.3 Boundary with the markets for leased lines.....	30
3.3.1 Contribution networks – Market 18 or the leased lines markets?.....	31
3.3.2 Feeder networks – Market 18 or the leased lines markets?	32
3.3.3 Trunk networks – Market 18 or the leased lines markets?	33
3.3.4 Access networks – Market 18 or the leased lines markets?.....	33
3.3.5 Conclusion	33
3.4 Boundary with ancillary technical broadcasting services.....	33
3.5 Boundary with content.....	34
3.6 Substitutability assessments.....	35
3.6.1 General.....	35
3.6.2 Substitutability on the services level.....	35
3.6.3 Substitutability between terrestrial networks and cable/satellite	36
3.6.4 Substitutability assessments in the terrestrial network	38
3.6.5 Substitutability between cable and satellite	48
3.6.6 Substitutability with other technologies.....	51
3.7 Conclusion – product definition.....	53
4 Definition of the relevant geographic market	54
4.1 General.....	54
4.2 Terrestrial networks	54
4.3 Cable TV	56
4.4 Satellite	56
5 Threshold for <i>ex ante</i> regulatory intervention	58
5.1 General.....	58
5.2 Transmission services for radio on terrestrial networks	59
5.2.1 The market for transmission services for local radio on terrestrial networks	59
5.2.2 The market for transmission services for national radio on terrestrial networks	60

5.2.2.3 Does the market have characteristics such that it will not sufficiently tend towards sustainable competition?	63
5.3 The market for transmission services for television on terrestrial networks	68
5.4 Transmission services on cable TV networks.....	77
6 Summary and conclusion	84
Appendix 1 Glossary	87
Appendix 2 Market definitions in other countries	89
Appendix 3 Cable TV	91
Appendix 4 Digital terrestrial network	93
Appendix 5 Telenor	95
Appendix 6 Norges Televisjon (NTV).....	97
Appendix 7 The frequency bands.....	99

Summary and conclusion

This document contains the market analysis that Norwegian Post and Telecommunications Authority (NPT) has carried out for what is considered the relevant national wholesale markets for broadcasting transmission services, to deliver broadcast content to end users.

Chapter 1 contains a description of the background and legal framework for the market analysis, whilst Chapter 2 provides a description of the market.

Chapter 3 assesses and defines the relevant product market. This definition is based on ESA's predefined product market. On the basis of assessments linked *inter alia* to demand- and supply-side substitution, NPT has concluded that the market must be divided into segments. This represents a deviation from the Recommendation.

Initially, NPT has divided the broadcasting market by technical platform into terrestrial networks, cable TV networks and satellite respectively. For all three of these platforms the product market is defined in a technologically neutral manner, covering therefore both digital and analogue transmissions. Other technical platforms that can be used for broadcasting transmissions, *inter alia* xDSL, optical fibre etc. have been evaluated but have not been found to constitute either separate markets, nor come under any of the other platforms.

Following further substitutability assessments, the terrestrial network has been split by specific services into radio and television respectively. A comparable division has not been made in the cable TV and satellite markets. For radio on terrestrial networks, a further division has been made between local and national transmissions. The television market is nationwide.

Broadcasting transmission can roughly be divided into four main types: contribution networks, feeder networks, trunk networks and access networks. It is NPT's opinion that only the access network is covered by Market 18.

It is also NPT's opinion that purchases and agreements on broadcast content fall outside the relevant market.

In line with current principles of competition law and with great emphasis on the Recommendation and the Guidelines, NPT has thus defined five relevant product markets:

- Transmission services for local radio on terrestrial networks
- Transmission services for national radio on terrestrial networks
- Transmission services for television on terrestrial networks
- Transmission services for radio and television on cable TV networks
- Transmission services for radio and television via satellite networks

A more specific definition of the broadcasting markets requires a geographic delimitation, cf. the Guidelines paragraph 57. Chapter 4 assesses the relevant geographic definition of each of the market segments. NPT has concluded that broadcasting transmission services via satellite is a transnational market. NPT does not have the power to regulate such markets. Consequently, the satellite market falls outside the further assessment of relevant national markets. The other four product markets are regarded as being national.

Since the division into market segments entails a departure from the Recommendation, chapter 5 specifically assesses whether there is a need for *ex ante* regulation in the four remaining market segments.

In accordance with the Recommendation, the following criteria should be met for a product market to qualify for sector-specific *ex ante* regulation in the electronic communications area:¹

1. There are structural or regulatory entry barriers in the relevant product market.
2. The market has characteristics such that it will not sufficiently tend towards effective competition.²
3. Ordinary competition law does not sufficiently address the objectives behind sector-specific regulation.

In assessing the final criterion, whether the potential competition problems in the market can be sufficiently handled by the provisions of the Competition Act, an appropriateness assessment is to be undertaken in which emphasis will be placed on the need for legal predictability, a detailed set of obligations and frequent and quick interventions. The options for regulatory interventions encompassed in ordinary competition law must be assessed in relation to any sector-specific *ex ante* regulation.

The three criteria are cumulative, i.e. all three criteria must be met to justify *ex ante* regulation.

NPT has assessed four market segments against the three *ex ante* criteria:

- Transmission services for local radio on terrestrial networks
- Transmission services for national radio on terrestrial networks
- Transmission services for television on terrestrial networks
- Transmission services for radio and television on cable TV networks

¹ Recommendation paragraph 12 and Explanatory Memorandum sections 3.2 and 3.3.

² Here the Recommendation uses the term “effective competition”, which may best be translated into Norwegian as “virksom konkurranse”. The Guidelines define this as a market in which operators with significant market power are absent, cf. chapter 19. Proposition No. 58 (2002-2003) to the Odelsting p. 99 states: “If none of the providers has significant market power then there is assumed to be sustainable competition in the market.” NPT therefore assumes that the terms will coincide for this purpose.

For local radio on terrestrial networks, NPT has found that already the first of the three cumulative criteria has not been met. Building their own infrastructure is a real alternative for local radio broadcasters.

In the markets for national radio and national television on terrestrial networks, NPT has concluded that both markets are characterised by high and non-transitory entry barriers, and that the markets do not have characteristics tending towards effective competition over the course of the next two to three years. The final *ex ante* criterion is a question of whether the potential competition problems in the market can be sufficiently handled by ordinary competition law.

In the markets for transmission services for both radio and television broadcasting, supplier and requesters are mutually dependent on each other. This has served to create stability in the bargaining situation between the parties over time. The markets have functioned well so far without *ex ante* regulation, and the operators have said that they want further development of both the radio and television market to be regulated by the market itself in line with commercial considerations. In NPT's view the market largely regulates itself, the contracts are long-term and the need for frequent intervention is nonexistent. Besides, the market can rely on ordinary competition law should intervention be requested.

On this basis NPT has concluded that competition law is a sufficient legal basis for protecting the interests that sector-specific *ex ante* regulation is meant to address in these markets.

Nor does the market for broadcasting transmission services on cable TV networks meet all the conditions for sector-specific *ex ante* regulation. There are assumed to be relatively high entry barriers in connection with the rollout of new cable networks, but in NPT's view the market is tending towards effective competition.

NPT has thus determined that none of the defined product markets for broadcasting transmission services meets the conditions for sector-specific *ex ante* regulation within the time perspective of this analysis. Such regulation shall therefore not be applied. Nor has further analysis been undertaken to assess whether an operator has significant market power in the respective markets.

1 Background and legal framework for the market analyses

1. This document contains the market analysis that Norwegian Post and Telecommunications Authority (NPT) has carried out on what is considered the relevant wholesale market for broadcasting transmission services, to deliver broadcast content to end users, in accordance with current electronic communication regulations. Both the product market and the geographical market are defined, and an assessment is made whether the individual market segments qualify for sector-specific *ex ante* regulation.
2. The first analysis of the market was circulated for consultation on 29 October 2004. NPT received responses to the consultation from BaneTele, the Norwegian Competition Authority, the Ministry of Culture and Church Affairs, Norges televisjon, Norsk Forbund for Lokal-TV (Norwegian local TV association), TDF Nordic, Telenor, TVNorge, TV2, UPC Norge and Viasat. Afterwards, a more precise market definition was circulated for separate consultation from 27 July to 7 September 2005.³ With the exception of UPC and Viasat, the same operators submitted feedback to this consultation as well. A completely updated analysis was circulated for consultation on 24 February 2006. The consultation closing date was 17 March 2006. NPT received eight responses to the consultation. A summary of the responses to the consultation are found in Appendix A.
3. Numbers and figures have been updated to reflect recent developments.
4. NPT's starting point is the 18 markets defined by the EFTA Surveillance Authority (hereinafter referred to as ESA) as relevant for sector-specific regulation, but has in the market for broadcasting transmission services found that national conditions warrant a change in the market definition.
5. However, the market and its analysis are not fixed once and for all, but will be subject to regular reassessments. In markets with frequent and comprehensive changes such reassessments will of course have to be carried out reasonably often. This analysis has a time horizon of two to three years. The market analysis is therefore limited in the extent to which it is forward-looking, cf. the Guidelines paragraph 20.

1.1 Background

6. In March 2002 the European Union (EU) adopted four new directives that are to provide the regulatory framework for electronic communication networks and electronic communication services in future. A fifth directive was also adopted in October 2002. The directives, which are relevant to the EEA, came into force with effect for Norway from 1 November 2004, from which date they were incorporated into the EEA Agreement and made applicable to the EEA. The five directives are:

- The Framework Directive - Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services;

³ The document and responses to the consultation are available at http://www.npt.no/portal/page?_pageid=121.47046&_dad=web&_schema=PORTAL&p_url=/pt_internet/venstremeny/hoeringer/hoering_hoved.html

- The Access Directive - Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities;
- The Authorisation Directive - Directive 2002/20/EC on the authorisation of electronic communications networks and services;
- The Universal Service Directive - Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services;
- The Privacy and Electronic Communications Directive - Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector.

7. The new regulatory framework is to lay the foundations for harmonisation of regulations in the EU/EEA, limit entry barriers and create conditions for sustainable competition for the benefit of users.

8. As described in the document "Methodology for Market Analysis"⁴ (the methodology document), the work on market analysis may be divided naturally into three phases:

1. Define relevant markets, by defining relevant product markets and geographic markets.
2. Undertake market analyses of each of the relevant markets, with the aim of uncovering whether some providers have significant market power.
3. Impose obligations on those providers identified as having significant market power.

9. This document contains NPT's assessment of the first phase.

1.2 Legal framework for the market analysis

10. In the context *inter alia* of the EU's five directives mentioned above, the Norwegian Storting (parliament) has passed the Electronic Communications Act⁵, which came into force on 25 July 2003. The Act's definition of significant market power is, in accordance with § 3-1, 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. Significant market power in one market may result in a provider having significant market power in a closely related market.

11. The term "significant market power" in the Act on Electronic Communications is very close to the competition law standard "dominance". It follows from Norway's

⁴ "Metode for markedsanalyse" (Methodology for Market Analysis) of 6 January 2005, prepared by NPT. The document is available at www.npt.no

⁵ The Electronic Communications Act, "Ekomloven", is available [currently not in English] at <http://www.lovdata.no/all/hl-20030704-083.html>. An unofficial version in English is available at www.npt.no

obligations under the EEA Agreement that identification of providers with significant market power is to be carried out in accordance with the guidelines and recommendations prepared by ESA under the new framework directive for electronic communication services:

- Guidelines on market analysis and the assessment of significant market power (hereinafter referred to as “the Guidelines”)⁶
- Recommendation on relevant markets (hereinafter referred to as “the Recommendation”)⁷

12. The documents are available on NPT’s website www.npt.no under the menu selection SMP.

13. In accordance with the Guidelines a market analysis is to provide the basis for the assessment of relevant markets and of significant market power and the assessment is to accord with competition law methodology. The Guidelines and the Recommendation, together with the provisions of the Act on Electronic Communications, especially §§ 3-1 to 3-3, will therefore form the legal framework for the market analysis. However, the Guidelines are not exhaustive and therefore in its methodology document NPT has elaborated on the criteria for the market analysis on certain points. If the Guidelines and the Recommendation are amended, NPT will amend this document accordingly. It is the current version of the methodology document that provides the basis for the market analyses that NPT undertakes.

14. In accordance with the Act on Electronic Communications, *ex ante* regulation of providers with significant market power is only to be used where this is necessary in order to achieve sustainable competition in the relevant or adjacent markets. In the Norwegian market regulatory obligations may only be imposed on operators with significant market power in those markets in which ESA or NPT has decided that sector-specific regulation is necessary. In each of these relevant markets NPT must assess the extent to which sustainable competition exists. Sustainable competition in this context means that there is no operator in the relevant market who, individually or jointly with others, has significant market power. See more about this under “General – market definition”, section 1.3.

15. The document “Methodology for Market Analysis” prepared by NPT (the methodology document) is not legally binding, but expresses NPT’s understanding of the guidelines to which NPT is obliged to adhere. The market analyses will therefore be carried out in accordance with the perceptions and assessments that are 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 yield.

16. The document “Methodology for Market Analysis” in no sense regulates the Norwegian Competition Authority’s assessments in accordance with the Competition Act. Even if NPT’s assessments in accordance with the methodology document will largely be based on competition law methodology, and will thus be closely aligned with ordinary competition law, NPT’s assessments will be motivated by the requirement for general *ex ante* regulation, whilst the competition authorities’ assessments are as a rule *ex post* in connection with actual cases. The Competition

⁶ EFTA Surveillance Authority Guidelines 14/07/2004

⁷ EFTA Surveillance Authority Recommendation 14 July 2004 with the Commission’s Explanatory Memorandum 2003/311/EC.

Authority's and NPT's assessments in accordance with the two sets of rules may therefore differ even within the same or overlapping markets.

1.3 General - market definition

17. As stated above, in regard to the market analyses, NPT must assess whether the markets defined by ESA suit Norwegian circumstances. A description and definition of the product market is to be given and the geographic market defined. Subsequently an assessment has to be made as to whether the market conditions are of such a nature that there is a need for sector-specific regulation.

1.3.1 The product market

18. The Recommendation states that the definition of the product market shall be based on an assessment of demand and supply-side substitution. A relevant product market is made up of products or services that are sufficiently substitutable for users.

19. Demand-side substitutability exists when two or more products in the market are, in the perception of the end user, mutually exchangeable or substitutable on the basis of characteristics, price and area of utilisation.

20. Supply-side substitutability exists when providers of other (non-substitutable) products, as a response to a small price change in the short term, can change their production or distribution and offer substitutable products without incurring significant additional costs or substantial risk.

21. An acknowledged method of analysing substitutability is the so-called "hypothetical monopolist test" (SSNIP)⁸, where one endeavours to find the best-defined market in which a hypothetical monopolist can exercise market power. The test is done on the basis of a small but significant (in practice 5-10 per cent) and non-transitory price increase for the relevant product, based on the assumed price level in a market with effective competition. All other prices are assumed to be unchanged. Then one assesses the effect of the price increase in the relevant market and assesses the total effect on the producer's revenue as a result of the price increase. The key objective is to determine whether such a price increase is profitable for the producer.

22. The Recommendation does not make use of the SSNIP test an absolute requirement in market definition for the market analyses. In any case, such a test by itself would not be decisive. The description of the SSNIP test in the Recommendation should be understood as a description of a procedure and a set of criteria for assessing market definition. In the individual analyses it will be natural and practical to base a definition on the terms and the procedure that the SSNIP test describes, even though the method cannot be used in its formal numerical form.

23. A further assessment criterion used in market definition is whether there are joint pricing constraints between different products. In such cases it can be expected that both the provider and those demanding the products largely view pricing of the products as one, and that it is therefore the total price that is significant for demand. Such joint pricing constraints can indicate that the products are in the same market, even though in principle neither demand nor supply-side substitution indicates this.

⁸ "Small but Significant Non-transitory Increase in Price". See the Guidelines, paragraph 40.

1.3.2 The geographic market

24. Once the relevant product markets are determined, the geographic market is defined. The outer geographic borders for the relevant product market will as a rule be determined by the extent of the network and the jurisdiction of the legal regulation of the market. The extent to which a more detailed geographic definition of the market has to be carried out will rest on an assessment of the substitutability of the relevant products and services on the supply and the demand side, with a non-transitory, small but significant price increase as described above.

25. The relevant geographic market is that area in which the relevant products and services are provided on sufficiently similar or homogeneous competitive terms. In assessment of substitutability on the demand side one should take account of preferences and geographic purchase patterns, if such information is available. With this as the basis the markets can be defined regionally within the national frontiers, nationally or transnationally. NPT can only define regional or national markets.

26. Assessment of the relevant geographic market will be somewhat different depending on whether the assessment is made *ex post* or *ex ante*. A definition of geographic markets *ex ante* must inevitably have a wider basis and a more general approach than is taken with a definition *ex post*. An *ex post* definition is based on an actual event the extent of the effects of which one can chart, whilst the forward-looking assessment must be based to some extent on different circumstances. This will therefore also characterise the scope of the assessment of the relevant geographic market.

27. In accordance with the Electronic Communications Act, § 1-3, cf. Regulation No. 882 of 4 July 2003, the Electronic Communications Act applies to Svalbard, Jan Mayen, the dependencies and Antarctica. As far as Svalbard is concerned, exemptions have been made for chapter 3 (significant market power), chapter 4 (access) and § 9-3 (consultation procedure). However, electronic communications on Jan Mayen, the dependencies and Antarctica are assumed to have very little significance for the market analyses NPT carries out in accordance with the Electronic Communications Act.

1.3.3 Definition of divergent relevant product markets/additional criteria

28. It may become relevant to define markets that diverge from those markets that have previously been defined in the Recommendation. If a divergent product market is defined the following additional criteria, in accordance with the Recommendation's Explanatory Memorandum section 3.3 of the Explanatory Memorandum, are to be present for the market to qualify for sector-specific *ex ante* regulation in the electronic communications area:

1. There are structural or regulatory entry barriers in the relevant product market.
2. The market has characteristics such that it will not sufficiently tend towards sustainable competition.⁹

⁹ Here the Recommendation uses the term "effective competition", which may best be translated into Norwegian as "virksom konkurranse". The Guidelines define this as a market in which operators with significant market power are absent, cf. paragraph 19. Proposition No. 58 (2002-2003) to the Odelsting p. 99 states: "If none of the providers has significant market power then there is assumed to be

3. Ordinary competition law does not sufficiently address the objectives behind sector-specific regulation.

2 Description of the broadcasting market

2.1 Introduction

29. The convergence of the telecom, media and IT sectors means that all transmission networks and services should be covered by a common regulatory framework. ESA has therefore recommended that broadcasting transmission services, too, are to be considered a relevant market.

30. This product market corresponds to Market 18 in ESA's Recommendation:

The wholesale market for broadcasting transmission services, to deliver broadcast content to end users.

31. In the Broadcasting Act § 1-1 first paragraph, broadcasting is defined as follows:

Broadcasting shall mean the transmission of speech, music, images and the like over the air or by wire, intended or suitable for direct and simultaneous reception by the public.

32. Although there are no legal definitions of broadcasting transmission services, transmission capacity in general is defined in Electronic Communications Act § 1-5 subsection 6 as:

Electronic communications service in the form of permanently established capacity for transfer of signals as an input factor for service production or as transmission between different geographic addresses for end users.

33. Broadcasting transmission services can be realised using different technologies and via different transmission media, such as satellite, terrestrial networks and cable TV networks.

34. Broadcasters can obtain access to the physical infrastructure, either through a direct agreement with the provider of transmission capacity or indirectly through an agreement with a distributor. The key element of the market that ESA has defined is the demand for access to physical infrastructure and transmission platforms to distribute their content.

35. Demand for broadcasting transmission services comes from both broadcasters such as the Norwegian Broadcasting Corporation (NRK) and TV2, and distributors of broadcast content such as ViaSat, Canal Digital, Canal Digital Kabel-TV (subsequently abbreviated as CDK) and United Pan-Europe Communications Norge AS (UPC).

36. Since the market is defined *ipso facto* as a wholesale market, broadcasters and pure-play distributors (i.e. those who purchase transmission services to transmit

sustainable competition in the market." NPT therefore assumes that the terms will coincide for this purpose.

programmes to their end users) will be wholesale customers, and thus not subject to regulation within this market (cf. Figure 1 in section 2.2.3). Relevant operators that may be regulated in this market are those that own or control infrastructure for transmitting broadcast content.

2.2 The broadcasting market

2.2.1 Developments in the market

37. The scope of broadcasting sector regulation has historically been justified by the fact that access to frequency resources is limited. Originally, television and radio (audio broadcasting)¹⁰ were broadcast exclusively over terrestrial, wireless transmitter networks. Eventually, cable TV networks were constructed, primarily to retransmit channels from neighbouring countries.

38. Early in the 1980s developments in satellite technology led to a significant rise in the number of available radio and television programme services. This led to a proliferation of commercial broadcasters all over Europe. They based their services in part on transmission of signals to end users' satellite dishes and in part on transmission to cable TV networks for further distribution to end users. The distribution companies normally encrypt the broadcasts, so that broadcasts can only be received by users with a decoder.

39. Towards the end of the 1980s, technologies were developed for digital broadcasting, both for radio and television. Due to digital technology's quality and cost advantages over analogue broadcasting the entire sector will eventually be digitised. The Storting has decided that there is to be built a digital terrestrial network for television in Norway, and to gradually phase out analogue broadcasts.

40. Governments have historically considered limited frequency resources a justification for regulating the content of radio and TV channels. In the early years of broadcasting, frequencies were reserved for publicly-owned broadcasters. In Norway, NRK had a statutory monopoly to engage in broadcasting. Eventually policymakers expressed a desire for greater diversity on the air. Commercial broadcasters who have obtained access to limited frequency resources are subject to public service broadcasting requirements, i.e. their broadcasts shall be received by the entire population, contain a varied menu of programming offering something for everyone and generally help to strengthen the Norwegian language, identity and culture.

2.2.2 Broadcasting legislation

41. Broadcasting activities are regulated by Act No. 127 of 4 December 1992 relating to broadcasting (the Broadcasting Act). With the exception of NRK, all broadcasters must have a licence from the Ministry of Culture and Church Affairs or the Norwegian Media Authority in order to engage in broadcasting, cf. the Broadcasting Act § 2-1. State-owned NRK is directly authorised by law to engage in broadcasting, cf. § 2-1 first paragraph. The licences issued for national broadcasting require the holders to serve the general public.

¹⁰ Radio communication actually includes both sound, television and other types of transmission. Broadcasting as a radio service is therefore a broader term than the programmes and services that the broadcasters transmit. For the sake of simplicity, "radio" will be used in this analysis for the concept of audio broadcasting.

42. Pursuant to the Broadcasting Act § 2-2 a licence is also required to construct or operate a wireless terrestrial network that is primarily to be used for broadcasting.
43. The Broadcasting Act distinguishes between national broadcasting (national networks) and local broadcasting (local networks).
44. National networks: Today, three analogue networks are in operation for national television, on which NRK1, NRK2 and TV2 are distributed. Five networks for national FM broadcasting are in operation: in addition to P4 and Kanal24, NRK has three networks. One of NRK's FM networks is used during parts of the day for regional programming. In addition, temporary frequency licences have been issued for a national digital network for radio based on DAB (Digital Audio Broadcasting).¹¹ The capacity on the DAB network is divided among three broadcasters, so that P4 has one share at its disposal, Radio 2 Digital¹² one share and NRK three shares.
45. Local networks: As of 1 January 2004, 23 licences for local television have been issued divided among the same number of licence areas.¹³ In addition, frequency resources have been set aside for a further six areas where there are currently no broadcasters interested. TVNorge broadcasts its local programming partially via other local TV channel networks.¹⁴ Frequency licences have been allocated to 148 local radio networks, where 267 licensees share broadcasting time.¹⁵ NRK also uses 64 local frequency licences to distribute programme services of the type Alltid Nyheter (24-hour news), Alltid Klassisk (24-hour classical music), Storting (24-hour public affairs and parliamentary debate), MP3 (popular music) and Sámi Radio (radio in the Saami language). A provisional licence has been granted to NRK in the Oslo region for regional DAB.
46. According to its licence, TV2 is obliged to carry its broadcasts via terrestrial networks (at least this applies to the current analogue network). NRK is also obliged to transmit its broadcasts on terrestrial networks.
47. Furthermore, the Broadcasting Act contains provisions obligating the cable TV networks to carry NRK1, NRK2, TV2 and local television, cf. the Broadcasting Act § 4-3.
48. According to the Regulation relating to television receivers¹⁶ § 1, everyone who has a television receiver or video player with a tuner must pay a licence fee (TV licence). This fee is to be paid annually whether one owns, borrows or rents a television receiver. The licence fee is determined each year by the Storting, and the fee goes in its entirety to NRK.
49. Thus, the licence fee is connected with the fact of having a television set, and not with the manner in which one receives broadcasts (cable, satellite or terrestrial networks). Hence, those opting for cable or satellite must pay both a licence fee and subscription fees etc. to the cable and/or satellite operator.

¹¹ DAB is an abbreviation for Digital Audio Broadcasting. For DAB on terrestrial networks, the formal term is T-DAB; Terrestrial DAB

¹² More information about the company can be found at <http://www.radio2.no/>.

¹³ Cf. Regulation No. 769 of 25 August 1995 relating to licence areas for analogue local television

¹⁴ TVNorge's national broadcasts are distributed via satellite and cable, whilst its local programming is also transmitted via terrestrial networks.

¹⁵ Cf. Regulation No. 1004 of 10 October 2000 relating to licence areas for local radio

¹⁶ Regulation No. 8798 of 23 October 1980 on television receivers.

2.2.3 Operators

Main categories of operators

50. A broadcaster wishing to deliver broadcast content to end users in Norway may obtain such transmission services from several providers and over different platforms (terrestrial networks, cable and satellite). The choice of provider is based on a number of factors, including:

- coverage and penetration
- technical aspects, including the degree of digitisation
- capacity availability and limitations
- regulatory requirements and restrictions, and
- cost differentials and revenue impact of acquiring transmission over different platforms

51. Broadcasters are usually present on several platforms at the same time. The decision as to whether or not a given broadcaster is to be transmitted on a certain platform may in certain cases be dictated by “must carry” obligations. In the absence of “must carry” obligations, the broadcaster itself decide whether the programmes are to be transmitted over a specific platform. This decision is based on the number of end users the broadcaster wants to reach compared with the costs/revenues involved in reaching these extra viewers. In satellite TV, for example, there are cases of exclusive agreements between broadcasters and distributors.¹⁷ Through such agreements, broadcasters can collect large revenues from the distributors. Those who offer the most popular programmes will also be able to make themselves attractive as an advertising channel.

¹⁷ There are exclusive agreements between TV2 and Canal Digital, and between Viasat and TV3.

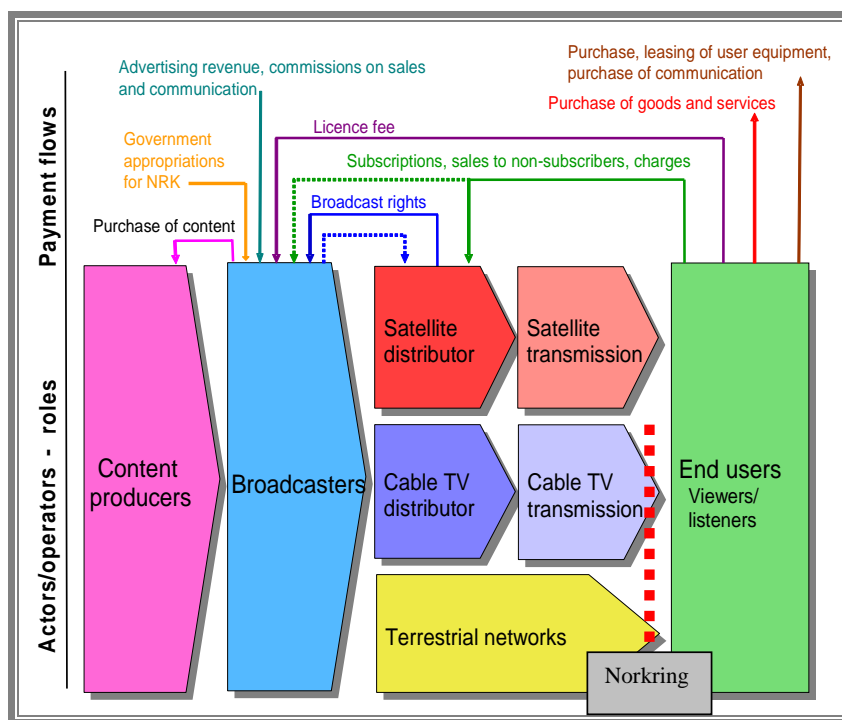


Figure 1: Overview of operators in the broadcasting market
(Source: NPT)

52. As can be seen in Figure 1, the broadcasting market consists of the following main categories of partakers:

- **Content producers** (such as movie companies and television and radio production companies).
- **Broadcasters** (NRK, TV2, etc.)
- **Providers of transmission capacity** (owners of infrastructure, e.g. cable TV network owners, such as CDK and UPC, owners of satellite transponder capacity, such as Telenor Satellite Networks and Nordic Satellite AB (NSAB), and Norkring as the owner of analogue terrestrial networks. In future NTV will offer transmission services on digital terrestrial networks).
- **Distributors** (companies that distribute broadcast programming by subscription agreements out to viewers, such as e.g. CDK and UPC on cable TV networks and Canal Digital and Viasat on satellite).
- **End users** (viewers and listeners).

53. The relationship between the various partakers can be briefly explained as follows: the broadcasters' programming most often consists of content produced in-house as well as content purchased from other content producers. To get their content distributed out to the end users, broadcasters have to contract directly with providers of transmission capacity or with a distributor of broadcast content. NRK's and TV2's agreements with Norkring for the distribution of their broadcasts on analogue

terrestrial networks can serve as examples of agreements between broadcasters and providers of transmission capacity.

54. To be distributed on cable and satellite, broadcasters have to contract with distributors. For cable distribution, broadcasters enter into agreements with CDK and/or UPC, for example, whilst for distribution via satellite, they sign agreements with Viasat and/or Canal Digital. Norwegian broadcasters will generally not pay to be distributed via cable or satellite. However, some foreign broadcasters pay to be distributed in these ways, but in the vast majority of instances, the distributors pay for the right to carry the various channels. The distributors cover their expenses through payment from end users. In cases with a direct customer relationship between broadcaster and supplier of satellite transmission it nevertheless happens that the broadcaster pays for the transmission. In this connection, the satellite signal is not used for transmission to private homes, but to feed transmitters on terrestrial networks.

55. If they do not own their own infrastructure, distributors must lease it from others. CDK and UPC own the necessary infrastructure and thus play a combined role as provider of infrastructure and distributor. Distributors in the satellite market must lease capacity from others. Canal Digital leases transponder capacity¹⁸ from Telenor Satellite Broadcasting, whilst Viasat leases transponder capacity from NSAB¹⁹.

56. By carrying broadcasting via cable and satellite, it is the distributors that have the direct contractual relationship with the end users and that charge for the delivery of content. On terrestrial networks there are as of today no distributors, and end users do not have to pay extra (over and above the licence fee) to receive content. This will change when the digital terrestrial network is rolled out and pay TV services will also be offered via digital terrestrial networks (Digital Terrestrial Television, DTT). However, NRK's public-service broadcasting will be free also on the digital terrestrial network.²⁰

*Norges televisjon AS (NTV)*²¹

57. In connection with the advertising of the frequency licence and licence for rolling out and operating a digital terrestrial television (DTT) network, a new operator arrived on the scene in the broadcasting market: Norges televisjon AS (NTV). NTV was formed in 2002 in connection with the first advertising of frequencies for digital terrestrial television networks. To begin with, NTV was equally owned by NRK and TV2, but in 2005 Telenor Broadcast also became part-owner. The three each now own one-third of the company. NTV was the sole applicant for a licence to roll out and operate a DTT network in Norway. On 1 June 2006, NTV was awarded the licence, and has now completed negotiating the final licence terms and conditions.

¹⁸ A transponder is equipment on communications satellites, i.e. an electronic circuit that receives, amplifies and changes the carrier frequency into a signal and finally transmits it back to earth.

¹⁹ Nordic Satellite AB owns and operates two Sirius satellites that cover the Nordic and Baltic regions and Eastern and Central Europe.

²⁰ NTV's licence application of 1 October 2005, p. 13, states that NRK's public-service channels (NRK1, NRK2, regional broadcasts and deaf interpreter service) shall be freely available on the digital terrestrial network. In an additional agreement when the license was awarded it was decided that TV2 shall be distributed free on the terrestrial network until the end of 2009.

²¹ Otherwise see Appendix 6.

58. Beside NTV a separate company, NTV Pluss, which is also equally owned by NRK, TV2 and Telenor, has been established. This company will be responsible for operating pay TV on DTT.²² NTV Pluss will thus be NTV's customer and purchase transmission capacity on the terrestrial network.

59. NTV will lease the transmission network from Norkring. NTV has signed a contract with Norkring as supplier of the transmitter network. The agreement covers rollout and operation for 15 years. As early as 2004 NTV considered Norkring to be the best candidate for such a rollout of DTT in Norway. Both technical discussions and negotiations have been taking place with Norkring for a long time.

60. The licence application pointed out that the two NTV companies are to be independent of each other, and that negotiations with infrastructure owners, other pay TV operators and broadcasters shall be conducted at arm's length. The promise has been made that none of the three owners of NTV shall be favoured in areas where they may sit on both sides of the negotiating table. This will for instance apply to Telenor as owner of Norkring, or NRK and MTG as owner of the new pay channel SportN and potential party in negotiations for access to the pay TV platform.

61. With NTV as holder of the DTT licence, Telenor is involved as a provider of infrastructure through Norkring, a provider of transmission services through NTV and as a distributor through NTV Pluss. NRK and TV2 will have roles as content producers, broadcasters, providers of transmission services and distributors. Both NTV as a constellation and the three parties will thus each obtain very significant positions in the Norwegian broadcasting market. As shown above, the circumstance that an operator is present in several parts of the chain is however also the case in both satellite and cable, but none of the operators there can be said to be spreading their activities as widely as the NTV partners. One of the major differences being the fact that in NTV the broadcasters are also involved in the company.

62. In connection with this analysis NTV is a party on the demand side. Therefore, the company is not a potential subject for regulation pursuant to the rules in the Electronic Communications Act which requires a significant market power assessment, cf. Electronic Communications Act chapter 3. On the other hand, as a provider of transmission services on the digital terrestrial network, NTV may be regulated under the Electronic Communications Act § 4-3. This provision establishes that as a possible provider of access control services, NTV shall meet reasonable requests for access from other operators, whether they be pay TV providers or individual broadcasters. Obligations according to this provision do not require analysis and identification of operators with significant market power.

2.2.4 The broadcasting networks in general

63. Today, end users can receive radio and television via terrestrial networks, cable or satellite. There are approximately 2.1 million households in Norway.²³ The breakdown of the number of households who use cable TV, satellite or terrestrial networks as their primary source for receiving television broadcasts is shown in Table 1.

²²Source: NTV's licence application

²³ Cf. data from Statistics Norway: The Income Distribution Survey for households in 2002 showed about 2.1 million households in Norway. The definition of a household is that people live together and have shared finances. It is important to note that students living away from home are considered to be separate households.

	Cable TV	Satellite	Terrestrial networks
Actual coverage of households	42 %	30 %	28 %
Theoretical coverage of households	65 %	85-90 %	NRK1 99.8 % TV2 90 % NRK2 52 %

Table 1: Breakdown of households by primary source for receiving television broadcasts as of 2004 (Source: NPT and Statistics Norway, Norwegian Media Barometer 2004)

64. Traditional broadcasting transmission can roughly be divided into four main types:

- Transmission between production sites (contribution networks)
- Transmission for feeding signals to transmitter station (feeder networks)
- Transmission for relaying signals between main transmitters (on cable TV networks from the head end to local node)
- Transmission for distribution to end users (access network)

65. The actual infrastructure of the broadcasting networks can be presented schematically in the following manner:

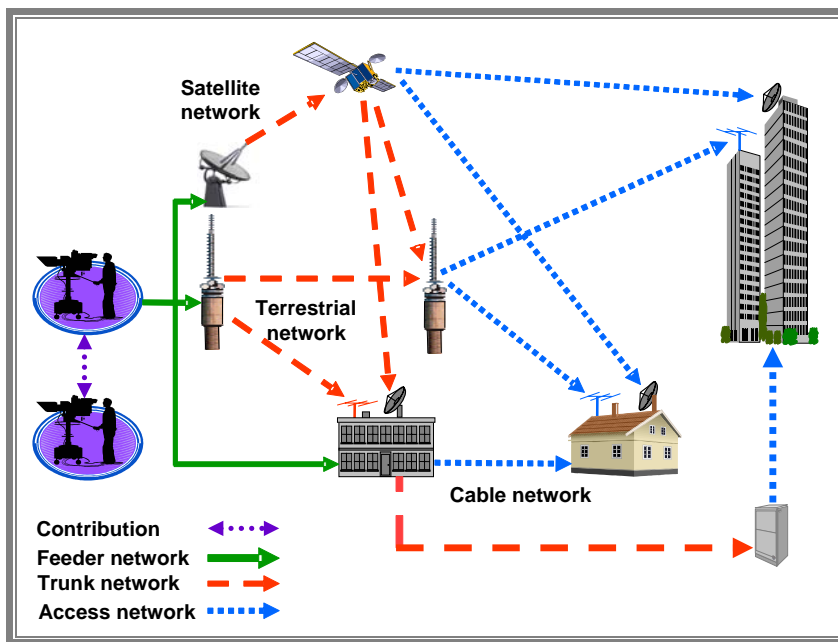


Figure 2: Schematic presentation of the infrastructure for broadcasting transmission

(Source: NPT)

66. *Contribution network* means the part of the network where broadcast content is carried for instance between recording/production sites and studio.

67. The *feeder network* is understood to be the portion of the network that runs from the broadcaster out to the first connection point in a transmitter network or trunk network (terrestrial antenna, satellite earth station or connection to a cable TV network). Feeder networks can be realised using various technologies, usually fibre or radio relay links.

68. The *trunk network* is understood to be the portion of the network where signals are carried between the first connection point with the broadcaster up to the interface with the access networks. On cable TV networks this can be the portion of the network between the point where the signals are received (for example from a satellite) and out into the network to a node for the access network. The trunk network usually has high capacity and may consist of fibre or a combination of fibre and radio relay links.

69. The *access network* is understood to be the last portion of the network out to the end user. In a broadcasting context such networks are usually called distribution networks. The access portion of the broadcasting networks (distribution network) is based on a satellite connection, terrestrial networks (ground-based radio transmitters) or cable TV networks. Technological developments have meant that other technologies as well may be used for broadcasting. A more detailed description of these will be given in section 3.6.6. On cable TV networks, access networks will vary from large (user-owned) networks with several thousand connections to single branchings with just a few connections and extend to the outlet in the end user's wall.

On the terrestrial networks, the access network consists of masts and related transmission equipment (see section 2.2.5.2).

70. Traditionally there has been separate infrastructure for the telecom and broadcasting networks, especially the access networks (distribution networks). In recent years, however, cable TV networks have been utilised also for Internet and telephony. On the feeder, trunk and contribution networks, the infrastructure may be used both for telecommunication and broadcasting.

71. The feeder networks and trunk networks are largely digitised. Since 15 October 2003, satellite-based broadcasting has been completely digitised, both in the transponders and when received by end users. The access portion of the cable TV networks transmits both digital and analogue signals, but cable TV networks with narrow bandwidth normally carry only analogue signals. The terrestrial broadcasting network is also facing a changeover from analogue to digital technology. Digitisation provides a substantial increase in transmission capacity in the physical infrastructure. It is expected that in a few years the entire value chain in the television market, except for the television sets, will be completely digitised. This means that production, distribution and reception of television signals will take place digitally.

72. Norkring has begun to roll out a national and a regional digital terrestrial network for radio, DAB (cf. section 2.2.2). The national network covers about 70 per cent of the households in Norway, and this network transmits programmes from NRK²⁴, P4 and Radio 2 Digital. The regional DAB network, which covers the Oslofjord region, currently transmits only NRK's local programming²⁵.

²⁴ NRK transmits the following channels digitally: P1, P2, P3, mPetre, Alltid Nyheter, Alltid Klassisk, Stortinget, Alltid Folkemusikk and Sámi Radio

²⁵ NRK Østfold, NRK Østlandssendinga, NRK Buskerud, NRK Telemark, NRK Vestfold, Stortinget and NRK met.OSLOFJORD

2.2.5 The terrestrial networks

2.2.5.1 Introduction

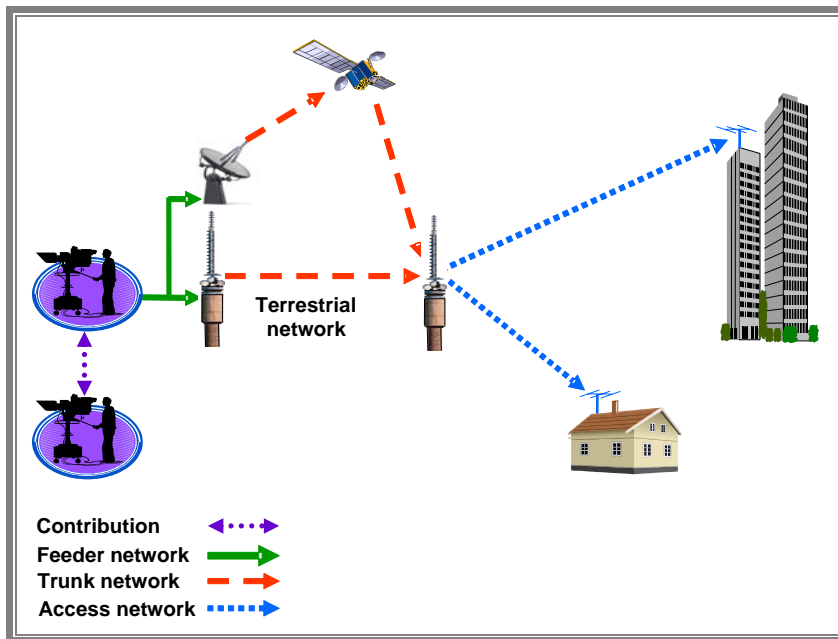


Figure 3: Schematic presentation of the infrastructure for broadcasting transmission via terrestrial networks
(Source: NPT)

73. The feeder network on the terrestrial networks consists of a radio link or fibre running to the main transmitter (for example Tryvann) or up to the earth station (for example Nittedal). From this point the signals are relayed through a trunk network, either via terrestrial main transmitters or via satellite, out to transmitters where the signals are relayed to end users via distribution/access networks.

74. The terrestrial networks currently comprise *inter alia* three transmitter networks for distribution of television content (cf. section 2.2.2). To transmit feeds from the television channel NRK1 to analogue terrestrial networks, radio relay links and fibre are used. The transmitter networks used to transmit NRK2's and TV2's broadcasts are primarily fed via satellite.

75. Norkring AS (Norkring) is, in practice, the only provider of transmission capacity²⁶ on terrestrial networks. Norkring is a wholly owned subsidiary of Telenor. Since several companies within the Telenor group are discussed in this document, the company name Norkring will be used for the sake of simplicity.

76. With regard to television, only NRK1 and TV2 have near national distribution solely via terrestrial networks. NRK1 has an estimated theoretical coverage of 99.8 per cent of households, whilst TV2 has an estimated theoretical coverage of about 90 per cent. Correspondingly, the estimated theoretical coverage of NRK2 is 52 per cent of households.

²⁶ Norkring provides transmission capacity in the product areas analogue national and regional/local terrestrial broadcasting of television and radio. Otherwise see Appendix 5 Telenor.

77. The main reasons that NRK and TV2 are broadcast on the terrestrial networks are that NRK previously owned these networks, and the coverage requirements stipulated in the licence. Without using terrestrial networks, NRK and TV2 would not have met these coverage obligations.

78. End users receive signals from analogue terrestrial networks via an ordinary roof/indoor aerial. There are no costs directly connected with receiving such signals aside from the licence fee paid to NRK. The cost of buying the necessary aerial is normally under NOK 400.

79. The existing analogue terrestrial networks function as a direct distribution channel for the broadcasters. Unlike with satellite networks and cable TV networks, there is no separate operator that packages, markets and sells content on analogue terrestrial networks to end users.

80. However, this will change as the digital terrestrial networks are rolled out and brought on stream. The increased capacity provided by digitisation makes it possible to offer more channels on the terrestrial networks. It is natural to envision programme package distributors seeking to offer services to end users over this network. Such a content provider would in that instance request capacity from the network owner, or the party having the use of the network. With NTV as licence holder, NTV Pluss, as the only programme package distributor, will request capacity from NTV until the shutdown of analogue services.

2.2.5.2 The technical structure of the access network

81. The terrestrial network in Norway consists of about 6,500 transmitters divided among 47 main transmitter stations and 2,700 smaller stations. The large main transmitter stations are situated on mountain tops around the country and contain transmitters for both radio and television. It is these main transmitter stations that receive the radio and television signals from broadcasters, and relay them to other main transmitters, smaller transmitters (repeaters) or direct to the public. At the main transmitter stations the actual antenna mast will usually be divided into several sections with antennas for transmitting signal packages on the UHF band placed at the top (for the TV2, NRK2, TVNorge channels and local television). The antennas for transmitting on the VHF bands will be placed below (for NRK1 and for the radio channels P1, P2, P3, P4, Kanal 24, Alltid Klassisk, Alltid Nyheter, Radio 1 and NRJ). Today, 2,735 transmitting sites are used to transmit NRK1 to 99.8 per cent of households. TV2 uses 450 transmitting sites to reach about 90 per cent of the households.

82. With a division of the terrestrial network's access part into its different components, the essential parts of the equipment will be the actual antennas, feeder system, combiner, transmitters and receiver equipment, all connected together by a variety of cabling. The equipment may be placed on the actual antenna mast or in equipment rooms on the ground (see Figure 4). Electricity, ventilation etc. will also be necessary.

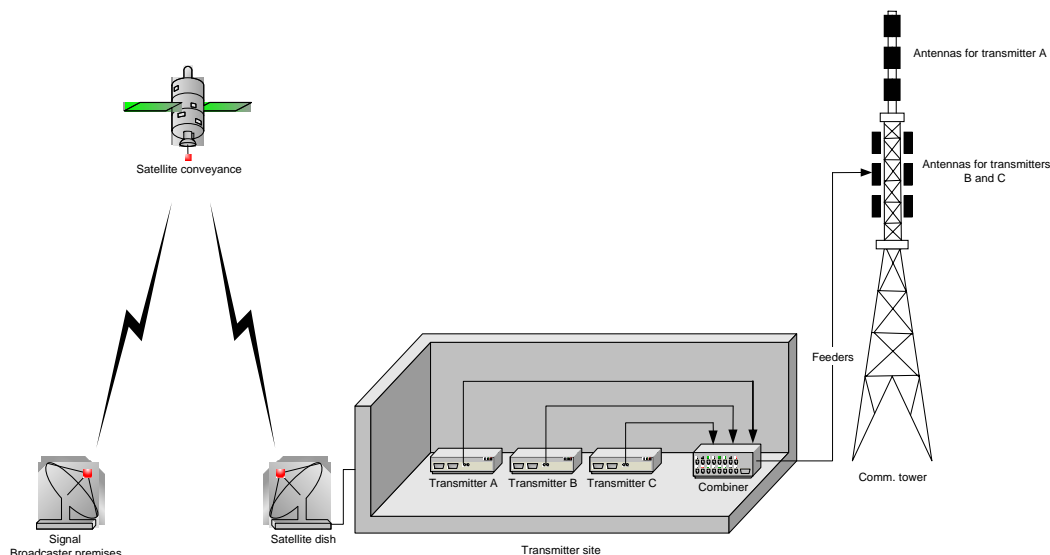


Figure 4. Technical components of the terrestrial network.
(Source: NPT)

83. The broadcasting signals are fed either by radio relay link, satellite or fibre cable (the above illustration shows satellite). The signals are carried to transmitters. The transmitters are technology and service specific. NPT has learned that in principle the other components may be divided in the sense that they can be used for both analogue and digital transmissions. Such a division can also largely take place simultaneously (parallel transmission). Since the frequencies allocated in connection with the licence for digital terrestrial television networks (470-790 MHz) are on the UHF band, it will in practice be the UHF antenna that can be used for parallel transmission.

84. The signals have to be transmitted through a combiner before they can be fed to the antenna system. Access to antennas therefore also requires access to the combiner. In the combiner, the various signals of the television channels are combined for a single transmission, while retaining at the same time a sufficiently high degree of separation between the signals. From the combiner the signals are relayed through the feeder system up to the antenna, and then aired. For digital broadcasting, the television channels' signals will already be compressed and multiplexed before they reach the transmitter.²⁷ In this manner, the use of combiners increases the efficiency of the antennas.

85. It is NPT's view that the terrestrial network's access network covers all the technical components that are necessary for achieving the final transmission of broadcast content to end users. This will cover everything from receiver equipment for the interface against the feeder network/trunk network to the antenna on the mast that transmits the signals to air to enable the end user to receive the television

²⁷ With multiplexing (MUX) two or more television channel signals are combined into one joint bitstream by using hardware called a multiplexer (or MUX). A multiplex describes the block of data that all together is carried by a single bit-stream.

transmissions with his/her end user equipment. The proviso being that this technical limitation may also cover infrastructure and technical components not specifically mentioned above.

2.2.6 Cable TV networks

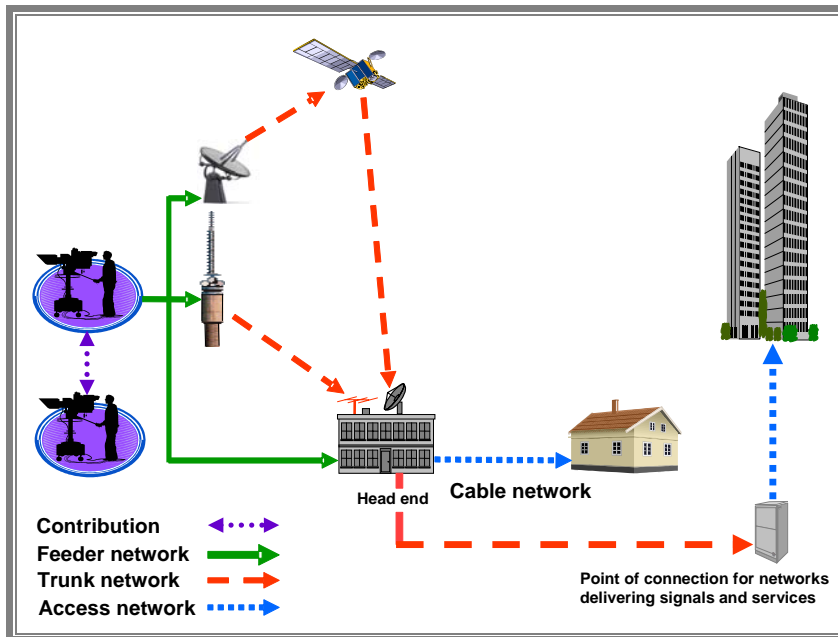


Figure 5: Schematic presentation of the infrastructure for broadcasting transmission via cable TV networks
(Source: NPT)

86. Broadcasting signals for cable TV networks are largely received from satellites and terrestrial networks to what is called a head end in Figure 5. In instances where cable TV networks receive the signal from a satellite, the cable network owner has agreements with the satellite distributor or broadcasters for the retransmission of signals and the cable network owner pays for this retransmission. However, there is also a growing number of local programmes that are fed exclusively via cable, in which there is a direct connection between the production site/studio and the cable TV network.

87. Furthermore, cable TV networks in Norway can be roughly divided into two main categories. One category is cable TV networks owned by housing cooperatives or housing associations. Depending on the size of these cooperatives, these networks can consist of both trunk and access networks. The user-owned networks will then negotiate with distributors of broadcasting to carry broadcasting content to residents. If they choose to contract with a cable TV distributor, the distributor will connect to the user-owned cable TV network's point of connection (see Figure 5). Since such user-owned networks are private electronic communications networks pursuant to Electronic Communications Act § 9-1, final sentence, they are subject to another type of regulation than public access networks. The other main category is cable TV networks where also the access network out to each individual household is owned by distributors. These networks are public communications networks.

88. The access portion of cable TV networks will consist partly of private networks, which are not the subject of regulation relating to significant market power, and partly of public access networks owned by cable TV companies. As Figure 5 shows, the trunk network constitutes the portion of the cable TV network running from the head end to the connection point of the private network and the transmission via satellite or terrestrial network to the head end.

89. Current cable TV networks cover approximately 65 per cent of Norwegian households, cf. Table 1. As of 2004 around 42 per cent of Norwegian households subscribed to cable TV.²⁸ The building of cable TV networks involves substantial investment in infrastructure and is therefore profitable only when the number of connections is sufficiently high within a limited area. Cable TV networks are therefore most relevant in areas with relatively high population densities.

90. The market for distribution of cable TV in Norway is dominated by CDK²⁹ and UPC, which together have approximately 80 per cent of the cable subscribers. All together there are approximately 9,000 cable TV networks in Norway. A number of these are very small and not commercially operated. See Appendix 3 for more detailed information about the cable TV market and other operators in this market.

91. Cable TV networks have, at the outset, high bandwidth, and will therefore be well suited to providing a range of other services if the networks are adapted to two-way traffic.³⁰

92. CDK and UPC currently produce transmission capacity only for their own use. The cable companies base their business model on relaying broadcasting signals through the cable TV network to their own end users.

93. The end users purchase an integrated package including both access to the network and a content package. The content of the package (broadcast channels, interactive services etc.) may vary somewhat depending on the capacity of the network, different business concepts and contracts entered into between the parties.

²⁸ Source Statistics Norway, Norwegian Media Barometer 2004.

²⁹ See Appendix 5 about Telenor

³⁰ UPC offers telephony and high-speed Internet that largely corresponds to competitors with xDSL technology on the fixed telephone network. Although CDK does not offer telephony, it offers similar Internet solutions to many of its customers.

2.2.7 Satellite

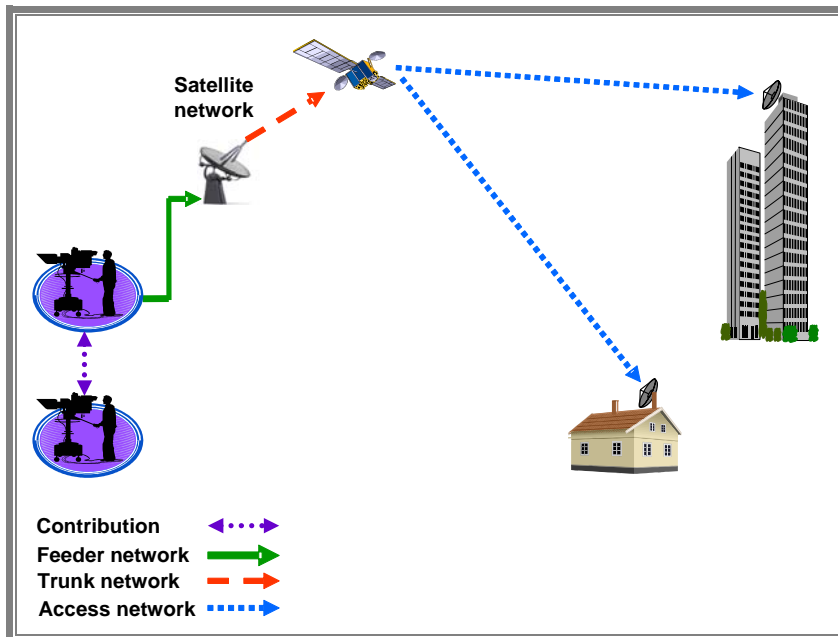


Figure 6: Schematic presentation of the infrastructure for broadcasting transmission via satellite (Source: NPT)

94. On satellite networks, broadcast content is carried via earth stations and satellite out to customers. The feeder network consists of infrastructure (fibre or radio relay link) out to the earth station. The trunk portion of the satellite network consists of the segment from the earth station and up to the satellite.

95. On the access side, a satellite-based broadcasting network is a one-way network that transmits signals from the transponders on the satellites to private cable TV networks (including SMATV³¹) and to private households that have a satellite receiver (dish). The satellite network can reach approximately 85-90 per cent of Norwegian households, cf. Table 1. As of 2004, approximately 30 per cent of Norwegian households received television broadcasts via satellite.³²

96. Since all satellite distribution (i.e. in access networks out to end users and in the trunk network to cable TV networks etc.) now takes place digitally, end users need a decoder. The decoders currently on the Norwegian market have a built-in return path that can be connected to the telephone network, thereby facilitating interactive services.

97. SES Astra, Telenor Satellite Broadcasting, NSAB, Intelsat, Eutelsat and others offer satellite capacity covering *inter alia* Norway. NSAB and Telenor have the satellites that are most attractive for broadcasters in the Norwegian market, since the two distributors that package programmes for retransmission via satellite in Norway –

³¹ SMATV: Satellite Master Antenna Television, shared antenna system with satellite reception.

³²Source: Statistics Norway, Norwegian Media Barometer 2004

Canal Digital and ViaSat – purchase transponder capacity from Telenor and NSAB, respectively.³³

3 Further information regarding the definition of the relevant product market

3.1 Market definition in the Recommendation

98. In its definition of the relevant market, NPT's starting point is the description of the relevant market in the Recommendation and the Explanatory Memorandum. After a brief review of the relevant market in Norway, NPT undertakes, *inter alia*, assessments of demand-side substitution possibilities at the retail level. The market is therefore defined first at the retail level, in accordance with the Explanatory Memorandum.³⁴ Thereafter, the effects of these conclusions on the definition of the relevant market at the wholesale level are reviewed. NPT also considers whether factors particular to Norway may require a market definition different from the one prescribed in the Recommendation.

99. The Recommendation makes a general distinction between retail markets and wholesale markets. For the broadcasting market, ESA has defined only one relevant wholesale market:

Broadcasting transmission services, to deliver broadcast content to end users.

100. In comments on the Recommendation, this market is described as follows:

Broadcasting transmission services and distribution networks in so far as they provide the means to deliver broadcast content to end users.

101. The Norwegian designation of Market 18 is *grossistmarkedet for overføringsjenester for kringkasting, for levering av kringkastingsinnhold til sluttbruker (the wholesale market for broadcasting transmission services, to deliver broadcast content to end users)*. The actual broadcast content is defined as being outside of the scope of application of this regulatory framework, whilst networks and related components used to deliver broadcasting services are included.

102. The Recommendation is open to the market being divided both in terms of the services delivered and in terms of the transmission network over which they are delivered. The transmission systems may also be regarded as constituting separate markets, depending *inter alia* on the following factors:

- Whether services broadcast over different platforms may be regarded as real demand substitutes with regard to price and product for a substantial number of end users.

³³ Viasat's programming is relayed via NSAB's Sirius satellites, whilst Canal Digital's programming is relayed via Telenor's Thor satellites.

³⁴ In accordance with the Explanatory Memorandum, the starting point for the definition and identification of markets is a characterisation of retail markets over a given time horizon, after which it is appropriate to identify relevant wholesale markets (cf. section 3.1 of the Recommendation's Explanatory Memorandum).

- Coverage and/or availability of the various transmission networks.
- Whether end users, or a considerable percentage of them, are able to switch between broadcasting or transmission platforms (substitutability).
- The presence and coverage of digital transmission platforms for broadcasting.

103. Transmission networks and services are input factors for delivering broadcast content to end users. Substitutability factors on the supply and demand sides for the various platforms (terrestrial networks, cable and satellite) may mean that the feasibility of switching between providers is limited.

104. According to the Recommendation, ancillary technical broadcasting systems (including conditional access systems³⁵) are outside of this relevant market. However, pursuant to the Access Directive, articles 5 and 6, cf. Annex I, the authorities may require that all operators of conditional access systems offer access to such systems on fair, reasonable and non-discriminatory terms, or to apply such access terms only in respect of providers found to have significant market power in the relevant market for conditional access systems. Reference is also made to section 3.4.

3.2 Introduction to NPT's assessments

105. On the basis of ESA's definition of the relevant market, NPT will, in what follows, assess which market definition is relevant for the Norwegian market for broadcasting transmission services. In principle, NPT assumes that this market includes infrastructure (feeder networks, masts, transmitters/transmitter networks, coaxial networks, satellites and transponders) and related services necessary to transmit broadcast signals to end users.

106. The recommended definition of the relevant product market is based on technological neutrality, i.e. it includes transmission capacity based on satellite, terrestrial networks and cable, and that no distinction is made between analogue and digital networks. The market covers transmission capacity for both television and radio. The principle of technology neutrality also means that the product market is to be defined on the basis of services, without regard for the technical platform over which they are realised. This applies if the services' intended use and characteristics are virtually the same for the buyer.

107. ESA is open to services and infrastructure factors warranting a division into smaller/several separate markets. In section 3.6 NPT will therefore consider whether the various transmission platforms can be said to be substitutable in respect of transmitting radio and television signals. NPT will also evaluate whether radio and television are substitutable products and hence part of the same market.

108. According to the Recommendation, the relevant market is a wholesale market. Since the competitive conditions on the retail level are relevant with regard to whether market power exists at the wholesale level, it is necessary to examine the market

³⁵ A conditional access system means a function in which access to a protected radio or television service is made conditional on a subscription or other form of individual advance agreement, cf. Proposition No. 58 (2002-2003) to the Odelsting relating to the Electronic Communications Act, chapter 16, remarks on Electronic Communications Act § 4-3.

definition and criteria for significant market power related to the retail level in addition to the wholesale level. For the definition of the relevant product market, this means that the evaluation of the relevant retail market will come before the evaluation of the relevant wholesale market, since demand at the wholesale level is derived from demand for retail products and/or services.

3.3 Boundary with the markets for leased lines

109. In general, transmission capacity/leased lines can be used for transmitting all types of signals, whether voice, other audio (such as music), text, images, video, audio and video broadcasting, data in and between companies etc. The wholesale market for broadcasting transmission services borders on other predefined markets at the wholesale and retail level. Leased line services can be realised using different technologies and via various transmission media such as fibre-optic cable, paired cables (copper) and radio relay link. Leased lines cover both analogue and digital circuits.

110. “Transmission capacity” is a generic term for permanent dedicated connections and is equivalent to the terms “dedicated capacity” and “leased lines”, which are used in the Recommendation. This implies that a guaranteed bandwidth is available at all times, regardless of other users. Transmission capacity can, in principle, be both one-way and two-way and also either symmetrical or asymmetrical. For most practical purposes the term is equivalent to what in Telenor’s product portfolio are called *leide samband* (“leased lines”). In addition to Telenor other market operators offer transmission capacity, *inter alia* BaneTele AS and TDC Song AS.

111. The demand for leased lines comes both from end users and providers of electronic communication. The terms end user and provider are defined in Electronic Communications Act § 1-5 subsections 13 and 14.

112. There are wholesale as well as retail markets for transmission capacity. The most relevant in this context is Market 7 (retail market, the minimum set of leased lines). Market 7 is limited upward to 2 Mbit/s. Higher capacities in the retail market fall outside the predefined product market and are thus not subject to sector-specific *ex ante* regulation. The wholesale markets are not limited to given capacities, but are divided into the product markets for terminating and trunk segments, Markets 13 and 14 respectively.³⁶

113. It is worth noting that a single legal entity can act both as a wholesaler and an end user, depending on whether the transmission capacity demanded is used as an input factor to provide services to others or used for the entity’s own purposes.

114. Traditional broadcasting transmission can roughly be divided into four main types: contribution networks, feeder networks, trunk networks and access networks, cf. section 2.2.4. Contribution, feeding and conveyance are all types of service that in principle can be, and to a certain degree in practice are, supplied on the same physical network.

115. In the following, NPT will undertake substitutability evaluations, thereby determining which markets the aforementioned main types of broadcasting transmission fall under.

³⁶ See NPT’s analysis and regulation of Markets 7, 13 and 14, published on NPT’s website www.npt.no

3.3.1 Contribution networks – Market 18 or the leased lines markets?

116. Lines used for transmitting signals between production sites (contribution) are primarily two-way digital lines.

117. Norkring's contribution networks have largely been reserved for broadcasting services. Traditionally lines of this type were analogue connections via radio relay link. In the past, this type of transmission was not regarded as dedicated capacity in the sense of "leased lines".

118. In recent years, Norkring has constructed a digital trunk network (DTN), with two-way connections for transmission between production sites. This transmission network is based on SDH/ATM technology³⁷. It is possible to differentiate between terminating and trunk segments in this network. Technically, these lines can be compared to other types of dedicated lines. However, traditionally such broadcasting transmission services were not considered to be like standard products provided by Telenor, because the transmission capacity in this network was reserved for broadcasting.

119. There are a number of competitors in the markets for leased lines, see the market analyses for Markets 7, 13 and 14. In addition to Norkring, there are also a number of providers active in conveyance of broadcast content, including BaneTele, Bredbåndssalliansen etc.

120. On the basis of an assessment of substitutability on the demand side, leased lines and the conveyance of broadcasting content on the contribution network will, in NPT's view, belong to the same market. Leased lines and the contribution network largely have identical areas of application. A broadcaster who demands capacity on the contribution network can just as well demand the same capacity in the form of leased lines. Contribution lines and leased lines are therefore to be regarded as substitutes from the customer's side and therefore belong to the same market.

121. This conclusion is further supported by looking at supply-side substitution. There is no essential technical or physical distinction between contribution lines and leased lines, even though historically they have been used for different types of service. These lines are therefore, in NPT's view, substitutable. Consequently, a provider who only supplies leased lines can easily restructure its production to start offering contribution lines – without incurring considerable cost or risk. On the basis of an assessment of supply-side substitution therefore, contribution lines and leased lines belong to the same relevant market.

122. Assuming that substitution exists between contribution lines and leased lines, it must also be assessed which leased line market revenues are to be attributed to. The broadcasting companies utilise the transmission service for their own use, as a carrier service for their broadcast content. Transmission capacity is not used as an input factor in the production of a separate electronic communications service since broadcast *content* is not an electronic communications service within the meaning of the Electronic Communications Act, cf. Electronic Communications Act § 1-5 subsection 4.³⁸ The broadcasting companies do not sell the transmission service to others, but use it for relaying their broadcast content. Broadcasters themselves must thus count as end users in purchasing contribution lines. NPT therefore believes that contribution lines purchased for the broadcasters' own use are to be placed in Market

³⁷ ATM is an abbreviation for Asynchronous Transfer Mode

³⁸ See also Proposition No. 58 (2002-2003) to the Odelsting, chapter 16 p. 86.

7, leased lines in the retail market. It is only capacities of up to and including 2 Mbit/s that will be included in this market and thus be subject to special regulation.

3.3.2 Feeder networks – Market 18 or the leased lines markets?

123. Lines for feeding signals from broadcasters to transmitter stations are ideally used for one-way transmission, and such lines are usually called feeder networks. Feeder networks may be based on *inter alia* fibre and radio relay links and may be both digital and analogue.

124. NRK largely uses capacity on an analogue radio relay link for its broadcast feeds, whilst TV2 bases its feeds on fibre. Several local TV stations largely use digital trunk networks (DTN) as their connection for feeding transmitter networks. Norkring is the only provider of feeder networks based on radio relay links, whereas for fibre there are a number of providers. Since Norkring's feeder network has been reserved for broadcasting services, this type of transmission has previously not been considered to be dedicated capacity in the "leased line" sense. It must be assumed that NRK will switch to demanding more digital transmission capacity for use for feeding broadcasting signals when the digital terrestrial network is rolled out. A higher degree of digitisation must also be expected to increase the substitutability with other digital platforms for transmission capacity.

125. Customers of feeder networks can just as easily demand ordinary leased lines. No special method is required for transmitting broadcasting services on the feeder network. A small but non-transitory increase in the price of feeder network capacity may result in customers of feeder network capacity turning instead to ordinary leased lines. Thus, NPT believes that there is a high degree of demand-side substitutability.

126. For feeder networks based on fibre, supply-side substitution must also be assumed to exist. A number of operators offer capacity for transmitting broadcast signals from broadcasters up to the transmitter network/earth station/head end of a cable TV network. No large investments are assumed to be involved for operators that offer (one-way) capacity on fibre-based feeder networks instead of offering this transmission capacity for two-way conveyance. For providers of feeder capacity via radio relay link, however, this substitutability may be somewhat less. In this connection it must be pointed out that Norkring has already constructed a digital trunk network, which is used *inter alia* for feeding broadcast signals.

127. Assuming that substitution exists between capacity in the feeder network and leased lines, it must also be assessed which leased line market the revenues are to be attributed to. Whether the service will come under Market 7 (retail market) or Market 14 (wholesale market) will depend on who the providers and requesters are, and how they use the service. Broadcasters utilise this service for their own use and not as an input factor in the production of electronic communication services offered to others, since broadcast content is not an electronic communications service pursuant to the Electronic Communications Act. Thus, broadcasters act as end users when purchasing capacity for feeding broadcast signals. For this reason, NPT concludes that capacity in the feeder network purchased for the broadcasters' own use is to be placed in Market 7, leased lines in the retail market. It is only capacities of up to and including 2 Mbit/s that will be included in this market and may be subject to special regulation.

3.3.3 Trunk networks – Market 18 or the leased lines markets?

128. For the trunk network, i.e. the portion of the network with an interface with the access network, substitution assessments will be analogous with those for lines for the feeder network, both on the supply and the demand side, and reference is made to the assessments in section 3.3.2.

129. The demand side for purchasing capacity on trunk networks consists of broadcasters (terrestrial networks and satellite) and distributors (satellite). On cable TV networks, the broadcasters do not pay for being carried. There are no distributors that purchase capacity on cable TV networks either, since the distributors themselves own these networks.

130. Whether the service will come under Market 7 (retail market) or Market 14 (wholesale market) will depend on who the providers and requesters are, and how they use the service.

131. NPT assumes that the capacity that broadcasters buy for transmitting their programming is utilised for their own use, and that it is therefore to be regarded as end-to-end circuits. For this reason, NPT concludes that capacity on trunk networks that broadcasters purchase is to be placed in Market 7, leased lines in the retail market. The same applies to distributors' purchases of trunk capacity on satellite. It is only capacities of up to and including 2 Mbit/s that will be included in this market and thus be subject to special regulation.

3.3.4 Access networks – Market 18 or the leased lines markets?

132. The access network (distribution network) is the portion of the network that goes out to the end users. The distribution of broadcast signals takes place as of today on three different platforms (terrestrial networks, cable and satellite), and it is particularly the access to the end user that constitutes the difference between these platforms. NPT will assess the substitutability between these platforms in more detail in section 3.6.

133. Distribution networks are largely one-way, and NPT therefore assumes that the access capacity offered over these three platforms will not be demanded by parties other than broadcasters and broadcasting distributors. Nor are end users largely assumed to demand services other than broadcasting over these platforms.

134. In light of this, it is NPT's view that transmission capacity in the access networks for cable TV, satellite and terrestrial networks must be placed in Market 18.

3.3.5 Conclusion

135. The sale of transmission capacity on contribution networks, feeder networks, and trunk networks is not to be included in Market 18, but is to be placed in Market 7, the minimum set of leased lines. Capacities up to and including 2 Mbit/s will be included in the market. Sales of capacity on the access network on cable TV networks, satellite networks and terrestrial networks are included in Market 18.

3.4 Boundary with ancillary technical broadcasting services

136. To receive television signals via cable or satellite, the end user is required to enter into a subscription agreement with the distributor. To deliver such a

subscription, pay TV or interactive services to end users, the distributor (unless the party in question operates its own transmission network) needs access to related technical broadcasting systems such as for instance conditional access systems³⁹, application programming interfaces (APIs) and electronic programme guides (EPGs). A set-top-box (STB)/decoder (with or without conditional access) may be required for the end user to be able to receive the signals, depending on the technological conditions.

137. When the digital terrestrial television network comes on stream, the same type of arrangements will be relevant there. The fact that there will be space for more channels and thus possibilities for pay TV programming via DTT is one of the most important commercial considerations of DTT compared with today's terrestrial networks. As stated in NTV's licence application, it is clear that NTV is assessing its role as provider of transmission capacity to programme distributors as important for ensuring earnings from the DTT rollout. It has been notified that the only distributor in the short term will be the company NTV Pluss, but that as long as there is capacity available other distributors or independent broadcasters may also be able to sign agreements with NTV on transmission services⁴⁰ (see Appendix 4). Questions about conditional access systems, EPGs, set-top boxes etc. will also arise in connection with these pay TV channels/packages.

138. In connection with conditional access systems etc. there is a fundamental need for interoperability and open standards on the equipment side. This facilitates effective competition between the operators in the equipment market, giving viewers a real choice in selecting providers and equipment. As of today there are problems related to various proprietary solutions for conditional access systems and set-top-boxes for different providers in the satellite market.

139. In accordance with the Recommendation, such ancillary technical broadcasting systems are not included in Market 18. Electronic Communications Act § 4-3 and Ecom Regulations chapter 4 nevertheless give the authorities the right to demand that all operators of conditional access systems shall offer access to content providers, regardless of whether or not the provider has significant market power. The access terms shall be fair, reasonable and non-discriminatory. The authorities may impose the same requirements on providers of other functions that can limit access to digital radio and television, such as software interfaces (including APIs etc.) and electronic programme guides (EPGs).

140. In NPT's view, there are no national circumstances that would justify departing from the Recommendation in excluding ancillary technical broadcasting services from the relevant market.

3.5 Boundary with content

141. In accordance with the Recommendation, electronic communication services include transmission services in infrastructure used for broadcasting, but exclude services providing or exercising control over broadcast content. Therefore, broadcast content lies outside the scope and application of the regulatory framework. A similar limitation is included in Electronic Communications Act § 1-2, which points out that

³⁹ The Norwegian term for conditional access is "betinget tilgang".

⁴⁰ See chapter 7 of NTV's licence application.

the act applies to activity connected with transmission of electronic communications and the associated infrastructure, services, equipment and installations. The wording of Electronic Communications Act § 1-5 subsection 4 also establishes that electronic communications service are services covering arrangement of electronic communication, normally for a fee. The preparatory work, Proposition No. 58 (2002-2003) to the Odelsting, point out that this definition does not include content that is carried via electromagnetic signals, cf. chapter 16 p. 68.

142. As described in the section above, the biggest business profits in the broadcasting market are obtained from the distribution of pay TV services. Today the operators in both the cable TV and satellite TV markets rely mainly on the revenues from end users' purchase of programme content. Similarly, in the future pay TV services and other interactive services will also be relevant on DTT, cf. NTV's licence application. Nevertheless, it is clear that the agreements for such distribution, at both the wholesale and retail levels, deal with carriage of broadcast content, and not electronic communications service within the meaning of the Act and directives. Consequently, they will fall outside Market 18.

143. In NPT's view, agreements for buying and selling broadcast content thus fall outside this relevant wholesale market.

3.6 Substitutability assessments

3.6.1 General

144. A relevant product market consists of products or services that are sufficiently substitutable. The starting point is that if products A and B are substitutable, they belong to the same market. On the other hand, if product A does not fall under the same relevant market as product B, it means that product A will not restrict the producers of product B from having significant market power. An exception from this starting point is nevertheless made if it is expected that product B will eventually develop into a close substitute for product A.

145. In the following, substitutability will be assessed both on the supply and the demand side, with a view, if possible, to defining national product markets in the broadcasting market.

3.6.2 Substitutability on the services level

146. In this connection, NPT will assess the extent to which radio and television are substitutable services as well as whether transmission capacity utilised, respectively, for radio and television, falls within the same market definition.

147. At the retail level, television and radio will not be regarded as substitutable services, but rather as complementary services. Television provides both a visual and auditory experience, whilst radio is sound only. Production values, costs and thus the content are often essentially different, which results in very different usage and experiences for consumers. For instance, radio is viewed as a primary source of music, whereas television is often regarded as a major source of dramas and series. Sports and movies are deemed to be the main area for pay TV. Thus, the areas of use for radio and television differ substantially.

148. Television and radio are also used differently. Radio is most often received via mobile units such as car radios, portable radios, pocket radios, mobile phones etc.,

whilst television programmes are usually watched on stationary units. NPT assumes that approximately 95 per cent of end users listen to radio via terrestrial networks⁴¹.

149. In light of this, it may be argued that the needs of radio listeners are largely not met by television or vice versa. NPT therefore believes that radio and television are two different products/services at the retail level.

150. At the wholesale level this may imply that radio and television require different transmission technologies. Below, we will undertake more detailed delineations between different technologies and services at the wholesale level.

3.6.3 Substitutability between terrestrial networks and cable/satellite

151. ESA is open to services and infrastructure factors warranting a division into smaller/several separate markets. Below is an assessment of whether it makes sense to divide the broadcasting market into terrestrial networks on the one hand and cable/satellite on the other and of whether radio and television require a further division into separate product markets.

Demand-side substitution

152. The number of programme services that end users can currently receive via analogue terrestrial networks is limited to three national television channels and five national radio channels, in addition to local programming. Far more television channels are available via cable or satellite, including niche channels, exclusive coverage of sporting events and movie channels.

153. While end users have free access to the television programmes transmitted via terrestrial networks, the broadcasting licence must be paid by everyone with a television set. Receiving radio programming over terrestrial networks is totally free of charge to end users. Cable and satellite services are ordinarily available by subscription. One of the reasons that end users choose to acquire a dish or cable is a desire for services that are different from and a supplement to the channels broadcast on the terrestrial networks. Another reason may be the poor coverage or quality of the terrestrial transmissions. Today, transmission services on satellite and cable TV networks will thus largely have to be regarded as complementary services rather than as a substitute for the terrestrial network.

154. This will eventually change in part. With the launching of pay TV services via DTT, end users will be able to subscribe to larger programme packages via the terrestrial network too. The quality will reportedly also be better than today. On the other hand, it will still be the case that reception of NRK television will be free. The same applies to radio broadcasts via terrestrial networks. The coverage of the terrestrial network is, and will continue to be, unique.

155. At the retail level, there are switching costs for consumers who switch from terrestrial networks to cable or satellite. Today there are no costs associated with doing the opposite. It is still uncertain whether there will be costs for switching to DTT. They are expected to be low for the primary channels. Apart from the fact that users must obtain a set-top-box and/or DAB radio, it will be free to receive NRK broadcasts.

⁴¹ This estimate is based on sales figures from Telenor Satellite Broadcasting and Norkring for the radio station P4, which has had national coverage. As far as NPT is aware, there is nothing to indicate that the share is smaller for local radio stations.

156. NPT believes that end users' preferences and choices are primarily governed by coverage, content and price, and less by which technical platform is used for transmitting programming.

157. The demand in the wholesale market is derived from the demand in the retail market, and is thus primarily affected also by coverage, content and price. Requesters in the wholesale market are distributors (for example Canal Digital and ViaSat) and pure-play broadcasters such as NRK and TV2.

158. For broadcasters it is important to be present on the network that reaches the most customers. To reach end users who receive programming via terrestrial networks, wholesale customers cannot choose to purchase transmission capacity on cable or satellite networks, or vice versa. This indicates that there is a clear division between terrestrial networks on the one hand, and cable/satellite on the other. If broadcasters wish to reach almost all households, they cannot choose only one network for delivering broadcast content, since the coverage and availability vary between the various networks, cf. Table 1.

159. A further factor is that the different networks offer different degrees of interactivity and interactive services since not all are digitised or have two-way functionality. Providers of interactive services (broadcasters or distributors) therefore have limited options. Two-way functionality will probably not be a reality within this analysis' time horizon for DTT, and will be more costly to achieve for DTT than for cable.

160. Moreover, the capacity in the networks is limited, particularly on the analogue terrestrial network. The broadcasters who wish to reach as many end users as possible are therefore also dependent on which network has room for them, and which package they gain entry to. For example, a slot in a distributor's basic pay TV package may be very important, and placement capacity can vary between the platforms. According to NTV's application, capacity in the digital terrestrial network during the initial rollout phase will be limited to 3 signal packages with space for 20-25 channels. The various platforms will thus be able to function as supplements and not substitutes for each other.

161. In light of this, NPT believes that terrestrial networks constitute a separate market for transmitting broadcasting services at the wholesale level.

Supply-side substitution

162. Supply-side substitution in this market exists when a provider of transmission capacity can offer customers an alternative if the current provider raises his prices. As of today, terrestrial networks will not be able to provide a real alternative to purchasers of capacity on satellite and cable TV networks, because terrestrial networks have only limited capacity available. Within the time horizon of this analysis the digital terrestrial network will also only have limited capacity compared with cable and satellite. Eventually the distributors will have to negotiate for access with the DTT network licensee, and this may represent a practical obstacle. The resources to be negotiated are in principle limited. Transmission capacity on satellite and cable TV networks will not be a real alternative to the public service broadcasters TV2 and NRK. TV2's obligations are stipulated in its licence. NRK's obligation to broadcast via terrestrial networks is mandated through ownership control. NRK and TV2 would not be able to meet their coverage obligations if they exclusively choose cable and/or satellite for their broadcasts.

163. Converting their production to distribution via terrestrial networks would require high, irreversible costs for providers of transmission services via cable and satellite.

164. Thus, opting out of one distribution platform may involve a substantial commercial risk for broadcasters. This indicates that the platforms should be considered complementary rather than as substitutes.

165. In NPT's view, circumstances on the supply side indicate that terrestrial networks constitute a separate market for transmitting broadcasting services at the wholesale level.

Conclusion

166. Following an assessment of the conditions on both on the supply and demand sides NPT has concluded that the terrestrial network constitutes a separate market for transmitting broadcasting services. Whether or not cable and satellite should also be separated is addressed in section 3.6.5.

3.6.4 Substitutability assessments in the terrestrial network

3.6.4.1 Delineation of services on the terrestrial networks

167. On Norkring's terrestrial network, much of the same infrastructure is used to deliver both television and radio broadcasts to end users. It may nevertheless be difficult to claim that supply substitution exists between radio and television broadcasts in Norway, even though a single operator both owns and operates a terrestrial network consisting of a feeder network, trunk network and masts. Norkring's possible market power will namely not be limited by competing against itself in radio and TV. Furthermore, antennas, and to a certain extent antenna feeder cables, connection points and the actual transmitter electronics are unique for radio and television, respectively. This equipment cannot therefore be used for both radio and television. It should also be mentioned that radio and television are broadcast over different frequencies, and it is not permitted to use frequencies set aside for television broadcasting for radio broadcasts or vice versa.

168. The transmission of radio requires a smaller portion of the existing infrastructure, both in terms of the number of masts and the amount of transmission capacity, than the transmission of television signals. The investment needs are thus correspondingly smaller and the entry barriers lower.

169. In NPT's view, this indicates that transmission of radio and transmission of television on terrestrial networks constitute separate product markets.

3.6.4.2 Digital and analogue broadcasts

170. The question may be raised whether the terrestrial network should be divided according to transmission technology, in addition to the division between television and radio transmissions. The question is then whether transmission services on the terrestrial networks shall include both analogue and digital broadcasts. On the television side, the question is whether transmission via the analogue (Analogue Terrestrial Transmission, ATT) and the digital terrestrial network (Digital Terrestrial Transmission, DTT) constitutes one or two different markets. On the radio side, it will

be a question of whether the market includes both FM broadcasts and broadcasts via Digital Audio Broadcasting (DAB).

3.6.4.2.1 Digital terrestrial television (DTT) networks

171. There is currently no digital terrestrial network for television broadcasts. However, in its decision of 26 February 2004⁴² the Storting endorsed the plans for the rollout of a digital terrestrial network. On 30 June 2005 the Ministry of Transport and Communications and the Ministry of Culture and Church Affairs advertised the licence to operate and build the digital terrestrial network for television in Norway. The advertisement of the licence emphasised the fact that a technological shift is to be carried out, and that its implementation therefore depends on the digital broadcasting service replacing the analogue service within the same frequency band. NTV was the sole applicant when the application deadline expired in September 2005. The licence was awarded NTV on 1. June 2006.

172. In assessing whether transmission services for television on analogue and digital platforms belong to one product market or different markets, it is necessary to take as a starting point that the digital platform will take over for and replace the analogue network as the latter is shut down. According to the tentative rollout plan in NTV's application, this transition will take place region by region, where the first regions will be shut off in the autumn of 2007. According to the rollout plan the final region will have transitioned fully to DTT by fourth quarter 2009. It has been an important political goal, which is reflected both in the advertisement of the licence and pointed out by the applicant, that the transition from analogue to digital transition shall be done in as short a time as possible. A brief parallel transmission period will be cost-saving for broadcasters and distributors and it will be regarded as economically practical for new frequencies to be released as quickly as possible. The rollout of the digital terrestrial network shall primarily take place by gradual transition within the same frequency band currently used for analogue transmission (frequency band 470 – 790 MHz).

173. A relatively brief period of parallel transmission and gradual transition from analogue to digital transmission based on reuse of the same frequency resources will also have a bearing on how end users and the wholesale customers view substitutability between the two transmission technologies. There will be a very limited period of time where the digital transmission services will constitute an alternative and possible substitute for the analogue services. At the retail level it is reasonable to assume that customer preferences are primarily governed by coverage, content and price. During the shift in technology it is likely that the new digital broadcasts will appear to the end customer as a close substitute for the analogue ones with respect to these three parameters.

174. According to NTV's application, the degree of coverage for DTT will be similar or better than for the analogue network. NTV's basic network will cover 95 per cent of Norwegian households in line with the licence requirement. In addition, NTV will roll out a shadow satellite network for those lying outside the basic coverage area and that do not have satellite coverage either. NTV also assumes that the digital terrestrial network will cover more than 70 per cent of the country's leisure homes.

⁴² <http://www.stortinget.no/inns/200304-128-001.html>

175. With respect to content it is expected that channel offerings will be greater after the digital changeover, at the same time as NTV emphasised in its application that it will facilitate more digital additional services such as electronic programme guide (EPG), super teletext and information services. It may be equally important for end users that the digital terrestrial network will continue to ensure free access to NRK, and TV2 until the end of 2009.

176. With respect to price, NTV states in its application that end users who only desire NTV's free offering will have to expect a unit cost of under NOK 1,500 per set-top box per television set in the household. By comparison this is at a level with the annual outlay for the basic pay TV package on cable TV networks. Gradual downward pressure on prices can be expected as more set-top-boxes arrive on the market. With regard to the physical reception equipment for ordinary households, no additional cost will accrue since they are using the same UHF antenna to receive the analogue transmissions from TV2 today. Despite the fact that the difference in switching costs will be less for the end user for the transition to DTT compared with cable and satellite, the total cost for continued reception via the terrestrial network will still be considerably lower than for the transition to alternative platforms.

177. Coverage, content and price must also be assumed to govern the demand at the wholesale level for transmission services on the terrestrial network. There is little to indicate that the technology shift from analogue to digital transmission will essentially change this. For broadcasters and distributors the desired coverage and/or the mandatory coverage requirement will as a rule be the guiding argument in choosing platforms. In their operating conditions, public service broadcasters NRK and TV2 are required to reach a given portion of the population. Coverage will therefore be crucial for their choice of platform.

178. It is likely that the digital broadcasts may seem more valuable than analogue ones to commercial broadcasters and pay TV operators. This is because they enable a broader and qualitatively better service to end users, at the same time as the broadcasts can be encrypted. A larger coverage field will also make the commercial channels more attractive as an arena for the advertising industry. TV3, TVNorge and any new channels will be able to profit in particular.

179. However, the capacity of the digital terrestrial network will be limited within the time horizon of this analysis. According to NTV's tentative rollout plan three signal packages with space for 20-25 TV channels will be rolled out initially. The rollout of other signal packages (4 and 5) could take place after the analogue transmissions are shut off, and if NTV finds it profitable. It is therefore difficult to envision that, within the time horizon of this analysis, the content and price parameters will materially change the circumstances driving the demand for transmission services on the terrestrial network. To the extent wholesale customers in the form of broadcasters or distribution companies actually wish to be present on the terrestrial network and therefore purchase transmission services there, it is reasonable to assume that it is the scope of distribution and any coverage requirements that will guide demand for the capacity made available during the initial rollout phase.

180. Wholesale customers who acquire transmission services on the terrestrial networks largely purchase a finished bundled product. The customers basically do not need to have particular insight into what kind of technical components and infrastructure are involved. They can take the transmission service they are offered

and rely on the provider's technical expertise. This will not change by the transition from analogue to digital transmission technology.

181. From what NPT has learned the access network as defined in section 2.2.5.2 constitutes the input factor that is necessary for being able to produce transmission services on the terrestrial network. This applies regardless of whether the service is offered based on digital or analogue transmission technology. The placement of transmitter stations and antennas in this fundamental infrastructure is coordinated with national and international frequency plans. Interference and frequency planning will therefore place huge limitations on whether the establishment of alternative mast infrastructure is possible. Furthermore considerable irreversible investments have been undertaken during the period with exclusive rights for the builder of the access network. Commercial as well as economic considerations therefore warrant that the builder of digital terrestrial networks must utilise this infrastructure as an input factor. In conclusion, environmental considerations will be an important restriction on rolling out new infrastructure. Ensuring appropriate management of key environmental resources such as cultural communities, outdoor recreation and aesthetics are compelling administrative considerations.⁴³

182. In other words, the access network will be the necessary input factor to which broadcasters and/or distributors must have access to have their services sent/sold to end users. The fact that the transmission service for digital television broadcasts must be expected to be offered in the same infrastructure as for the analogue transmissions, warrants the definition of a technologically neutral product market for television transmission services on the terrestrial network.

183. Moreover, it can be argued in purely technical terms that the digital terrestrial network is a modernisation of and efficiency improvement on the present analogue terrestrial network. This upgrading is an expected outcome of technological developments giving rise to better methods for utilising and improving the efficiency of electronic communication.⁴⁴ What is involved in this instance is a more efficient way of transmitting broadcasting signals. The digital signals are compressed, making it possible to transmit more channels on the same frequency band that previously was used by only a single analogue television channel. The phasing out of analogue transmissions primarily means that valuable frequency resources will be released and/or utilised more optimally. On the other hand, it is hard to make the case that the transmission service as such will be essentially different, and that the broadcasters and/or distribution companies that wish to be present in the digital terrestrial network face a pronounced new service. Since what is involved here is a modernisation of the network it is reasonable to define the Norwegian market for television transmission services over terrestrial networks as a technologically neutral market.

184. An assessment of whether the analogue and digital television transmissions will constitute substitutes must naturally be hypothetical, since the services for all practical purposes will be offered successively in the market. However, within the time horizon of this analysis, NPT considers that a forward-looking substitution

⁴³ See *inter alia* Report No. 58 (1996-97) to the Storting "Environmental protection policy for sustainable development" and Report No. 29 (1996-97) to the Storting "Regional planning and land-use policy".

⁴⁴ See also "Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the regions on accelerating the transition from analogue to digital broadcasting" COM(2005) 204 final.

analysis at the end user and wholesale levels warrants the inclusion of analogue and digital transmission technology in a common market.

185. Furthermore, NPT believes that the product market for transmission services on the terrestrial network must be delineated further to cover the access part of the terrestrial network as defined in section 2.2.5.2. It is this physical infrastructure that makes up the necessary input factor for broadcasters and/or distributors in order to be able to produce and offer transmission of the broadcast content to end users.

3.6.4.2.2 Digital terrestrial networks for radio broadcasting (DAB)

186. In this section the topic of discussion is whether both analogue and digital radio broadcasts shall be included in the same product market, i.e. whether both FM radio and DAB, or other digital feeding technology for radio over terrestrial networks⁴⁵, should be discussed together. For practical purposes NPT will refer only to DAB, although much of the argumentation is also relevant for other digital transmission technologies for radio.

187. Norkring has begun to roll out a national and a regional digital terrestrial network for radio, DAB (cf. section 2.2.2). Broadcasters who transmit digital national programmes are NRK⁴⁶, P4 and Radio 2 Digital⁴⁷. The national network covers about 70 per cent of households in Norway.⁴⁸ Further rollout is steered by the operators, i.e. broadcasters, and decisions are made in cooperation between Norkring, based *inter alia* on market-related evaluations. The current goal is 80 per cent coverage by the end of 2006. In the regional DAB network, which covers the Oslo fjord area, only NRK's local broadcasts are transmitted.

188. There are certain factual circumstances separating transmission services for digital radio broadcasts from transmission services for digital television broadcasting. First, the DAB network has already been rolled out and is in operation, with the network covering 70 per cent of the population. However, FM radio and DAB use different frequencies, and will continue to do so as the DAB network is rolled out. Unlike the situation for television broadcasting, DAB is thus not meant to replace FM broadcasts in the same frequency band.

189. It is nonetheless the case that FM radio broadcasts are expected to be phased out with time. The date for this has not been set and is assumed to be quite a few years from now. The report from the Norwegian Media Authority's working group for digital radio recommends within the current Storting period that a resolution be passed in favour of a gradual shutdown of analogue FM broadcasts, with final shutoff in 2014.⁴⁹ A long parallel transition period for digital radio will have a bearing on how quickly the migration to DAB radio will take place in the retail market.

⁴⁵ Other possible digital transmission technologies are digital multimedia broadcasting (DMB), digital radio mondiale (DRM) etc., cf. the Digital Radio Report of 19 December 2005.

⁴⁶ NRK broadcasts the following channels via DAB: P1, P2, P3, Alltid Nyheter, Alltid Klassisk, Stortinget, Alltid Folkemusikk, NRK mPetre, NRK Sámi Radio and the local broadcasts NRK P1 Oslofjord, NRK Østlandssendingen, NRK Østfold, NRK Buskerud, Telemark and Vestfold and metOSLOFJORD and Oslo City Council.

⁴⁷ Radio 2 Digital broadcasts both a main channel and the niche channel Bokradioen.

⁴⁸ Source: <http://www.dabdigitalradio.no/>

⁴⁹ "Digitalradio i Norge" (Digital Radio in Norway), Recommendation from working group appointed by the Ministry of Culture and Church Affairs to evaluate further rollout, operating conditions and models for digital radio (the DAB report), 19 December 2005

190. Today, the number of listeners of DAB radio is relatively low, particularly seen in relation to the fact that it is assumed that as much as 70 per cent of the population is able to receive DAB. The reason for this is assumed to be the relatively high price for DAB receivers, the fact that DAB radios require so much electricity that it restricts mobility and, to some degree, coverage. Moreover, DAB does not offer listeners significantly more than better sound quality of largely the same programmes that can be received by FM radios. In 2005, 51,000 DAB receivers were sold in Norway.⁵⁰ By comparison, each year approximately 850,000 analogue radios are sold on a regular basis in various types of products. However, it is assumed that the sale of DAB radios will increase considerably in the near future. The forecast for 2006 is 100,000 radios. The demand among end users for DAB radios will also be affected by the information available in the media etc. NRK is in the midst of a large-scale campaign to market its DAB services. Moreover, it has been announced that NRK will shut off its niche channels, i.e. the Alltid broadcasts on the FM band and broadcast them exclusively on DAB and the Internet in 2007. Channels such as Alltid Klassisk and Alltid Nyheter are popular channels and must be expected to affect the adoption of DAB radios by the population. There are also other market activities aimed at getting the end user equipment out to listeners. DAB radios are given away as gifts, prizes or cheaply distributed in other ways.

191. End users largely receive radio while on the move. The car industry must therefore be expected to have a major impact on the spread of DAB receivers. According to the Electrical and Electronics Trade, there are currently several DAB car radio products on the Norwegian market, with the forecast for 2006 indicating 5,000 sold units.⁵¹ If DAB radios are sold integrated in cars in the future, this will naturally affect developments in the retail market. There is a trend among the major auto manufacturers that supply cars to Norway to equip cars with receivers capable of receiving both DAB and FM broadcasts. Another important product for receiving radio while mobile is radio units in mobile phones, mp3 players etc. As of today these products mainly contain FM receivers.

192. Even if there is still no significant transition to DAB in the retail market, there is much to indicate that the sale of DAB radios will increase within the time horizon of this analysis, and particularly as certain popular national channels are broadcast exclusively on DAB. Developments in the retail market will also be closely related to developments at the wholesale level. The same factors and trends as for transmission services for digital television are seen at the wholesale level for radio: The wholesale products being negotiated are the same for the analogue and digital transmission services, and the negotiations for the digital services will come prior to the new services being offered extensively at the retail level.

193. As for the terrestrial networks for television, the same infrastructure and the same input factors are requested for analogue as for digital transmission services for radio content. As defined in section 2.2.5.2, the access network constitutes the necessary input factor for requesters of transmission services for DAB. The considerations that complicate duplication of this infrastructure apply similarly to radio broadcasting as for television broadcasting.

⁵⁰Source: <http://www.dabdigitalradio.no>

⁵¹Source: <http://www.ee-bransjen.no/pub/filer/200508291.xls>

194. Norkring owns the national access network and will be the only party on the supply side when broadcasters negotiate transmission services for DAB.

195. At a meeting with the operators NPT learned that it is the DAB negotiations with Norkring that, within the time horizon of this analysis, are the most relevant. Such negotiations and agreements are already in progress, and some agreements have already been signed. On the other hand, agreements on analogue transmissions have been largely concluded, and they have a duration lasting until the time when it is most likely that the shutdown of analogue services has been politically decided and implemented. The radio broadcasters share the opinion that the shutoff date for FM broadcasts will be crucial for developments in the retail market. Broadcasters have a collective interest in advancing this view to make the parallel transmission period as short as possible and avoid higher operating expenses.

196. The operators also share the view that digitisation of radio transmission is a necessary modernisation and efficiency improvement of the current analogue terrestrial network for radio broadcasts. As for DTT, what is involved here is a more efficient way of utilising the capacity of the terrestrial network and transmitting broadcast signals. The digital signals are compressed, which makes it possible to transmit more channels on the same frequency band that previously was used by only a single analogue channel. Compression or bit reduction is just one of several factors that make DAB more spectrum efficient than FM.

197. The digital transmission service for which negotiations are now taking place with Norkring is nevertheless not perceived by requesters as a completely new service. They continue to negotiate for a service that ensures that their programme content will be transmitted to listeners via the terrestrial network. To an even greater degree than for television broadcasters and distributors, the transmission services for the radio channels on the terrestrial network are non-substitutable with transmission services on other platforms (cable and satellite). This is mainly connected with the fact that radio listeners have other wishes regarding mobility. A presence on the terrestrial network therefore constitutes the only alternative for the radio channels to benefit from the cost savings and opportunities for service renewal and service differentiation that digitisation of the service represents.

198. The national radio broadcasters currently act as a group in negotiations on transmission services for DAB since they have a common interest in ensuring that the transition from analogue to digital radio takes place within as short a time horizon as possible. Parallel DAB and FM distribution is viewed as a very high additional cost.

199. The parallel transmission period with analogue broadcasts will be longer for DAB than for DTT. This must also be expected to affect the migration to DAB in the retail market. However, developments at the wholesale level and at the retail level are mutually affected by each other within the time horizon of this analysis, and radio broadcasters as a group are interested in the change at the wholesale level reinforcing the change at the retail level, and vice versa. The more DAB services there are and the more popular programmes and channels that can only be received digitally, the greater the adoption in the retail market and the better the financial basis becomes for being able to continue the rollout.

200. Final licences for broadcasting DAB radio have not been awarded. As mentioned, as of today NRK, P4 and Radio 2 Digital are entitled to transmit trial broadcasts on national DAB. NRK plans to end analogue FM distribution of all its niche channels in 2007. Only NRK has transmission rights to broadcast local radio on

DAB. Other radio channels, national and local, are currently only entitled to transmit in analogue on the FM network.

201. Even though it is unrealistic that all radio broadcasters, and particularly all local radio stations, will move their broadcasts to DAB in the next two to three years, it is clear today that the operators view the digital transmission service as a very relevant substitute for the analogue format. None of the national broadcasters consider it to be an option not to commit to DAB within the next two to three years. Anything else would be commercially unfortunate since the company would then fall behind in relation to new technology and other competitors. The negotiations on transmission services at the wholesale level are therefore currently almost exclusively about DAB.

202. Even though DAB and analogue radio will not be substitutes with respect to price and coverage in the retail market within the time horizon of this analysis, it is necessary to emphasise developments at the wholesale level since developments here will largely govern what happens among end users.

203. Since the wholesale customers view the two technologies as relevant substitutes within the time horizon of this analysis, and that this fact will most likely speed up the transition to DAB in the retail market, NPT has concluded that the two transmission technologies shall be included in the same product market.

3.6.4.3 Local and national programming on terrestrial networks

204. There are factors that may suggest that the market for transmission services on terrestrial networks differs according to whether local or national programming is involved. The question is whether it therefore makes sense to split the radio and television markets further into local and national broadcasts, respectively.

205. Current frequency licences and licences for both local radio and television are limited to apply to specific geographic areas. The licences and frequency licences are largely coordinated with respect to duration. Owing to the limitations in the licences and frequency allocations, a local broadcaster will only obtain access to frequencies reserved for local broadcasting, whereas a national broadcaster will only obtain access to frequencies reserved for national purposes. Frequencies reserved for broadcasting may not be freely bought and sold. This makes it difficult today to substitute between local and national transmission services via terrestrial networks.

206. Substitution between the local and national transmitter networks is also limited owing to technical and cost factors, including the different ranges of transmitters, inappropriate placement of masts and problems with interference due to co-location etc. To avoid harmful interference from other adjacent broadcasters, transmitters with more limited power may be appropriate for the purposes of local broadcasting. This may help to limit substitutability between transmission services for local and national broadcasting.

207. Due to these types of frequency and regulatory limitations, it will not be possible in the current situation to substitute local and national programming, either for television or for radio. A local radio station will not request transmission capacity meant for national radio, and the same for television. As of today a substitutability assessment therefore indicates that these are different product markets.

208. In the case of radio, it can be assumed that this will continue to be the situation for several years to come. The national licences run for many years and the local radio stations similarly have licences and frequency licences that run beyond the time

horizon of this analysis. However, a transition to digital radio (DAB) could change the situation.

209. The national radio broadcasters want to see the quickest possible changeover to DAB. The costs associated with parallel broadcasting are very high for them. They are therefore expected to attempt to speed up the date for the analogue shut-off.

Negotiations are taking place, and some agreements on transmission of national DAB radio have already been signed between the national broadcasters and Norkring. There is no reason for national broadcasters to request transmission services for local radio broadcasting. Indeed, the national transmission product Norkring is offering relies on the use of a number of local transmitters. However, the national broadcasters are not buying this in isolation, but as part of a total national transmission service.

Substitutability between local and national transmission services, seen from the perspective of the national broadcasters, is therefore not present within this analysis.

210. The local radio broadcasters are in another situation with respect to the transition to DAB. As of today their frequency licences and licences only entitle them to analogue broadcasts in a limited coverage area. No local radio station has a licence for DAB. The regulatory restrictions are in that respect considerable. A transition to DAB, with or without a parallel broadcasting period, will also be very costly for these broadcasters, who often have little money to begin with. All together this suggests that local radio broadcasters do not regard a quick transition to DAB as desirable.

211. Eventually, a technological transition must nevertheless be expected, local radio included. It is conceivable that new licence areas will be defined, since several channels must then share a single multiplex and thus in practice have the same coverage area. Even though the licence areas will probably go from being small local areas to larger regions, it is not obvious that local broadcasters will request complete national transmission services instead.⁵² The technical barriers can be lower than today, while licence requirements and cost-related factors will suggest that transmission services for local/regional and national distribution are products that cannot replace each other seen from the side of local broadcasters. The fact that there is still no set date for a possible shutdown of the FM network is furthermore an argument against a conclusion of substitutability between local and national transmission.

212. For television, however, the situation is different. As of today the circumstances are the same as for radio, with local television broadcasters and national broadcasters requesting different products. Within the next two to three years the situation will nevertheless change considerably. Since all the frequencies currently set aside for DTT are allocated together to a single operator and not to the individual broadcasters, either local or national, it is no longer appropriate to talk about local markets for transmission services for television broadcasting. There will only be one operator on the demand side, probably NTV, which will use a national network following negotiations with Norkring. NTV will not buy geographically limited transmission services, but access to the complete national network for television transmission.

213. The transition to digital transmission will nevertheless take place gradually. The builders' right to establish transmitter systems for DTT broadcasting should not

⁵² A more practical solution will be a collaboration between several local broadcasters who together request a regional frequency/licence.

be an obstacle for existing transmitter licences in the 470-790 MHz band. NPT has awarded frequency licences for analogue transmissions of television broadcasting until 31 December 2009. When these frequency licences expire, the frequencies devolve to NTV, which can then begin using the released frequency bands to roll out multiplexes four and five. The transmission service NTV buys will thus gradually increase in scope as more released frequencies become available to the former. Even so, it is true that these frequencies and the transmission services apply to national transmission.

214. Local television broadcasters will, to ensure continued distribution on the terrestrial network, have to negotiate with NTV and not Norkring on transmission services in relevant geographic areas. It will not be possible to request a local transmission service direct from Norkring. Neither Norkring nor the broadcasters have the use of the frequencies, and local TV broadcasters may negotiate only with NTV for distribution. Within the time horizon of this analysis, it is therefore feasible that the dividing lines between local and national transmission services for television will be erased seen from the demand side (NTV). For broadcasters, only a question remains about requesting distribution through NTV, while the infrastructure and frequencies transmitted are the same regardless of reach.

215. NPT shall take into consideration expected market developments within the time horizon of the analysis. The fact that within the next two to three years we will see a situation with just one national provider and one national requester, is a compelling argument for claiming that there is a single national market for transmission services for television broadcasting. This argumentation is furthermore supported by the fact that only a few, if any, negotiations on agreements in the analogue terrestrial network remain, whether for national or local television. The market for analogue transmission services has for all practical purposes therefore ceased to exist.

216. In the longer term it is possible that other frequency bands will be dedicated to electronic communications networks based on DTT technology, for example 790-862 MHz. It is then possible that local television broadcasters will themselves be awarded frequencies there, and that they therefore will request a geographically limited transmission service. However, this must be assumed to lie outside the time horizon of this analysis and cannot be accorded weight in these discussions.

217. In NPT's view the discussion here indicates that transmission services for local and national broadcasts constitute separate product markets for radio, but not for television, where there is only a single product market.

218. In the following local television on terrestrial networks will not be discussed separately, but will fall under the general product market television on terrestrial networks.

3.6.4.4 Conclusion

219. Following the above substitutability assessments NPT is left with the following product markets on the terrestrial networks:

- The wholesale market for transmission services for local radio on terrestrial networks
- The wholesale market for transmission services for national radio on terrestrial networks
- The wholesale market for transmission services for television on terrestrial networks

3.6.5 Substitutability between cable and satellite

220. In the above assessment of whether the terrestrial networks have to be categorised as a separate product market, NPT has distinguished between cable and satellite on the one hand and terrestrial networks on the other. In this section the assessment is made whether also cable and satellite constitute separate product markets.

221. Coverage is a key parameter in assessing whether satellite and cable belong to the same relevant market. Neither the cable TV networks nor the satellite networks are national in the sense that virtually all end users can be connected to the respective networks. The cable TV networks are primarily concentrated in densely populated areas in Norway. In parts of the largest cities, cable TV networks overlap considerably, whereas in smaller geographic areas there is as a rule no more than one network. Although technically, satellites can have national coverage, in practice there are many households that *inter alia* for reasons involving satellite shades and/or civil law are unable to choose satellite broadcasting.

222. The assumed theoretical coverage for satellite is 85-90 per cent of Norwegian households, whilst cable TV networks have a theoretical coverage of 65 per cent, cf.

Table 1. According to the Norsk Media Barometer 2004,⁵³ only 15 per cent of households in the larger cities have dishes, whilst 71 per cent are connected to a cable system. In sparsely populated areas the percentages are 52 per cent and 6 per cent, respectively.

Slettet: Table 1

223. Cable and satellite distributors use transmission capacity as an input factor in producing the services that they offer their customers. The end users purchase an integrated package of network, service platform and content. The product sold varies depending on capacity on the network, different business concepts and the contracts entered into between the parties.

Demand-side substitution

224. Theoretically, a large percentage of households ought to be able to choose between cable or satellite. In practice, however, choice is more limited. For more about this and the delineation between private and public cable TV networks, see section 2.2.6. In many housing cooperatives, individual households are, for various reasons, not permitted to install their own dishes. This results in an actual limitation on the households' freedom of choice within geographically defined areas. However, many housing cooperatives have set up private networks for transmitting radio and

⁵³ Prepared by Statistics Norway, available at <http://www.ssb.no/emner/07/02/30/medie/>

TV. If a housing cooperative has established its own private network, and the primary provider of broadcasting services to this network raises its prices, the housing cooperative will be able to turn to other satellite- or cable-based providers of comparable services. Since in this instance a housing cooperative is to be regarded as an end user, the opportunity to switch between cable TV and satellite does exist, even if the individual household is not permitted to install its own dish. Likewise, end users in densely populated areas with services based on a cable TV network might choose satellite as a transmission platform as a response to a small but significant non-transitory increase in the price of the cable TV network. Seen in isolation, this indicates that there is substitutability between cable TV networks and satellite networks, especially from cable TV to satellite. However, it must be taken into consideration that there may be considerable costs related to replacing a platform. As a rule, costs will accrue for end user equipment, set-top-box and satellite dish, as well as different forms of connection charges and subscription costs. The sums vary according to which way a service is switched and which provider an agreement is signed with.

225. On the other hand, for end users in sparsely populated areas or neighbourhoods of detached houses, it is not given that a cable TV network alternative to satellite exists. Since substantial investment is required for establishing an access network for cable TV in sparsely populated areas, it is very unlikely that cable TV networks, in the short or medium term, will be able to constitute a real alternative to satellite networks in these areas. The fact that cable TV networks are primarily used by end users in housing cooperatives and in blocks of flats and that satellite broadcasts are received by more households in detached houses than in housing cooperatives indicates that the platforms are not substitutable, but complementary.

226. The demand in the wholesale market is derived from the demand in the retail market and is largely affected by the coverage of the network. The requesters in this market are made up of distributors (for example Canal Digital, ViaSat CDK and UPC) and pure-play broadcasters (such as NRK and TV2, for example). Since neither satellite nor cable TV networks are national, most broadcasters will probably want to be available on both platforms. Thus, transmission via satellite and cable for wholesale customers too will be considered more as complementary services than substitutes. Since very few broadcasters pay to be distributed via cable TV networks and satellite⁵⁴, traditional substitutability assessments in respect of switching costs will not be relevant in this context.

Supply-side substitution

227. Supply-side substitutability exists when providers of other (non-substitutable) products, as a response to a small price change in the short term, can change their production or distribution and offer substitutable products without incurring significant additional costs or substantial risk.

228. In this market, substitutability at the wholesale level would require that other providers could switch relatively easily to offering broadcasting transmission services

⁵⁴ The Broadcasting Act and the Broadcasting Regulations do not contain any provisions in respect of compensation for “must carry” programme channels. According to information from Telenor Broadcast, the broadcasters do not pay to be carried. The end users do not pay directly for these “must carry” channels, but pay for receiving a basic pay TV package consisting of “must carry” and other TV channels. NPT has learned that there is some disagreement in the market about whether the cable network owners are obliged to distribute “must carry” programmes without charge.

if the provider to which the end user is connected should impose a small but significant non-transitory price increase. NPT finds it rather unlikely that providers of transmission services on satellite can convert their production to offering transmission services on cable TV or vice versa.

Delineation of services on cable and satellite networks

229. In section 3.6.2, NPT concluded that transmission of radio and television on terrestrial networks constitutes two separate product markets. One of the reasons for this is the end users' demands for mobility. This factor is not relevant in respect of transmissions via cable or satellite. An end user receiving broadcasts via cable or satellite is just as immobile with regard to radio broadcasts as with regard to television broadcasts.

230. Unlike terrestrial networks, on which radio and television are provided over infrastructure that differs in part, these services are provided via the same infrastructure on cable and satellite networks. The end user purchases an overall package, consisting of radio and TV programming services and cannot opt out of one of these services.

231. Despite the fact that NPT has regarded radio and television as two different products on the retail level, cf. section 3.6.2, circumstances at the wholesale level mean that they must be regarded as part of the same market within cable and satellite, respectively.

Analogue and digital broadcasting

232. A technology shift in broadcasting is currently under way, whereby broadcasts are largely becoming digitised. Transmissions via satellite are already completely digitised, whilst digitisation has not been fully implemented on cable TV networks. Thus, on cable networks, analogue and digital broadcasts are being transmitted in parallel. The question will then be whether these transmission technologies are to be placed in the same or separate markets.

233. It may be claimed that end users who receive digital broadcasts are getting a different service from those receiving analogue broadcasts, with greater choice in respect of channels and interactive services. For end users the transition to digital transmissions will largely be seen as an upgrading and modernisation of the cable TV product. It must be expected that digital transmission will eventually develop into a close substitute, and even a replacement, for analogue transmission.

234. For their part, broadcasters are able to determine that end users gain access to a service that covers a certain portion of the population, regardless of transmission technology. Nor is a licence required to offer analogue or digital broadcasts via cable or satellite. It is common for the same distributor to provide both analogue and digital broadcasts on its cable TV network.

235. On the supply side, a substantially lower investment is required to transmit both analogue and digital broadcasts simultaneously on the cable TV network than on terrestrial networks. The owners of the cable TV networks are adapting their systems to be able to transmit digital broadcasts in step with the end users' wishes.

236. Thus, it is NPT's view that transmission services for analogue broadcasts via cable belong to the same market as transmission services for digital broadcasts via cable.

Conclusion

237. Demand-side substitutability assessments indicate that there is a greater substitutability going from cable TV to satellite than vice versa. On the supply side there is no substitutability. Thus, following an overall assessment, NPT believes that cable TV networks and satellite networks constitute separate product markets broadcasting transmission services. NPT furthermore regards both markets as covering both radio and television, and that both of these markets are technologically neutral.

3.6.6 Substitutability with other technologies

238. To some degree, broadcast content is also transferred over other types of technology than the three platforms discussed above.

3.6.6.1 Fixed network technology/xDSL

239. Further development and establishment of fixed network technology such as xDSL may represent a possible alternative as transmission services for broadcast content. Such technology will basically only provide possibilities for fixed reception, i.e. little mobility. Broadcasting over xDSL variations is not very widespread, *inter alia* due to capacity problems on the access networks. It is only in some areas that the copper wire connection is so good that it provides good enough broadcasting transmission in terms of quality.

240. Another alternative technology for transmission of broadcast content is optical fibre. Several energy companies are rolling out high-speed access networks in local areas, often based on fibre or a combination of different technologies. For example, Lyse Tele AS is offering triple-play services combining telephony, broadband and IP-TV via fibre. Lyse Tele is building only in Rogaland, but has partners in other parts of the country.⁵⁵ Lyse Tele itself had 15,100 IP-TV customers as of 31 December 2005. Including partner companies the number is 20,600. Telenor also offers television via fibre, but only on Svalbard.⁵⁶ Broadcasting over fibre connection, alone or combined in triple play services, is reckoned to have the potential to attract more end users as fibre connections are rolled out. However, such a rollout is very costly. As of today, fibre coverage is so minimal that broadcasting via optical fibre can hardly be said to be a real competitor to either cable TV networks, satellite or terrestrial networks, not even within the next two to three years. NPT therefore believes at this time that it is not right to include either transmission services over xDSL-solutions or optical fibre in the relevant market.

241. Another way of distributing radio or television content is via the Internet: Internet radio and TV. This will require that the end user has a broadband line with a certain download speed. In principle, such a broadband line can be achieved via xDSL, coaxial cable, optical fibre or similar. In particular, live radio via broadband (streaming) is offered to a relatively great extent by many broadcasters, and is used to a certain degree by end users. However, such broadcasts provide little opportunity for mobile reception. It will therefore hardly be an alternative to ordinary FM radio in cars, pocket radios etc. Internet radio is thus not very relevant for situations where end users by and large traditionally listen to live radio. One alternative is to download

⁵⁵ See www.lyse.no

⁵⁶ Read more about this on

http://www.telenor.no/om/presse/aapen_linje/2003_08/feature_svalbard.shtml

radio programmes to listen to later (for example through podcasting⁵⁷), but the end user then loses the immediacy people normally desire from radio. It is therefore difficult to see that Internet radio is a practical substitute for ordinary FM radio.

242. Today, only a limited number of television channels offer Internet TV. So far, live Internet TV has been used less than Internet radio, *inter alia* because it requires higher bandwidth to achieve good quality. Recordings of previously broadcast TV shows are more suited to reception via the Internet since they can be downloaded in their entirety and saved temporarily before the end user sees them. Nevertheless, it is difficult to imagine that end users view this as a satisfactory alternative to ordinary broadcasts they are used to watching on TV. In NPT's view, the technology has not come far enough for Internet TV services to constitute an alternative to cable TV, satellite or terrestrial networks for a significant number of end users within the time horizon of this analysis.

243. On this basis NPT has found no reason to include transmission services for television and radio broadcasts via fixed network technology in the relevant product market.

3.6.6.2 Mobile

244. Today's GSM and GPRS mobile networks do not have the capacity to offer transmission of television content. Further development of mobile technology and especially 3G technology is changing this picture. New wireless connections via, *inter alia* UMTS, WiMAX etc. can be alternative transmission platforms for television and radio. It may be a separate product (IP-TV) or via the Internet (Internet TV or Internet radio).

245. It is regarded as rather unlikely that transmission of radio via mobile networks will be particularly interesting commercially. This is transmitted via the terrestrial network and is free to end users. Many mobile telephones today already have a built-in FM receiver. Internet radio may possibly be interesting to end users who wish to listen to international radio broadcasts.

246. Sample surveys conducted by providers show that a large share of the population would like to be able to watch television via mobile phone.⁵⁸ Both Telenor Mobil and NetCom offer some Internet TV on mobile phone via UMTS, thereby utilising the possibility for broadband connection afforded by UMTS.⁵⁹ However, it is too early to say anything about when such services will be commercially and practically available to a significant group of end users, and thus represent an alternative as transmission capacity for broadcast content. Broadcasters' services and end user preferences in connection with format, services etc. will also affect how quickly such services win market share. In NPT's opinion this change has not come so far that it will have a noticeable impact within the time horizon of the analysis.

⁵⁷ Podcasting is a method for publishing audio files on the Internet. Podcasting uses the RSS format to publish audio files. The end user can download the audio files and play them at a later time.

⁵⁸ See *inter alia* <http://www.hegnar.no/IT-Kanalene/newsdet.asp?id=188469&cat=110> and <http://www.itavisen.no/showArticle.php?articleId=1306644>

⁵⁹ See <http://telenormobil.no/tjenester/3g.do> and <https://netcom.no/tjenester/internetpamobilen/mobiltv.html>

3.6.6.3 Conclusion

247. NPT sees that xDSL, optical fibre, UMTS etc. are access paths with a significant potential for transmitting both radio and television broadcasting services. The continual rollout of both broadband and radio relay link networks emphasises this, while at the same time different types of bundling and triple play services make it attractive for end users to choose these types of solutions.

248. It is NPT's opinion that these types of transmission services do not constitute a real alternative for a large enough number of end users, nor will they within the next two to three years. NPT has therefore concluded that within the time horizon of this analysis it is not relevant to include these technologies in the market for transmission services for broadcast content.

3.7 Conclusion – product definition

249. NPT has attempted to define the market in accordance with the current principles of competition law, attaching particular weight to the Recommendation and the Guidelines.

250. NPT has assessed the market for “broadcasting transmission services, to deliver broadcast content to end users” in respect of national circumstances. In NPT's view, the market consists of the following technologically neutral market segments:

- The wholesale market for transmission services for local radio on terrestrial networks
- The wholesale market for transmission services for national radio on terrestrial networks
- The wholesale market for transmission services for television on terrestrial networks
- The wholesale market for transmission services for television and radio on cable TV networks
- The wholesale market for transmission services for television and radio via satellite

251. For all these markets it is only the access part of the infrastructure that is included in the markets and that will, if necessary, be covered by sector-specific regulation.

252. In NPT's opinion, this division into several market segments is a deviation from the Recommendation. Pursuant to Electronic Communications Act § 9-3 and Framework Directive article 6, NPT will forward the market analysis to ESA for notification.

4 Definition of the relevant geographic market

4.1 General

253. According to the Guidelines, paragraph 57, the geographic market may be defined as that area in which the relevant product is offered on approximately similar and sufficiently homogeneous conditions of competition. The degree of substitutability both on the supply and the demand side may be taken into consideration in the assessment of the geographic market and, as a part of such a substitutability assessment on the demand side, preferences and geographic purchase patterns should be taken into account. However, it follows from the Guidelines, paragraph 60, that geographic markets in the electronic communication 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.

254. Further reference to Norway as a jurisdiction should therefore be taken to mean mainland Norway/Norwegian land territory, cf. the description of the applicability of the Electronic Communications Act in section 1.3.

4.2 Terrestrial networks

255. In chapter 3 NPT concluded that the product markets for broadcasting transmissions on terrestrial networks had to be divided into three: the market for television and the markets for local radio and national radio, respectively. The topic of discussion here is how these product markets are to be defined geographically.

256. Norkring is the only provider of a complete network for transmitting television via terrestrial networks. The demand side in the television market thus has no real substitution possibilities on terrestrial networks. This situation is expected to persist during the time horizon of this analysis, even though a changeover is seen during the period with respect to which party actually has the use of the frequency licences, from broadcasters to NTV.

257. Since only one provider exists of the service in question and the network by nature is national, NPT believes that the market for television transmission services over terrestrial networks must be defined nationally.

258. For national distribution of radio, Norkring, in the same manner as for television, reigns supreme. The demand side has no other providers to buy transmission service from if they are to comply with their licence obligations. Since Norkring is the only provider of transmission services for national radio and since by nature this network covers the entire country, NPT assumes that the geographic market for national radio transmission services is the whole of Norway.

259. Local radio is divided into 148 licence areas.⁶⁰ This means that the question may be raised whether the market for local radio transmission services shall consist of 148 local relevant geographic markets.

260. On the local level, a number of local radio broadcasters have set up all or part of the necessary equipment and networks themselves. But also local radio

⁶⁰ Cf. Regulation No. 1004 of 10 October 2000 relating to licence areas for local radio

broadcasters may purchase transmission services from Norkring. Norkring therefore has the possibility to offer services in these areas. According to Norkring's own data, Norkring has a 30 per cent market share of transmission services for/distribution of local radio.

261. Norkring's offer of transmission services for local radio transmission is differentiated according to coverage area, i.e. broadcasters' frequency licences. Norkring's offer of broadcasting transmission services is a reference offer in line with Telenor/Norkring's other wholesale products.⁶¹ The offer does not vary in price between the different geographic areas. The price depends on how much coverage is requested and the level of service desired by the customer. Hence, within these variables, the product Norkring offers is homogenous throughout the country. This suggests that it is not necessary to divide the market into geographically limited areas.

262. There are no other commercial providers of transmission services for local radio broadcasting. Local broadcasters either build their own networks or lease all or part of their capacity from Norkring. For its part, Norkring can offer appropriate services in all licence areas. The competitive conditions in this respect are the same in the various local radio areas.

263. With licensees doing more in the way of building their own networks, opportunities for more providers than Norkring may nevertheless eventually exist. In theory, it has not been ruled out that some of the radio broadcasters may be able to start external sales of leased lines on the networks they have built. This must be assumed to be relatively simple in technical terms. In that case, for other local radio broadcasters the companies may represent a real substitute to Norkring.

264. As far as NPT knows this has not been relevant in practice. On the contrary, NPT has information that local radio broadcasters are increasingly choosing not to build their own networks but purchase services from Norkring instead. The costs of rolling out and not least operating networks are so high that some broadcasters do not find it profitable to bear the expenses themselves. Norkring's offer and quality of service is preferred instead of own investments. Most local radio broadcasters have little money, which limits their ability and willingness to take on major investments. Uncertainty in connection with a forthcoming switch to digital transmission further emphasises this. It is nevertheless so that Norkring still has a relatively low market share.

265. In view of this, the market conditions cannot be said to be materially different from each other in the 148 different geographic areas. Any competition on the provider side will have to take place within the specified licence areas. Today, however, there are no indications that such a situation prevails. This means that Norkring is, and will continue to be, the only commercial provider, which moreover covers all the licence areas. Since this is the situation for all the areas, the competitive conditions are so alike that it does not make sense to divide up the market geographically beyond a national definition according to the scope of the Electronic Communications Act.

266. Following an overall evaluation, NPT has concluded that the markets for transmission services on terrestrial networks will be national for national radio services, local radio services and television services.

⁶¹ See www.jara.no

4.3 Cable TV

267. There are a number of minor/local distributors in the cable TV market.⁶² Many of these networks are owned by housing cooperatives or commonhold associations, but as mentioned these private networks fall outside the assessments here. For the majority of the other operators it may make sense to limit the provision of cable TV to the geographic area where the owners are based. An assessment of supply-side substitution can therefore suggest a split into several relevant geographic markets.

268. However, cable TV services from the local providers have relatively small coverage. The significance of their market position must be regarded as being marginal. In NPT's view, this may indicate that there is no basis for departing from considering the entire country as the geographic market in this analysis. In addition, NPT has stressed that the number of local/regional providers of cable TV indicate that it would almost not be practicable to define all geographically confined networks and market areas as separate relevant markets.

269. On the other hand, although the two large providers CDK and UPC are present in many cities and towns in the country, they too are not national in the sense that all households in Norway can receive cable TV based on CDK's and UPC's offers. This is largely due to the fact that it is economically profitable only to build systems where there is a reasonably high population density. NPT has learned that there are still relatively large areas with double coverage. This is particularly true in densely populated/urban areas, but double coverage is also possible in residential neighbourhoods since it is possible to use a single feeder point for connection, making extension less costly. The fact that there continually are examples of end users, both private individuals and housing associations, that switch provider is proof that there are several alternative providers to choose from. This weighs against a finding that each network should be a separate geographic market.

270. Since there are areas with double coverage and no clear geographic borders can be drawn between the portion of the population that can be offered cable TV and that which (currently) cannot receive such services, NPT has come to the conclusion that these are factors strongly weighing against a split into several relevant geographic markets.

271. In light of this, NPT assumes that the relevant geographic market for broadcast transmission services on cable TV networks is all of Norway.

4.4 Satellite

272. The operators in this market are predominantly international, and the relevant market is not necessarily limited to Norway. The market is defined more according to a satellite's footprint, which varies somewhat from one satellite to another. However, it is clear that each of the four operators identified in the introduction (SES Astra, Telenor, Intelsat and NSAB) have coverage in all of the Nordic countries.

273. There are factors that suggest that the market for transmitting broadcasting services via satellite is a transnational market. Such a transnational market has not yet

⁶² Cf. NPT's network report. The report was last updated for 2003, and is available on request.

been defined by ESA, and it is outside NPT's competence to regulate markets beyond Norway's borders, cf. the Framework Directive article 15 (4).

274. The two distributors that package programme services for retransmission via satellite – Canal Digital and ViaSat – purchase transponder capacity from Telenor and NSAB in order to provide TV programming in other Nordic countries as well.

275. NPT also refers to a statement by the Commission in connection with the planned merger between Telenor and Telia that the market for providing transponder capacity must be regarded as being Nordic (or possibly Scandinavian).⁶³ The Commission justified its assessment by arguing that cultural and linguistic factors do not pose sufficient barriers to broadcasting largely the same channels across the entire Nordic region, since the Scandinavian countries have the same tradition of subtitled foreign programmes.⁶⁴

276. In light of this, NPT regards the market for transmitting TV and radio via satellite as being transnational. Pursuant to the Framework Directive, article 15 (4), NPT may not regulate transnational markets, and the market for broadcasting transmission services via satellite will therefore not be discussed further in this analysis. NPT will await the Commission's and ESA's further efforts on a common European approach to this market and align its regulations accordingly. Should ESA and the Commission define a transnational market for broadcasting transmission services via satellite NPT will consequently have to revisit the issue, and perform an analysis.

277. On this basis NPT has concluded that the market for broadcasting transmission services, for delivering broadcast content to end users consists of the following four market segments:

- The wholesale market for transmission services for local radio on terrestrial networks
- The wholesale market for transmission services for national radio on terrestrial networks
- The wholesale market for transmission services for television on terrestrial networks
- The wholesale market for transmission services for television and radio on cable TV networks

⁶³ Cf. case COMP/M.1439 (Telia/Telenor)

⁶⁴ Cf. also PTS's market analysis and the Commission's statements regarding Austria's and Ireland's market analyses.

5 Threshold for *ex ante* regulatory intervention

5.1 General

278. Should national regulatory authorities define product markets departing from ESA's Recommendation of relevant markets⁶⁵, it must be assessed whether the market(s) are suited to sector-specific *ex ante* regulation. This assessment has already been made for the predefined markets, and the question has been answered affirmative.⁶⁶

279. NPT has found it practical and necessary to divide the predefined market according to the three different types of infrastructure for transmitting broadcasting, and furthermore by service for the terrestrial networks. Substitutability assessments have shown that national conditions do not make it possible to define a single common market for broadcasting transmission services, as the Recommendation calls for. Instead, NPT has defined four separate national markets and one transnational market, cf. section 3.7 and chapter 4. This represents a deviation from the Recommendation's predefinition of the broadcasting market.

280. In assessing whether a market that deviates from the Recommendation qualifies for sector-specific *ex ante* regulation the market shall be assessed with regard to three cumulative conditions. The conditions are listed in the Recommendation recital 12 ff. If any of the conditions are not met, the market should not be analysed with a view to possible *ex ante* regulation.

281. In the following, NPT will assess the four national wholesale markets for transmitting broadcasting services against the three criteria presented below, to examine whether the conditions are met and whether the market analyses are therefore required. The cumulative criteria are as follows:

1. There are structural or regulatory entry barriers in the relevant product market. These must be high and non-transitory.
 - For example, *structural entry barriers* may be the extent and coverage of the network, high sunk costs and control over infrastructure that is not easily duplicated.
 - *Regulatory entry barriers* may be the consequences of legal, administrative or governmental decisions that have a direct impact on conditions for access to and/or the operator's positioning in the relevant market. Frequency rights are an example of such a possible entry barrier.
2. The market has characteristics such that it will not sufficiently tend towards effective competition within the time horizon of the analysis.
3. Ordinary competition law does not sufficiently address the objectives behind sector-specific regulation, for example in situations

⁶⁵ See Framework Directive article 7, Recommendation recital 22 and Explanatory Memorandum page 12.

⁶⁶ See Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on Market Reviews under the EU Regulatory Framework (COM(2006)28 final), section 4.1.

- where extensive interventions are required to correct a market failure
- where interventions are required relatively frequently or where the timing of an intervention is of great importance
- where it is crucial to create legal predictability.

282. In an assessment of whether the final *ex ante* condition has been met the point of departure must be the real and/or potential competition problems in the market. The regulatory options encompassed in ordinary competition law must be assessed in relation to any sector-specific *ex ante* regulation.

283. Below we shall review the criteria in the aforementioned order, to the extent necessary, for broadcasting transmission services on terrestrial networks and on cable TV networks.

5.2 Transmission services for radio on terrestrial networks

5.2.1 The market for transmission services for local radio on terrestrial networks

5.2.1.1 Do structural or regulatory entry barriers exist?

284. In chapter 4 NPT concluded that the market for local radio transmission services is to be viewed as a single national market. This is because the same competitive conditions prevail within the entire country. There is just one commercial provider: Norkring. The demand side utilises Norkring's/Telenor's reference offer to distribute its transmissions within its licence areas. The alternative is that local broadcasters build and operate their own networks. As of today approximately 70 per cent build their own networks, while 30 per cent use Norkring's services.

285. Many local radio broadcasters are self-sufficient in respect of transmitter equipment. These broadcasters do not necessarily own the masts on which the antennas and other transmitter equipment are mounted, but often rent space on masts belonging to Norkring or mobile operators, or on rooftops/walls etc. (co-location). Since local radio only shall provide coverage in a limited geographic area, relatively limited infrastructure investments are required. In most areas, 1-3 transmitters in an area are sufficient to cover the area in question. The fact that as many as 70 per cent of local broadcasters have chosen such a solution suggests that this is practically possible, even for broadcasters with modest access to capital to begin with.

286. In NPT's view, there are therefore no high and non-transitory entry barriers in the markets for transmitting local radio on terrestrial networks.

287. The market must meet all three relevant criteria to justify *ex ante* regulation. Since the markets for transmission services for local radio are not deemed to have entry barriers of any significance, this market will not be assessed further in respect of the remaining criteria.

5.2.2 The market for transmission services for national radio on terrestrial networks

5.2.2.1 Do structural or regulatory entry barriers exist?

288. The topic of discussion here is whether structural or regulatory entry barriers entail an asymmetry between an established undertaking and any new operators in the market. New operators in this connection are other undertakings that could conceivably compete with Norkring on offering a transmission service for national radio. Since NPT has concluded that the market is to be defined in a technologically neutral manner, both analogue and digital transmission services will be relevant to assess. Nevertheless emphasis must be placed on the fact that in the relatively near future analogue radio is expected to be phased out and digital radio (DAB) will take over as a transmission technology.⁶⁷ Any new operators on the supply side are more likely to establish themselves as competitors on DAB, than orient themselves toward an FM radio market in the process of being faced out.

289. Factors in an assessment of the structural entry barriers include *inter alia* control of infrastructure not easily duplicated, unrecoverable sunk costs etc. All of these can influence the feasibility of new operators entering the market.

Control of infrastructure and sunk costs

290. If an operator controls infrastructure that is not easily duplicated, and this infrastructure represents a necessary input factor in the relevant market, this could represent a substantial entry barrier to potential competitors. Without taking a position on whether the relevant infrastructure in this market may be seen as an essential facility in relation to competition law, NPT must assess whether control of such infrastructure can be seen as a structural entry barrier in this relevant market.

291. As of today only Norkring controls mast infrastructure that can cover the entire country. This obviously implies an advantage for the company in relation to new operators. The fact that Norkring too will have to invest in new equipment to modernise the transmitter network to offer a satisfactory DAB broadcasting service, does not change this advantage materially since the purchase of new transmitter equipment per se is not crucial when a complete access network is to be established. The costs of such equipment are relatively low, seen in relation to investment costs of building the actual masts, sites and other related systems.

292. Theoretically, it is possible to establish a physical terrestrial network parallel to Norkring's. It is not so that Norkring controls infrastructure that is impossible to duplicate in technical terms. In practice, however, the establishment of a satisfactory alternative to Norkring's terrestrial networks for distribution of radio will be very time consuming and costly. Financial considerations therefore indicate that a whole new mast infrastructure for radio broadcasting over terrestrial networks is not very likely.

293. Unrecoverable sunk costs are fixed costs attributable to an irreversible investment. Unrecoverable fixed costs mean that a potential newcomer faces higher decision-relevant costs than the operator already established. This cost difference comprises an entry barrier to the potential entrant.

⁶⁷ A decision on the shut-off date for FM radio has not been made. In its report of 19 December 2005, "Digital Radio in Norway", the digital radio group has proposed the year 2014 as a fitting shut-off date.

294. The construction of masts for a nationwide network will be very costly. It is highly unlikely that a competitor of Norkring would manage to roll out a completely parallel terrestrial network for national radio transmission. As shown below, a new FM network will not be particularly relevant since the lack of frequencies limits new operators on the demand side, and the time horizon for the lifetime of FM radio places restrictions on the existing requesters' opportunity and willingness to negotiate with new providers. This means that not only is the rollout of DAB networks the most attractive for new operators, but also establishment of completely new infrastructure for this purpose will be so costly that it must be viewed as virtually unrealistic.

295. However, Norkring offers co-location on its masts where there is space. In theory, using co-location on Norkring's masts, alternative providers of transmission capacity for transmitting radio can therefore realise an alternative distribution network. Co-location in Norkring's mast infrastructure also has the advantage that the masts are situated in accordance with multinational and bilateral coordination agreements Norway is party to, and adapted to the needs of broadcasters.

296. NPT has obtained information on whether co-location in Norkring's transmitter stations, masts etc. is difficult in practice. Norkring/Telenor says that co-location is offered on the same conditions as the Telenor Group's regulated co-location products. This means that co-location is to be provided on non-discriminatory and objective terms, that the offer is transparent and in line with the other wholesale products in Telenor's wholesale offer⁶⁸. On the other hand, other operators maintain they receive insufficient information about the cost basis of Norkring's offer. After having been in talks with the national radio broadcasters, NPT nevertheless has the impression that they are reasonably satisfied with the negotiating climate and the agreements they have with Norkring.

297. NPT has not been able to confirm whether this is also the case for new operators who wish to establish themselves as competitors to Norkring for distribution of radio. This is because NPT is not aware of any such operators. It is difficult to know whether the lack of potential competitors means that no operators, national or international, view it as a profitable business idea to operate radio transmission services in Norway at the current time, or whether entry barriers per se mean that in principle interested operators give up already before they enter into negotiations with Norkring.

298. Indeed, providers of terrestrial-based transmission services also use other masts and installations than the ones Norkring owns. There are examples of networks that to a relatively high degree rely on co-location with telecom operators (for example NetCom and Telenor Mobil). To ensure a complete nationwide network, it will nevertheless be necessary to install equipment in Norkring facilities too. A complete national network that meets broadcasters' coverage obligations is practically inconceivable unless Norkring's mast infrastructure is used to a greater or lesser degree.⁶⁹

⁶⁸ See www.jara.no

⁶⁹ P4's licence, by which P4 is entitled to distribute broadcasts on the FM network, is an example of a network that to a certain degree was built without the use of Norkring's masts. This new FM network was not built on earlier multilateral or bilateral coordination agreements, but it must be clear that Norkring had an advantage in already owning masts etc. that could be used even though antennas etc. had to be adjusted. P4 has achieved approximately 60 per cent of its coverage by using Norkring's network, a further 40 per cent coverage has been achieved by co-locating small and medium-sized

299. If an undertaking wishes to build a new nationwide network in Norway, and this business should prove to fail, it cannot expect to get back much of its invested funds. For example, the infrastructure/means of production cannot easily be sold in a secondary market, as is the case in many other businesses. The sunk costs will rise with the size of the network, i.e. coverage and capacity. Besides, such sunk costs are presumably especially high in Norway, due to its rugged topography and scattered population. Sunk costs thus also represent an entry barrier because Norkring does not face such investment costs – they have already been sunk.

Regulatory entry barriers

300. Regulatory entry barriers can be both laws and regulations along with decisions issued by relevant authorities, cf. the Recommendation recital 15.

301. Pursuant to the Broadcasting Act § 2-2 a licence is required to construct or operate a wireless terrestrial network that is primarily to be used for broadcasting.

302. A factor in the assessment of the granting of such a licence is the coverage obligations imposed on radio broadcasters. The coverage requirements must be met within the frequency licences granted, cf. Electronic Communications Act chapter 6. The frequency plans underlying the licences are based on multinational and bilateral coordination agreements. Norkring has long adapted its establishment of infrastructure according to these frequency plans, and to a certain degree the granting of frequencies in Norway has been based on Norkring's infrastructure.

303. As of today there are no more frequencies available for national analogue radio. The frequency resources that have been set aside for national FM transmissions under the current frequency plan have been fully distributed among NRK, P4 and Kanal24.⁷⁰ New operators on the demand side are therefore irrelevant and there is consequently very little competition for new operators on the supply side.

304. Final licences for DAB radio have yet to be awarded. However, possible frequency bands for transmitting DAB have been set aside, and more may be allocated. Newly allocated frequencies for national radio plus the fact that DAB enables more efficient utilisation of them means that it is possible to envision new operators wishing to enter the demand side. Consequently, it can also be more interesting to get established on the supplier side. During the advertising of final DAB licences, new operators of transmission services can also compete with Norkring and broadcasters for frequency resources direct in the licensing round. The competing parties therefore encounter the same regulatory entry barrier. Nevertheless it is natural to think that because of its size, experience in the market and financial strength, Norkring will have an advantage in a licensing round.

transmitters at other operators, for example telecom operators. Still it should be noted that in this agreement Norkring is P4's sole contracting party, and then for a complete national network. The other providers are subcontractors to Norkring.

⁷⁰ An overview of frequencies allocated for radio are described in Appendix 7.

305. Other considerations that complicate the duplication of terrestrial networks are related to the environment. Environmental protection can limit the rollout of new infrastructure. Ensuring appropriate and sustainable management of central environmental resources such as cultural communities, outdoor recreation and aesthetics are compelling administrative considerations.⁷¹ The possibility for rolling out new infrastructure is thus limited through planning and building authorities' authorisations and decisions. Such limitations constitute regulatory entry barriers that can discourage new operators, and on the other hand be a considerable advantage for the already established operator Norkring, which has already established its infrastructure in line with approved zoning plans.

Conclusion

306. The above assessments demonstrate that there are both structural and regulatory entry barriers. On the structural side the financial burden of establishing a parallel terrestrial network is the biggest challenge for new operators. Limited frequencies and licences are high regulatory barriers.

307. In NPT's view, both structural and regulatory entry barriers thus exist in the market for national radio transmission services on terrestrial networks. Their magnitude creates a clear asymmetry between the established operator Norkring and new operators. NPT therefore considers the first of the three *ex ante* criteria as being met.

5.2.2.3 Does the market have characteristics such that it will not sufficiently tend towards sustainable competition?

308. Should the market, despite high entry barriers, tend towards sustainable competition, sector-specific *ex ante* regulation shall not be implemented.

309. No operator other than Norkring has a national mast infrastructure that can be offered to broadcasters. Today there is therefore no competition in offering transmission services for radio broadcasting over terrestrial networks.

310. The question is then whether it is conceivable, within the next two to three years, that the market will tend towards effective competition. For this to be the case it requires that new providers enter the market for national radio transmission services on terrestrial networks.

311. As the above makes clear, entry barriers in this market are so high that the duplication of Norkring's mast infrastructure must be regarded as unrealistic. It is also highly uncertain whether a new operator will regard it as profitable to establish its own transmitter network by means of co-location on Norkring's masts. For FM radio, it is unrealistic that anyone will enter the market since no new operators will be forthcoming on the demand side and the existing ones have already signed long-term agreements with Norkring. However, in a DAB market it could be more attractive to compete for customers. Due to the large entry barriers, the fact that DAB licences have yet to be awarded and that the shut-off date for FM networks has not been set, it is NPT's view that a new operator will not arrive on the scene over the course of two to three years.

⁷¹ See *inter alia* Report No. 58 (1996-97) to the Storting "Environmental protection policy for sustainable development" and Report No. 29 (1996-97) to the Storting "Regional planning and land-use policy".

312. For this reason it is NPT's view that the market for radio transmission services is not sufficiently tending towards sustainable competition. Consequently, the second *ex ante* condition has been met.

5.2.2.4 Will regulation beyond ordinary competition law be necessary to address the objectives behind sector-specific regulation?

313. The final criterion that must be tested is whether ordinary competition law *per se* is sufficient to ensure the dynamics of the market. Only if ordinary competition law is insufficient for promoting sustainable competition is sector-specific regulatory intervention relevant, cf. the Recommendation recital 18.

314. Ordinary competition law is sufficient if it can address the same objectives that are the intent of sector-specific regulation. For this to be the case, competition law must have a sufficient appropriate legislative basis containing effective remedies.

315. Ordinary competition law has a broad application area and wide-reaching remedies. In this context the most relevant legal rules in competition law are Competition Act §§ 11 and 12.

316. Competition Act § 11 prohibits abuse of a dominant position. The tools the competition authorities have at their disposal should this prohibition be violated are authorised in § 12. Through individual decisions the competition authorities may impose any measure necessary on undertakings to bring the infringement of § 11 to an end, cf. Competition Act § 12 first paragraph.

317. To assess whether sector-specific regulatory intervention may be required rather than ordinary competition law measures, it makes sense first to attempt to identify an existing or potential market failure. This assessment must have a forward-looking perspective, but it is also natural to look at the earlier and current situation.

318. The use of specific obligations in accordance with sector-specific rules is not conditional on whether exploitation of market power is actually taking place. It is sufficient that a competition problem can potentially arise under given conditions. Furthermore, the nature of this competition problem must be such that ordinary competition law is not regarded as an adequate retaliatory device. The criteria for assessing the qualifying nature of the competition problem in this respect are *inter alia* the need to create regulatory predictability in the market, how frequently regulatory intervention will be relevant, and the time pressure under which any interventions must be undertaken.

319. The market for distribution of national radio programming is characterised by apparent structural problems. A single provider (Norkring) controls access to the mast infrastructure on the terrestrial networks and has by means of large irreversible investments established a *de facto* monopoly. There are also high regulatory entry barriers in the market. The construction of a new analogue terrestrial network for radio alongside the existing one is therefore regarded as unlikely.

320. This *de facto* monopoly situation implies an opportunity for the provider to engage in denial of access, excessive pricing etc. Such potential monopoly behaviour can represent a risk both *vis-à-vis* broadcasters who want their radio content to be distributed, and new operators who want access to establish their own transmission service. In that respect the behaviour could distort competition among already existing operators and deter new operators from entering the market. Consequently, it must be

regarded as a theoretical possibility that Norkring's control of the access network for radio transmission services may constitute a potential competition problem and market failure. Nevertheless, this does not appear to characterise the situation in the market.

321. There are no alternative providers to Norkring for national radio transmission services. NPT has held meetings with the operators on the demand side in Norway to obtain information on how they view the current market situation. So far Norkring has not denied broadcasters access to its mast infrastructure. Norkring offers installation in its transmitter stations and on its antenna masts according to co-location agreements. With respect to the complete transmission service Norkring does not have a standing offer for national radio transmission services for potential new customers. Norkring will build and operate the new transmitter network after the agreements have been signed with the individual broadcasters. Agreements on complete transmission services will therefore always be adapted to the needs of the individual broadcaster.

322. The three broadcasters who buy transmission services for radio are working closely together in connection with the negotiations with Norkring. Joint negotiations are taking place to a certain degree. The negotiations involve agreements spanning ten to fifteen years, implying that both requesters and providers bear considerable risks. Providers must be able to guarantee that quality goals and upgrading requirements are met during the entire period of the contract, while requesters must secure long-term financing. However, there are important reasons for why operators in this market endeavour to achieve a long-term view in the contractual relationship. For the commercial broadcasters there is a direct relationship between the size of the listening audience and the revenues they receive from advertising and sponsors. Any new operators must build up customer volume over a long period of time. This indicates that the costs for the agreed quality and coverage area for Norkring's transmission product have to be phased in over a long period of time. For the provider a long-term view in the contractual relationship is also necessary to ensure that considerable operating and rollout costs can be recouped. The need for a long-term view on both the provider and demand sides serves to characterise the market for transmission services for radio content with a high degree of predictability for the operators.

323. There are several factors indicating that the dynamics of the market for national radio transmission services are characterised by mutual dependence between providers and the operators on the demand side. NPT has no indications that as the only provider Norkring can act independently of counterparties. This can possibly be explained by the fact that the negotiating strength of broadcasters to a large extent balances the prominent position Norkring has as an infrastructure owner. Even if Norkring controls a necessary input factor for realising a transmission service for national radio, the individual radio channels are the licence holders and control the allocated radio frequencies⁷². Since control of frequencies and broadcasting licences are similarly necessary input factors for realising the transmission service, this will restrict Norkring's ability to act independently. Besides, if radio broadcasters negotiate as a group, they will together control a considerable portion of Norkring's revenue basis. Revenues from the agreements with the commercial channels Kanal 24 and P4 amounted all together to **[Exempt from public disclosure]**⁷³ of Norkring's revenues in 2005. NRK, which conducts parallel negotiations for radio and television

⁷² Norkring has frequency licences for national DAB up to 31 December 2010.

⁷³ Cf. Public Administration Act § 13, Freedom of Information Act § 5a

distribution, alone contributed [Exempt from public disclosure]⁷⁴ of revenues. The higher the degree of concentration among operators on the demand side, the more difficult it will be for Norkring as the only provider to autonomously draft the terms and conditions of its agreements.

324. In discussions with broadcasters it has been pointed out that there is a desire in the industry for the rollout of DAB to be regulated by the market itself, in line with commercial assessments. It is therefore not necessarily considered to be an advantage that sector-specific regulation sets the terms for the negotiating situation between the provider and demand sides. A detailed set of obligations can contribute to shifting the balance between the operators and disturbing the dynamics afforded by commercial negotiations.

325. Furthermore, there appears to be only moderate doubt that Norkring's/Telenor's prices are unreasonable. Comparisons broadcasters themselves have carried out regarding *inter alia* similar agreements in Sweden have not provided indications that Norkring charges excessive prices.

326. On this basis, NPT has no indications that there is anything about Norkring's behaviour or the dynamics in the market to suggest that as the sole provider the company can set the conditions and prices for the transmission service without regard to the counterparties.

327. Nor does NPT have reason to believe that the negotiating conditions and prices have deteriorated in the recent past. Some of the broadcasters have even said that they see positive developments. What characterises the negotiating situation in this market, in addition to the fact that the agreements entered into are long-term and are not subject to annual renegotiation, is that negotiations are rarely conducted under pressure of time. Still, this does not mean that there is not any pressure on both parties to enter into new agreements. While the infrastructure owner has maintenance costs related to maintaining the infrastructure and wishes the whole time to maximise utilisation of the capacity, broadcasters have usually invested in frequencies, or have rollout and coverage obligations imposed on them in their licences. The fact that the negotiations between the parties will be protracted can instead be a sign of the mutual dependency the operators experience among themselves, and that there is room to measure bargaining power as long as there are no real alternative contracting parties.

328. The fact that the negotiating situation between the operators in the market for transmission services for radio content arises at intervals of ten to fifteen years may indicate that regulatory interventions are very rarely required. A stable and predictable negotiating process indicates that ordinary competition law can be sufficient for intervening against potential abuse of market power. It may also prove simpler for the competition authorities to intervene *ex post* in a market where a few long-term contracts are signed, and where the exploitation of dominance will be limited to the period when these agreements are negotiated.

329. If a market is characterised in principle by a high degree of predictability for the operators, and the product or service that is sold is realised over a long time period, this may lessen the need for sector-specific intervention. In such a market it must be assumed that the requirement for legal predictability can be met under ordinary competition law.

⁷⁴ Cf. Public Administration Act § 13, Freedom of Information Act § 5a

330. Competition law assumes that the threshold for § 11 has not been violated where there is a theoretical risk of denial of access, but where it does not actually happen. For example, there may be situations where mutual dependency exists between provider and requester. Such a situation is as shown the case in the Norwegian market for transmission services for radio content over terrestrial networks.

331. Furthermore it is worth noting that the market for broadcasting transmission services so far has not been subject to sector-specific regulation. Nor have the operators in the market approached NPT for assistance, and NPT is furthermore not aware of any cases before the Norwegian Competition Authority in this connection. It is adjacent to believe that if for example excessive pricing or illegal discrimination had taken place, the market operators would have reacted to this earlier. The parties have always had the opportunity to invoke general competition law, but have so far not availed themselves of this option.

332. Concerning the question of whether the potential competition problems in the market can be sufficiently handled by the provisions of the Competition Act, an appropriateness assessment is to be undertaken in which emphasis shall be placed on the need for legal predictability, a detailed set of obligations and frequent and quick interventions. An assessment of whether this applies to the relevant market must be based on real and/or potential competition problems in the market, and measure these against the remedies general competition law has at its disposal.

333. In the market for radio broadcasting transmission services, denial of access has never been a problem. Both providers and the operators on the demand side depend on predictability and a long-term view in the contractual relationship and are mutually dependent on each other since both control wholesale services that are necessary for realising the transmission service. Moreover, regulatory intervention will be limited to having to assess a limited number of agreements negotiated at intervals of ten to fifteen years.

334. Competition law has always been available, but not invoked by the parties. On this basis, there does not appear to be a special need for legal predictability or a detailed set of obligations. Nor can the need for frequent and quick regulatory intervention be said to be present.

335. In view of this, NPT believes that competition law may be a sufficient legal basis for addressing the same objectives sector-specific *ex ante* regulation is meant to realise. NPT therefore believes that regulation beyond ordinary competition law will not be necessary in this market.

5.2.2.5 Conclusion: national radio on terrestrial networks

336. In NPT's view, evident structural entry barriers exist in respect of establishing a mast infrastructure for transmission services for national radio. It is deemed unlikely that alternative providers will establish the necessary mast infrastructure required for nationwide broadcasting. A movement towards sustainable competition in the long term is therefore not likely. The first two criteria for *ex ante* regulation are met in that respect.

337. However, NPT concludes that ordinary competition law has sufficient remedies to rectify the potential competition problems that could conceivably arise in the market within the time horizon of this analysis. Since the three criteria for sector-

specific *ex ante* regulation are cumulative and the final criterion here has not been met, such regulation shall not be applied, cf. the Recommendation recital 12 ff. Consequently, no further analysis of the market will be undertaken.

5.3 The market for transmission services for television on terrestrial networks

5.3.1 Do structural or regulatory entry barriers exist?

338. The issue here is whether structural or regulatory entry barriers entail an asymmetry between an established undertaking and any new operators in the market. New operators in this connection are other undertakings that could conceivably compete with Norkring on offering a transmission service for television. Since NPT has concluded that the market is to be defined in a technologically neutral manner, both analogue and digital transmission services will be relevant to assess in principle. Nevertheless, emphasis must be placed on the expectation that analogue television will be phased out in the near future and DTT will take over as a transmission technology. New potential operators on the supply side are more likely to want to establish themselves as competitors on DTT, than orient themselves toward an analogue television market in the process of being shut down.

339. Factors in an assessment of the structural entry barriers include *inter alia* control of infrastructure not easily duplicated, unrecoverable sunk costs etc. All of these can influence the feasibility of new operators entering the market.

Control of infrastructure and sunk costs

340. If an operator controls infrastructure that is not easily duplicated, and this infrastructure represents a necessary input factor in the relevant market, this could represent a substantial entry barrier to potential competitors. Without taking a position on whether the relevant infrastructure in this market may be seen as an essential facility in relation to competition law, NPT has assessed whether control of infrastructure that is not easily duplicated can be seen as an entry barrier in this relevant market.

341. Norkring owns and operates the nationwide mast infrastructure used on the terrestrial networks. The network includes a number of large transmitter stations with very tall transmitter masts and powerful transmitters. In addition there are a considerable number of smaller stations with lower masts. Considerable capital has been invested to roll out and maintain such a network.

342. Theoretically, it is possible to establish a new terrestrial network parallel to Norkring's. It is not so that Norkring controls infrastructure that is absolutely impossible to duplicate in technical terms. In practice, however, the establishment of a satisfactory alternative to Norkring's terrestrial network for distribution of analogue national television would be so time consuming and costly that it is considered completely improbable that it will happen, not least taking into consideration the fact that the decision has been made to cease analogue transmission. For local television the entry barriers must be assumed to be somewhat lower, since fewer transmitters etc. are required to cover the geographic area concerned. However, experience shows that most local-TV licensees today use Norkring as a supplier of these services, which can indicate the existence of relatively high entry barriers in these markets too, seen in

relation to the companies' investment ability and finances. The situation will change even more with the transition to DTT, since local TV licensees then will have to relate solely to NTV as provider of the transmission service. This is described in more detail below.

343. Unrecoverable fixed costs ("sunk costs") are fixed costs attributable to an irreversible investment, i.e. a provider cannot expect to recover the capital expenditure once it is made, for example through the sale of the investment, if the provider wishes to exit the market. Unrecoverable fixed costs mean that a potential newcomer faces higher decision-relevant costs than the (or those) operator(s) already established.

344. Building masts and related infrastructure for a nationwide terrestrial network will be very costly. Norkring's mast infrastructure consists *inter alia* of 47 main transmitter stations that are frequently located on mountaintops that are difficult to access. Erecting masts and installing transmitter equipment involves high sunk costs that constitute an asymmetry between the established undertaking and new operators in the market. This is a major reason why it must be expected that the rollout of DTT will depend on using the mast infrastructure already established for analogue television broadcasting.

345. The cost of establishing necessary infrastructure for transmitting local television will naturally be lower than for national television. NPT nevertheless assumes that there will be considerable sunk costs for local television too. Besides, with the transition to digital terrestrial networks, establishing small local networks adapted to local television broadcasters will be irrelevant. The awarding of frequencies in connection with the DTT network means that by nature the network will be national. A potential competitor to Norkring would not be able to build smaller networks with a view to attracting only local broadcasters since all available DTT frequencies have been assigned to NTV.

346. Norkring has already recouped its investment in the existing infrastructure. This cost difference comprises an entry barrier to a potential entrant. The sunk costs will rise with the size of the network, i.e. coverage and capacity. Besides, such sunk costs are presumably especially high in Norway, due to its rugged topography and scattered population. The fact that there is no secondary market for the large investments in infrastructure that are required, entails considerably higher risk for new providers of transmission services.

347. NPT therefore believes that there are relatively high sunk costs connected with establishing a national terrestrial network for television, and that this represents a considerable entry barrier.

348. With the transition to DTT the argument can be made that, like any new provider of transmission services, Norkring faces similar investments in the technical equipment for broadcasting. However, the antenna mast and related equipment rooms etc. are irreversible investments that Norkring has already made but which constitute a significant entry barrier to a new operator.

349. The question is whether the same will apply to the actual antennas, antenna cables, the feeder system, combiners, receiving equipment and transmitters. In defining the access part of the terrestrial network, it is assumed that these elements must also be included in the product market, see section 2.2.5.2. It must be expected that Norkring has a competitive advantage in the form of technical expertise and information about capacity at its transmitter stations, and that this makes installation

of technical equipment for broadcasting more difficult for other providers. Transmitting power, voltage capacity and frequency area considerations also warrant Norkring maintaining overall control of such installations. The carrying capacity of the antenna mast is also limited, so that installation of several antennas will have to be restricted and carefully coordinated. NPT is also aware that Norkring has already started updating its equipment to be ready to offer DTT. Part of the investments have already been made and written down to a certain degree. These are in turn factors indicating the existence of a pronounced asymmetry between Norkring and any new providers.

350. Norkring currently offers co-location wherever there is space available on its antenna masts and in its equipment rooms. In theory, using co-location on Norkring's masts, alternative providers of transmission capacity for transmitting (analogue) television can therefore realise an alternative distribution network. Co-location in Norkring's mast infrastructure has the advantage that the masts are situated in accordance with multinational and bilateral coordination agreements for frequencies Norway is party to, and adapted to the needs of broadcasters.

351. Norkring says that co-location is offered on the same conditions as the Telenor Group's regulated co-location products. This means that co-location is to be provided on non-discriminatory and objective terms, that the offer is transparent and in line with the other wholesale products in Telenor's offer⁷⁵. The fact that Norkring already offers co-location on the same terms as the Telenor Group's regulated products, serves to some degree to reduce the structural entry barriers.

352. Since Norkring is a national provider and well-established in the analogue broadcasting market, it will be difficult for a new operator to offer sufficiently differentiated services that would draw broadcasters away from Norkring. This is further reinforced by the fact that contracts for analogue transmission of television are long-term, and in practice all such agreements have already been signed for the remaining life of the analogue terrestrial network. There is therefore in reality no demand for such services that new providers can cover. This is obviously a major obstacle to entry.

353. As the DTT licence holder NTV will be awarded all the frequency resources set aside for this purpose and thus be the only party that will benefit from requesting access to Norkring's technical broadcasting equipment for television transmission services. NTV will both rent the actual transmitter network and outsource the operations to Norkring, and on the other hand sell transmission services to NTV Pluss or individual broadcasters. There will not be other requesters of Norkring's transmission services since neither distributors nor broadcasters will have their own frequencies over which they can transmit television content. This is clearly a very high entry barrier.

354. Within the time horizon of this analysis NTV will have a *de facto* monopoly on digital transmission of television broadcasting. This may change if more frequencies are released and dedicated to DTT technology, but this is not going to happen within the next two to three years.

355. In the market for television transmission services on the terrestrial network, Norkring thus controls infrastructure that is not easily duplicated, and the sunk costs

⁷⁵ See www.jara.no

invested in this infrastructure constitute an actual and considerable structural entry barrier to new operators.

Regulatory entry barriers

356. Regulatory entry barriers can be both laws and regulations along with decisions issued by relevant authorities, cf. the Recommendation recital 15.

357. Pursuant to the Broadcasting Act § 2-2 a licence is required to construct or operate a wireless terrestrial network that is primarily to be used for broadcasting.

358. One factor in such a licence is the coverage obligations imposed on broadcasters. TV2's licence requires that the broadcasts reach at least 86 per cent of the population via terrestrial transmitters. The coverage requirements must be met within the frequency licences granted, cf. Electronic Communications Act chapter 6. The frequency plans underlying the licences are based on multinational and bilateral coordination agreements. Norkring has long adapted its establishment of infrastructure according to these frequency plans, and to a certain degree the granting of frequencies in Norway has been based on Norkring's infrastructure.

359. The same environmental considerations discussed in connection with radio pose in the same way regulatory entry barriers to television over terrestrial networks.

360. Another regulatory entry barrier in the market for television transmission services on terrestrial networks is the availability of relevant frequencies. International coordination agreements for frequencies also constitute regulatory barriers to establishing mast infrastructure. A new national infrastructure would have to be incorporated in this frequency regulation. For Norkring's part this has already been done, and they thus have an advantage ahead of new operators. The issue is particularly relevant in connection with the forthcoming establishment of a new national digital terrestrial network.

Conclusion

361. The above assessments demonstrate that there are both structural and regulatory entry barriers. On the structural side the financial burden of establishing a parallel terrestrial network is the biggest challenge for new operators. Within the time horizon of this analysis the limited frequencies that are awarded NTV constitute a high regulatory entry barrier.

362. In NPT's view, both structural and regulatory entry barriers thus exist in the market for national television transmission services on terrestrial networks. Their magnitude creates a clear asymmetry between the established operator Norkring and new operators. NPT therefore considers the first of the three *ex ante* criteria as being met.

5.3.2. Does the market have characteristics such that it will not sufficiently tend towards sustainable competition?

363. Should the market tend towards sustainable competition despite high entry barriers, sector-specific *ex ante* regulation shall not be implemented.

364. No operator other than Norkring has a national mast infrastructure that can be offered to broadcasters. Today there is therefore no competition in offering transmission services for television broadcasting over terrestrial networks.

365. The question is then whether it is conceivable, within the next two to three years, that the market will tend towards effective competition. This requires that new providers enter the market for television transmission services on terrestrial networks.

366. As the above makes clear, entry barriers in this market are so high that the duplication of Norkring's mast infrastructure must be regarded as unrealistic. It is also highly uncertain whether a new operator will regard it as profitable to establish its own transmitter network by means of co-location on Norkring's masts. The fact that the analogue terrestrial networks are to be closed down in a few years' time makes it uninteresting to establish competitive operations for analogue broadcasting. The awarding of frequencies also constitutes a regulatory entry barrier, making alternatives to Norkring's services highly unlikely. If so, this would only be the case if NTV had used an alternative/supplementary builder of DTT networks in parts of the country. However, it is not very likely that such a division of the contract would have been commercially profitable. NTV has now signed a 15-year contract with Norkring.

367. However, competition may also come from other broadcasting platforms. Still, the substitutability assessments above (section 3.6) show that at the present time the competition from cable TV and satellite is not regarded as strong enough to be able to budge the position of the terrestrial network. Furthermore, nor are other technologies (xDSL or fibre etc.) for transmitting television assumed to constitute real alternatives to terrestrial networks within the time horizon of this analysis.

368. Norkring will be the builder of the new digital terrestrial network.⁷⁶ The rollout will be based on existing infrastructure under Norkring's control. In NPT's view there is therefore little to indicate any trend towards competition in this market. Neither potential new establishment on the terrestrial network nor over other platforms may be able to push the market in the direction of sustainable competition within the time horizon of this analysis. For this reason it is NPT's view that the market for television transmission services over terrestrial networks is not sufficiently tending towards sustainable competition. The second *ex ante* condition has thus been met.

5.3.3 Will regulation beyond ordinary competition law be necessary to address the objectives behind sector-specific regulation?

369. The final criterion that must then be tested is whether ordinary competition law per se is sufficient to promote the dynamics of the market. Only if ordinary competition law is insufficient for promoting sustainable competition in the market is sector-specific regulatory intervention relevant, cf. the Recommendation recital 18. There is no reason to introduce sector-specific regulation in a market if general competition law can eventually achieve sustainable competition in the market, cf. the Recommendation recital 18.

370. Ordinary competition law is sufficient if it can address the same objectives that are the intent of sector-specific regulation. For this to be the case, competition law must have a sufficient appropriate legislative basis containing effective remedies.

371. Ordinary competition law has a broad application area and wide-reaching remedies. In this context the most relevant legal rules in competition law are Competition Act §§ 11 and 12.⁷⁷

⁷⁶ In a press release dated 14 July 2006 NTV announced that it had signed a contract with Norkring for total delivery of transmission networks for digital television broadcasting.

⁷⁷ Act No. 12 of 5 March 2004 on competition between undertakings and control with concentrations.

372. Competition Act § 11 prohibits abuse of a dominant position. The tools the competition authorities have at their disposal should this prohibition be violated are authorised in § 12. Through individual decisions the competition authorities may impose any measure necessary on undertakings to bring the infringement of § 11 to an end, cf. Competition Act § 12 first paragraph.

373. To assess whether sector-specific regulatory intervention may be required rather than ordinary competition law measures, it makes sense first to attempt to identify an existing or potential market failure. This assessment must have a forward-looking perspective, but it is also natural to look at the earlier and current situation.

374. The use of specific obligations in accordance with sector-specific rules is not conditional on whether exploitation of market power is actually taking place. It is sufficient that a competition problem can potentially arise under given conditions. Furthermore, the nature of this competition problem must be such that ordinary competition law is not regarded as an adequate retaliatory device. The criteria for assessing the qualifying nature of the competition problem in this respect are *inter alia* the need to create regulatory predictability in the market, how frequently regulatory intervention will be relevant, and the time pressure under which any interventions must be undertaken.

375. The market for distribution of national television broadcasts on the terrestrial network is characterised by apparent structural problems. A single provider (Norkring) controls access to the mast infrastructure on the terrestrial networks and has by means of large irreversible investments established a *de facto* monopoly. There are also high regulatory entry barriers in the market. The construction of a new analogue terrestrial network for television alongside the existing one is therefore regarded as unlikely.

376. This *de facto* monopoly situation gives the provider an opportunity to engage in denial of access, excessive pricing etc. Such potential monopoly behaviour can represent a risk both vis-à-vis broadcasters who want their television content to be distributed, and new operators who want access to establish their own transmission service. In that respect the behaviour could distort competition among already existing operators, deterring new operators from entering the market. Consequently, it must be regarded as a theoretical possibility that Norkring's control of the access network for television transmission services may constitute a potential competition problem and market failure. Nevertheless, this does not appear to characterise the current situation in the market.

377. There are no alternative providers to Norkring for national transmission services for television. NPT has held meetings with the operators on the demand side in Norway to obtain information on how they view the current market situation. NPT has no indications that there is anything about Norkring's behaviour or the manner in which the market functions to suggest that as the only provider it can act independently of its counterparties. So far Norkring has not denied broadcasters access to its mast infrastructure. Norkring offers installation in its transmitter stations and on its antenna masts according to co-location agreements. With respect to the complete transmission service for television Norkring does not have a standing offer for national analogue television transmission services to potential new customers. Norkring will build and operate the new transmitter network after the agreements have been signed with the individual broadcasters. Agreements on complete transmission

services will therefore always be adapted to a large degree to the needs of the individual broadcaster.

378. Today there are just two large customers purchasing national transmission services on the analogue terrestrial networks from Norkring, while there are a number of smaller customers requesting local coverage. Negotiations are taking place on agreements stretching over ten to fifteen years. This means that both requesters and providers bear considerable risk. Providers must be able to guarantee that quality goals and upgrading requirements are met during the entire period of the contract while requesters must secure long-term financing. However, there are important reasons for why operators in this market endeavour to achieve a long-term view in the contractual relationship. For the commercial broadcasters there is a direct relationship between the number of households they cover and the revenues they receive from advertising and sponsors. Any new operators must build up a customer volume on their terrestrial network platform over a long period of time. This indicates that the costs for the agreed quality and coverage area for Norkring's transmission product have to be phased in over a long period of time. For the provider a long-term view in the contractual relationship is also necessary to ensure that considerable operating and rollout costs can be recouped. The need for this long-term view on both the provider and demand sides serves to characterise the market for transmission services for television content with a high degree of predictability for the operators.

379. There are several factors indicating that the dynamics of the market for national television transmission services are characterised by mutual dependence between providers and the operators on the demand side. NPT has no indications that as the only provider Norkring can act independently of counterparties. This can possibly be explained by the fact that the negotiating strength of broadcasters to a large extent balances the prominent position Norkring has as an infrastructure owner. Even if Norkring controls a necessary input factor to realise a transmission service for national television, the individual television channels are the licence holders and control the allocated television frequencies. Since control of frequencies and broadcasting licences are similarly necessary input factors for realising the transmission service, this will restrict Norkring's ability to act independently. Revenues from the agreement with TV 2 constituted **[Exempt from public disclosure]**⁷⁸ of Norkring's revenues in 2005. NRK, which conducts parallel negotiations for radio and television distribution, alone contributed **[Exempt from public disclosure]**⁷⁹ of the revenues. The higher the degree of concentration among operators on the demand side, the more difficult it will be for Norkring as the only provider to autonomously set the terms and conditions in its agreements. During rollout of the digital terrestrial network the available DTT frequency resources within the time horizon of this analysis will be held by a single requester. NTV will be the sole requester of both national and local transmission services for television, and small broadcasters will have to deal with NTV. As the licence holder, NTV will control nearly **[Exempt from Public Disclosure]**⁸⁰ of Norkring's revenue basis.

380. In a market with considerable bargaining power on both sides it is not necessarily regarded as fortunate for sector-specific regulation to lay down the terms for the negotiating situation between the provider and demand sides. A detailed set of

⁷⁸ Cf. Public Administration Act § 13, Freedom of Information Act § 5a

⁷⁹ Cf. Public Administration Act § 13, Freedom of Information Act § 5a

⁸⁰ Cf. Public Administration Act § 13, Freedom of Information Act § 5a

obligations can contribute to shifting the balance between the operators and disturbing the dynamics provided by commercial negotiations.

381. Furthermore, there appears to be only moderate doubt that Norkring's/Telenor's prices are unreasonable. Comparisons broadcasters themselves have carried out in relation *inter alia* to similar agreements in Sweden have not provided indications that Norkring charges excessive prices for its transmission services. An Analysys Consulting report commissioned by the Ministry of Culture and Church Affairs in 2003 concluded that Norkring's projected investment costs in the analogue television transmission network are proportionate to the expected costs of maintaining the analogue transmission service provided that the migration to DTT does not take place before 2013.⁸¹

382. On the other hand some distributors and broadcasters NPT has been in contact with have still requested more information from Norkring to establish with certainty whether Norkring's prices are cost-oriented. At the same time these operators confirm that there are opportunities to obtain bids and request further specification of cost elements from potential subcontractors for comparison with Norkring's prices. It has also emerged that on several occasions it has been possible for requesters to request access to Norkring's offer through independent auditors.

383. On this basis, NPT has no indications that there is anything about Norkring's behaviour or the dynamics in the market to suggest that as the sole provider the company can set the conditions and prices for the transmission service without regard to the counterparties.

384. Nor does NPT have reason to believe that the negotiating conditions and prices have deteriorated in the recent past. Some of the operators on the demand side have even made it known that they have achieved lower prices than the original offer through negotiations with Norkring. What characterises the negotiating situation in this market, in addition to the fact that the agreements entered into are long-term and are not subject to annual renegotiation, is that negotiations are rarely conducted under pressure of time. Still, this does not mean that there is not any pressure on both parties to enter into new agreements. While the infrastructure owner has maintenance costs related to maintaining the infrastructure and wishes the whole time to maximise utilisation of the capacity, broadcasters have usually invested in frequencies, or have rollout and coverage obligations imposed on them in their licences. The fact that the negotiations between the parties will be protracted can instead be a sign of the mutual dependency the operators experience among themselves, and that there is room to measure bargaining power as long as there are no real alternative contracting parties.

385. The fact that the negotiating situation between the operators in the market for transmission services for television content arises at intervals of ten to fifteen years may indicate that regulatory interventions are very rarely required. A stable and predictable negotiating process indicates that ordinary competition law can be sufficient for intervening against potential abuse of market power. It may also prove simpler for the competition authorities to intervene *ex post* in a market where a few long-term contracts are signed, and where the exploitation of dominance will be limited to the period when these agreements are negotiated.

⁸¹ Review of investment costs for Norkring's analogue TV network, Final report for the Ministry of Culture and Church Affairs, March 2003

386. If a market is characterised in principle by a high degree of predictability for the operators, and the product or service that is sold is realised over a long time period, this may lessen the need for sector-specific intervention. In such a market it must be assumed that the requirement for legal predictability can be met under ordinary competition law.

387. Competition law assumes that the threshold for § 11 has not been violated where there is a theoretical risk of denial of access, but where it does not actually happen. For example, there may be situations where mutual dependency exists between provider and requester. Such a situation is as shown the case in the Norwegian market for transmission services for television content over terrestrial networks.

388. Furthermore it is worth noting that the market for broadcasting transmission services so far has not been subject to sector-specific regulation. Nor have the operators in the market approached NPT for assistance, and NPT is furthermore not aware of any cases before the Norwegian Competition Authority in this connection. It is adjacent that if for example excessive pricing or illegal discrimination had taken place, the market operators would have reacted to this earlier. The parties have always had the opportunity to invoke general competition law, but have so far not availed themselves of this option.

389. Concerning the question of whether the potential competition problems in the market can be sufficiently handled by the provisions of the Competition Act, an appropriateness assessment is to be undertaken in which emphasis shall be placed on the need for legal predictability, a detailed set of obligations and frequent and quick interventions. An assessment of whether this applies to the relevant market must be based on real and/or potential competition problems in the market, and measure these against the remedies general competition law has at its disposal.

390. In the market for transmission services for television broadcasting, denial of access has never been a problem. Both providers and the operators on the demand side depend on predictability and a long-term view in the contractual relationship and are mutually dependent on each other since both control wholesale services that are necessary for realising the transmission service. Moreover, regulatory intervention will be limited to having to assess a limited number of agreements negotiated at intervals of ten to fifteen years.

391. Competition law has always been available, but not invoked by the parties. On this basis, there does not appear to be a special need for legal predictability or a detailed set of obligations. Nor can the need for frequent and quick regulatory intervention be said to be present.

392. In view of this, NPT believes that competition law is a sufficient legal basis for addressing the same objectives sector-specific *ex ante* regulation is meant to realise. NPT therefore believes that regulation beyond ordinary competition law will not be necessary in this market.

5.3.4 Conclusion – television on terrestrial networks

393. In NPT's view, considerable structural entry barriers exist in respect of establishing a mast infrastructure for transmission services for national television. It is deemed unlikely that alternative providers will be able to establish the necessary mast

infrastructure required for national broadcasting. A movement towards sustainable competition in the long term is therefore not likely. The first two criteria for *ex ante* regulation are met in that respect.

394. However, NPT concludes that ordinary competition law has sufficient remedies to rectify the potential competition problems that could conceivably arise in the market within the time horizon of this analysis. Since the three criteria for sector-specific *ex ante* regulation are cumulative and the final criterion here has not been met, such regulation shall not be applied, cf. the Recommendation recital 12 ff. Consequently, no further analysis of the market will be undertaken.

5.4 Transmission services on cable TV networks

5.4.1 Introduction

395. There are approximately 800,000 cable TV subscribers in Norway, divided among approximately 9,000 networks (see Appendix 3). According to NPT's network report, approximately half of these subscribers/connections are connected to private electronic communications networks. Such networks are subject to special regulations through the Electronic Communications Regulations, chapter 9. The portion of the cable TV market that is the subject of analysis and possible regulation in this context is the access networks/connections owned by the cable operators.

5.4.2 Do structural or regulatory entry barriers exist?

396. It may be questioned whether the market for broadcasting transmission services via cable TV networks is characterised by high and non-transitory entry barriers. Such entry barriers can be of both a structural and regulatory nature. The topic of discussion is whether there are circumstances in the market that have the effect of an imbalance between the already established operators and new operators who are looking at entering the market.

397. There are more than 50 network owners supplying broadcasting via cable TV networks to more than 1,000 connections. Most of them do so on a commercial basis. This indicates that historically speaking it has been possible for providers to enter the market.

398. It is costly to build a cable TV network, and the rollout of the network is largely an irreversible investment. There may be a certain potential for a secondary market for the equipment, or sale of the entire cable TV network to another operator. However, the latter opportunity is limited in areas with parallel networks.

399. When the irreversible investments are undertaken, the cable TV network can be used to offer attractive additional services such as telephony, broadband etc. In the cable TV market a new operator will be able to quickly build up a relatively large customer base by, for example, signing agreements with one or more housing cooperatives. The opportunities for offering additional services and signing contracts with major customers mean that new cable network providers can in principle achieve a larger revenue basis than new providers of transmission services on terrestrial networks or via satellite. Nor can it be demonstrated that the established cable TV providers have considerable economies of scale compared with new operators.

400. At the same time it is clear that CDK and UPC are superior in terms of their size. Together, they have a market share of nearly 80 per cent. This could indicate that

the high entry costs to become established as a cable TV provider constitute per se a considerable entry barrier to potential competitors.

401. Prospective earnings on the networks are limited if there is a cable TV network in the area from before. As of today the theoretical degree of coverage for cable TV networks is 65 per cent of Norwegian households. Of these households, approximately two-thirds avail themselves of the service, cf. Table 1. If a new operator builds where there already is coverage, to establish a customer base it will either have to get end users to switch cable TV providers, or attract end users who currently do not have cable TV.

402. The end users' decision to sign subscription agreements will depend on factors such as costs for switching equipment, connection fee, subscription costs, degree of digitisation, offers for additional services etc. Besides, some housing associations have discount agreements with established providers that new operators would have a hard time competing with.⁸² These types of factors could function as structural entry barriers.

403. Nevertheless, it must be noted that parallel networks have been built and are being built in several places. There are areas where both CDK and UPC are present, or where one of these large operators has networks in parallel with smaller providers.

404. NPT has obtained information on CDK's and UPC's geographic coverage. The documentation from these operators show that while Oslo, Bergen, Kristiansand and Østfold in particular have a considerable degree of overlapping between cable TV networks, parallel networks are also found in other areas. Besides, in the major cities it is the case that expansion of already existing networks could take place relatively quickly if, for instance, a major customer were to indicate an interest or be attractive for other reasons. As long as earnings are considered high enough, typically in cases where a large housing cooperative or other collective customers want to be connected, the investment can pay off and rollout can take place relatively quickly despite the existence of another network in the area. Among other things, it is assumed that through Telenor CDK has relatively simple access to already existing conveyance routes and pole lines.

405. The occurrence of parallel networks shows by itself that it has been commercially profitable for providers to establish a parallel network, and this can be an indication that the entry barriers in the market are surmountable.

406. Even if this market segment only covers cable TV, other infrastructure will also affect the degree of entry barriers to new operators. The possibilities for achieving profitability on the networks and attracting end users are also affected by the alternatives for receiving broadcasts end users have in a given area.

407. The above arguments show that there are to some degree large structural entry barriers when building new cable TV networks. Rollout and maintenance costs are considerable and profitability prospects vary according to the customer basis that can be expected. Moreover, the nature of the entry barriers is such that it must be assumed they will continue in the future, at least within the time horizon of this analysis.

⁸² For example, Telenor/Canal Digital has an agreement with NBBL, which is a joint organisation for Norwegian housing cooperatives. 92 housing cooperations are affiliated with NBBL, including OBOS, USBL and BBL. The affiliated housing cooperatives manage around 4,500 housing cooperatives with 260,000 units throughout the country.

408. Regulatory entry barriers are also relevant in the discussion of the first *ex ante* criterion. Such regulatory entry barriers can be both laws and regulations along with decisions issued by relevant authorities, cf. the Recommendation recital 15.

409. Certain regulatory entry barriers exist in connection with establishing cable TV networks. Firstly, certain ecom law-related requirements regarding technical standards, authorisation for installers etc. must be met.⁸³ Secondly, it is a question of where the cable is to be physically strung. Municipal zoning plans can be restrictive. Environmental considerations are also addressed through different rules and can limit the possibilities for rolling out networks. Where private land is involved it may also be a question of negotiations to get the landowner's consent. A further challenge is that there is relatively little coordination of building activities at the community level, creating an additional lack of predictability and risk for developers.

410. Should a new cable TV network provider also wish to function as a distributor on its own network it will also have to deal with an extensive set of rules regarding media law. The Broadcasting Act and Broadcasting Regulations contain rules on "must carry" obligations, subscription choice etc. These directives make requirements of the provider that go beyond purely technical or ecom law competencies.

411. In principle, the regulatory conditions will not be insurmountable for new operators, but will often lead to increased costs and delays. Established operators have an advantage in that they already meet the regulatory requirements. Regulatory conditions could thus constitute entry barriers in addition to the structural barriers to new operators. Based on an overall assessment, NPT has concluded that new operators in the market for transmission services via cable TV networks face high and non-transitory entry barriers despite the fact that a considerable number of local providers currently exist in the market. The first criterion of *ex ante* regulation must therefore be considered as having been met.

5.4.3 Does the market have characteristics such that it will not sufficiently tend towards sustainable competition?

412. The question is then whether there are dynamic qualities associated with the market for broadcasting transmission services via cable TV networks that suggest that over time the market will tend towards sustainable competition. Both competition on the end user and wholesale levels are relevant.

413. Together, CDK and UPC have a market share of 80 per cent in the retail market. This combined market share has been relatively stable over time. However, the ratios of the two operators have changed. In the discussion below NPT's departure point is the competitive situation between the two companies. However, several of the factors that are pointed out will also be relevant in the competitive situation with other cable TV providers.

414. The ability of cable TV providers to attract end users is determined by the attractiveness of the products they can offer. Providers will primarily attempt to outcompete each other by offering the most attractive content. Programme content, that is to say the actual TV channels, is the most important competition driver in the television broadcasting retail market. Add-ons include value-added services such as internet access, telephony and other interactive services. The end users' decision to sign a subscription agreement with a cable TV provider will depend on factors such as

⁸³ Such requirements are enshrined in Ecom Regulations chapters 1 and 9.

costs for switching equipment, connection fee, lock-in period, current subscription costs, degree of digitisation, etc.

415. However, competition at the retail level in the cable TV market requires that end users have real freedom of choice between different cable TV providers. This will only apply if there are parallel networks. In such cases end users can approach different providers to obtain the best possible offer.

416. As shown above, instances of parallel cable TV networks are relatively common in Norway. The reach of parallel networks is greater in densely populated areas than in residential areas. It is NPT's view that the extent of areas with double coverage is so large, particularly in relation to the number of residential customers/population, that a considerable number of end users can choose between several alternative cable TV providers. UPC and CDK also state that expansion of the networks to reach particularly attractive end users can be accomplished relatively quickly, and that this is being done several places in the country. This facilitates real competition at the retail level. The operators will compete to win existing customers from their competitors.

417. As mentioned, CDK's and UPC's combined market share has been relatively stable in recent years. However, the ratios between them have changed substantially. Since CDK was established as TBK Kabel and later as Telenor Avidi, the company has managed to build up a considerable market position. This has happened both by rolling out new networks where no networks previously existed, acquisition of existing networks and by rolling out networks in parallel with UPC's. Both UPC and CDK state that a relatively large share of CDK's current customer base consists of former UPC customers. This applies particularly to housing cooperatives and other collective customers that have chosen to switch providers. In addition, there has been intense competition on agreements for cable TV deliveries to new housing areas, new buildings and housing cooperatives. Some housing associations have even held what are in effect bidding competitions where cable TV providers had to compete. This shows that competition has been taking place from the start between the two operators, and that it is possible for a new cable TV provider to build up a considerable customer basis in a relatively short time.

418. Beside parallel coverage, a major condition for competition for end users is that end users are not locked into their contracts. It is hard for NPT to see that this is the case. The retail level operates today with lock-in periods of 12 months. After this the contacts can be cancelled with three months' notice. Regular renegotiations are also common for larger collective customers. In connection with the expiry of lock-in periods and in situations of renegotiations NPT is aware that both UPC and CDK put in considerable effort to keep on to their customers. Moreover, the competing operator will often make direct sales pitches to the competitor's end users. In campaigns of this sort, the improvement and digitisation of the cable TV network along with lower prices and better content are offered to retain or recruit the customer.

419. NPT has obtained figures on customer migration, churn and revenues from UPC and CDK, respectively. The figures from the last four years indicate that real competition is taking place between the two companies. In particular, the churn numbers, that is to say customer exit from existing customer base, confirms the picture NPT has formed of the two companies actively taking customers away from each other. Even though the comparable statistical material that NPT has managed to obtain from the operators is limited, the numbers show a significant negative

correlation between stability in the customer base. For example, while CDK saw a **[Exempt from public disclosure]** increase in losses of housing association customers from 2003 til 2004 UPC experienced a similar decline in churn of **[Exempt from public disclosure]** in the same period. Churn increased in parallel for both of the operators from 2004 to 2005, which can be connected with the fact that competition from other platforms is gradually having an effect. Overall, the churn percentage for the two cable TV providers is low, under **[Exempt from public disclosure]**⁸⁴ for both providers in 2005, but this share seems to be increasing quite rapidly. UPC, for instance, lost **[Exempt from public disclosure]**⁸⁵ more housing association customers in the first half of 2006 compared to the same period in 2005.

420. NPT is to take long-term market developments into consideration. Even if other platforms are not included in the market segment for cable TV networks it is relevant to look to the competition cable TV meets from other platforms. In the relatively near future, the competition from terrestrial networks, satellite and new technologies will be able to exercise competitive pressure on cable TV providers. Even though in section 3.6.6.1 NPT found that IP-TV does not have a significant volume of customers today, it is likely that suppliers of television over the fixed copper access network and new fibre networks may exercise competitive pressure on cable TV providers in the future. Both UPC and CDK state that they are already seeing competition from fibre networks in particular. Pressure from new platforms comes in addition to the competition they meet today from other cable TV providers. Future competitive pressure from several quarters may facilitate effective competition among providers and dynamic development in the market.

421. It was shown above that the two large cable TV providers are seeing that they compete actively at the retail level. This is reflected in market share, churn and revenue numbers. Relatively short lock-in and cancellation periods also mean that end users have a certain amount of buyer power. This is particularly true of larger housing cooperatives and other major customers that are very attractive in the eyes of the providers. It is also NPT's view that the future competition from new transmission services via xDSL will constitute a further corrective in designing cable TV providers' services, prices and other competition parameters at the retail level. On the basis of the above factors, NPT has found that there are factors in the market that enhance competition at the retail level between the operators, and that this situation will persist.

422. As defined in this analysis, the broadcasting market is a wholesale market. The wholesale level must also be assessed to answer whether the market is competitive or is tending towards competition.

423. However, the question can be asked whether such a wholesale level exists at all in the market for broadcasting transmission services via cable TV networks. Cable TV providers, which are relevant in this assessment, own their own access networks. The cable TV provider functions both as a network owner and provider of transmission services for cable TV, and as a distributor of content to end users.

424. However, cable TV providers do not sell transmission capacity to any third party in a wholesale market for delivery of transmission services for broadcast content. All the capacity on their own network is used for their own distribution of

⁸⁴ Cf. Public Administration Act § 13, Freedom of Information Act § 5a.

⁸⁵ Cf. Public Administration Act § 13, Freedom of Information Act § 5a.

content packages. There are no reference offers on a wholesale level for sale of vacant transmission capacity. The provider purchases content, composes the various programme packages and transmits the signals to its subscribers. For their part, the content producers/broadcasters do as a rule not pay for the transmission service. On the contrary, it is the cable TV providers that pay the content producers. The cable TV operator is also bound by broadcasting legislation rules on “must carry” obligations and subscription choice etc. This market dynamic, which ensues from the fact that programme content is the most important driver of competition, means that the content producers have considerable bargaining power vis-à-vis cable TV providers. Rules on “must carry” obligations and channel choice for subscribers further reinforce this fact. The negotiating relationship with the content producers consequently serves to limit the cable TV providers’ freedom of action in the market.

425. Potential customers at the wholesale level can be divided into different categories. NPT is aware that there are some content producers that to some degree have requested distribution over cable TV networks. However, the opposite is the rule: cable TV providers request content for distribution. Furthermore, there are providers of other services such as for instance broadband that request access to transmission on cable TV networks. It must be noted that services other than broadcasting fall outside the market analysed here. A third category of requesters on the wholesale level will be operators who request access to transmission capacity for broadcasting over cable TV networks in order to operate as a distributor of content packages. However, NPT believes that this type of demand is so low that it does not appreciably change the assumption that there is no active wholesale market of a substantial scope, even if this is per se technically possible.

426. There are significant indications that the market is seeing or tending towards sustainable competition. At the retail level it is relatively clear that this is the case. Intensive competition is taking place today among providers, and eventually cable TV is expected to see competition from alternative services such as IP-TV. However, at the wholesale level it is not equally straightforward to say that a competitive situation exists since wholesale products are not offered today and there are thus no external sales of transmission services.

427. On the other hand, providers who technically speaking can offer such transmission services cannot act freely and independently of broadcasters. At the wholesale level, cable TV providers’ freedom of action is being held back by broadcasters’ strong position as content providers. The argument that cable TV providers are directly influenced by the sales value of the content they present in the end user market therefore stands.

428. Following an overall evaluation it is NPT’s view that the market for transmission services for broadcast content via cable TV networks is tending towards sustainable competition; consequently the second criterion for *ex ante* regulation has not been met. The effect of parallel geographic coverage in several areas, and the intense competition to be able to offer the best programme services, serves to a sufficient degree to ensure dynamic development of the market.

429. The market must meet all three relevant criteria to justify *ex ante* regulation. Since the markets for cable TV transmission services are not deemed to meet the second *ex ante* criterion, this market will not be assessed in relation to the last criterion.

5.4.4 Conclusion – cable TV networks

430. On this basis, NPT deems that the three cumulative conditions for sector-specific *ex ante* regulation of transmission services on cable TV networks have not been met. Consequently, the market is not relevant for sector-specific regulation pursuant to the Electronic Communications Act. No further analysis of this market will therefore be undertaken in this round.

6 Summary and conclusion

431. NPT has discussed how the market for broadcasting transmission services in Norway shall be defined, and taken a position on whether the nature of the market is such that sector-specific *ex ante* regulation is required.

432. In principle, the product market is predefined by ESA, cf. the Recommendation. The Recommendation's market definition for the broadcasting market is:

The wholesale market for broadcasting transmission services, to deliver broadcast content to end users.

433. However, following an assessment of demand and supply sides, NPT has found that the Norwegian market must be divided into several individual market segments. This marks a departure from the product market definition in the Recommendation.

434. In line with current principles of competition law and with great emphasis on the Recommendation and the Guidelines, NPT has defined five relevant product markets:

- Transmission services for local radio on terrestrial networks
- Transmission services for national radio on terrestrial networks
- Transmission services for television on terrestrial networks
- Transmission services for radio and television on cable TV networks
- Transmission services for radio and television via satellite networks

435. All of the markets are defined in a technologically neutral manner. Separate markets have been identified for radio and television on the terrestrial networks. This is not the case for cable TV and the satellite market.

436. For all market segments only the access part of the infrastructure is covered.

437. A more specific definition of the broadcasting markets requires a geographic delimitation, cf. the Guidelines paragraph 57. NPT has concluded that broadcasting transmission services via satellite is a transnational market. NPT does not have the power to define such markets. Consequently, the satellite market falls outside a further assessment of relevant national markets. The other four product markets are regarded as being national.

438. Finally, NPT has undertaken an assessment of whether there is a need for *ex ante* regulation in the four remaining market segments, cf. the Recommendation recital 12 ff. An assessment of the Recommendation's three criteria for *ex ante* regulation is necessary since NPT defines markets that depart from those predefined in the Recommendation. The four markets assessed in relation to the *ex ante* criteria are the markets for:

- Transmission services for local radio on terrestrial networks
- Transmission services for national radio on terrestrial networks
- Transmission services for television on terrestrial networks

- Transmission services for radio and television on cable TV networks

439. NPT has already found for local radio over terrestrial networks that the first criterion, whether there are sufficiently high and non-transitory structural and regulatory entry barriers in the market, has not been met. Since a market must meet all three conditions to justify *ex ante* regulation, sector-specific *ex ante* regulatory remedies shall not be implemented for local radio broadcasting over terrestrial networks.

440. For national radio and national television over terrestrial networks, NPT has concluded that both markets are characterised by high and non-transitory entry barriers, and that the markets do not have characteristics tending towards effective competition over the course of the next two to three years. The two first *ex ante* criteria are therefore met.

441. The final criterion is a question of whether the potential competition problems in the market can be sufficiently handled by ordinary competition law.

442. There is a considerable degree of countervailing buying power in the markets for transmission services for both radio and television broadcasting. The markets are characterized by a structure and dynamic whereby provider and requesters are mutually dependent on each other. This positioning and hence negotiating situation has been stable over time. The markets have functioned well without *ex ante* regulation for a long time. The parties have also expressed the opinion that sector-specific *ex ante* regulation is not necessary. The markets largely regulate themselves, the contracts are long-term and the need for frequent intervention is nonexistent. Besides, the parties can turn to ordinary competition law should intervention be requested. On this basis NPT has concluded that competition law is a sufficient legal basis for addressing the interests that sector-specific *ex ante* regulation is otherwise meant to implement in these markets.

443. NPT consequently determines that the final *ex ante* condition has not been met for the transmission services markets for radio and television over terrestrial networks and that sector-specific *ex ante* regulation is not to be applied in these markets, cf. the Recommendation recital 12 ff.

444. Nor does the market for broadcasting transmission services on cable TV networks meet all the conditions for sector-specific *ex ante* regulation. There are assumed to be high entry barriers in connection with the rollout of new cable networks, but in NPT's view the market is tending towards sustainable competition. Since a market must meet all three criteria to justify *ex ante* regulation, the market for transmission services on cable TV networks is not relevant for sector-specific *ex ante* regulation either.

Conclusion

445. Through the analysis of the market for transmission services for broadcast content, NPT has concluded that the Norwegian market departs from the Recommendation's predefinition. After defining relevant product markets, delineating them geographically and assessing the three conditions for *ex ante* regulation, the conclusion has been made that the Norwegian market segments do not qualify for sector-specific *ex ante* regulation. An analysis of whether an operator has significant market power is therefore not relevant.

446. In NPT's view, several of these conclusions represent departures from the Recommendation. Pursuant to Electronic Communications Act § 9-3 and Framework Directive article 6, NPT will forward the market analysis to ESA for notification.

Appendix 1 Glossary

Public service broadcasting	Means that the broadcasts are to be receivable by the entire population, contain a varied menu of programming offering something for everyone and in general help to strengthen Norwegian language, identity and culture.
API	Application Programming Interface. A set of routines that a program uses to execute and order services performed by a computer operating system.
ATT	Analogue Terrestrial Television.
CATV	Community Antenna TV. A cable TV system in a housing cooperative, for example.
DAB	Digital Audio Broadcasting
Decoder	Hardware or software that converts encrypted data back to its original form. Included as an element of a set-top-box, see below.
DVB	Digital Video Broadcasting
DVB-T	Digital Video Broadcasting – Terrestrial. Also used to refer to the family of standards for the distribution of digital terrestrial television that DVB has devised and that are approved by ETSI.
DTT	Digital Terrestrial Television.
Electromagnetic interference	Electrical disturbance in a system due to natural phenomena, low-frequency waves from electromechanical equipment or high-frequency waves from chips and other electronic devices.
Frequency band	The expression is used to describe different areas of the radio frequency spectrum. The measuring unit is Hertz.
GSM	(Global System for Mobile Communications). A common European digital mobile telephone system.
GPRS	(General Packet Radio Service). Standard for wireless mobile communication and a further development of GSM.
Internet-TV	Television transmission over the Internet, primarily by live streaming.
Internet radio	Radio transmission over the Internet, primarily by live streaming.
IP-TV	(Internet Protocol Television). Transmission of digital TV by means of Internet Protocol over a broadband connection.
Contribution	Transmission between production sites (for instance between NRK's main office and regional offices).
Multiplex	The block of televisions signals and other data that all together is carried by a single bit-stream. Occasionally abbreviated as MUX.
Optical fibre	Fibre made of glass. Can be used for high-capacity transmission of signals over long distances.
Podcasting	Method for publishing audio files on the Internet for download to

	different terminals that can play audio files, for example iPod.
Set-top-box	Box for decoding encrypted television signals that is connected to a TV set (cf. decoder).
SMATV	Satellite Master Antenna TV.
Transponder	Equipment on communications satellites, i.e. an electronic circuit that receives, amplifies and changes the carrier frequency into a signal and finally transmits it back to earth.
Trunk network	Network consisting of the transmission system for the physical transmission of information and the logical functions necessary for routing information for various services through the network.
Triple-play	A product package consisting of the Internet, VoB and TV in the same delivery.
UMTS	(Universal Mobile Telecommunications System). A system for third generation mobile telephony capable of providing data capacity up to 2 Mbit for stationary users (theoretical), and 384 kbps for mobile users.
WiMAX	(Worldwide Interoperability for Microwave Access). A standard for high-speed point-to-point and point-to-multipoint data transmission.
xDSL	Digital Subscriber Line. Through different xDSL technologies such as ADSL and VDSL, existing copper network can be used for services with a need for high transmission capacity.

Appendix 2 Market definitions in other countries

By 1 August 2006 nine European countries had notified their analyses and decisions in the market for broadcasting transmission services: Austria, Finland, Sweden, Ireland, the United Kingdom, the Netherlands, Spain, Lithuania and Italy.

Austria (RTR) has defined the following markets⁸⁶:

- Transmission services for television on analogue terrestrial networks
- Transmission services for FM radio on analogue terrestrial networks

Ireland (ComReg) has defined the following markets⁸⁷:

- Transmission services for radio on national analogue terrestrial networks
- Transmission services for television on national analogue terrestrial networks

Finland (FICORA) has defined the following markets⁸⁸:

- Transmission services for television on national analogue terrestrial networks
- Transmission services for television on national digital terrestrial networks
- Transmission services for radio on national analogue terrestrial networks
- Transmission services for radio on national digital terrestrial networks

Sweden (PTS) has defined the following markets⁸⁹:

- The market for national radio broadcasts on analogue terrestrial networks
- The market for television broadcasts on analogue terrestrial networks
- The market for television broadcasts on digital terrestrial networks

The UK (Ofcom) has defined the following markets⁹⁰:

⁸⁶ See AT/2003/0018.

⁸⁷ See EI/2204/0042 and EI/2004/0114.

⁸⁸ See FI/2004/0076

⁸⁹ See SE/2005/0188

⁹⁰ See UK/2004/0111. Ofcom initially also notified a market for managed transmission services (MTS). However, this was withdrawn on 24 January 2005 following a request from the Commission.

- Markets for access to masts and sites for transmission of radio and television on terrestrial networks for Crown Castle's and ntl:broadcast's respective networks.

The Netherlands (OPTA) has defined the following markets⁹¹:

- Wholesale market for radio and television transmission services on cable TV networks on UPC's, Essent's and Casema's networks.
- Retail market for radio and television transmission services on cable TV networks on UPC's, Essent's and Casema's networks.

Spain (CMT) has defined the following markets⁹²:

- Television transmission services on analogue and digital terrestrial networks

Lithuania (RRT) has defined the following markets⁹³:

- Terrestrial radio broadcasting services networks where frequencies are allocated to providers of transmission services.
- Terrestrial television broadcasting services where frequencies are allocated to providers of transmission services.
- Terrestrial radio broadcasting services where frequencies are allocated to broadcasters
- Terrestrial television broadcasting services where frequencies are allocated to broadcasters
- Wire radio broadcasting transmission services
- Cable TV broadcasting transmission services

Italy (AGCOM) has defined the following markets⁹⁴:

- Transmission services for television on analogue terrestrial networks
- Transmission services for television on digital terrestrial networks
- Transmission services for radio on terrestrial networks

Consequently, the Commission has preliminarily accepted market definitions that include both analogue and digital terrestrial networks in the same market, separate market segments for the two, and total exclusion of a market for digital terrestrial networks.

⁹¹ See NL/2005/0246. The Commission was in doubt in connection with the retail market. However, after OPTA eased price controls the Commission approved the notification.

⁹² See ES/2005/0252

⁹³ See LT/2006/0376

⁹⁴ Correct reference still unknown.

Appendix 3 Cable TV

In 2003 NPT registered⁹⁵ 8,948 networks. Providers' reported numbers for the status as of 1 January 2005 showed that cable TV networks covered all together 918,364 connections⁹⁶ (households, offices, client rooms, hotel rooms, etc.). This corresponds to 42 per cent of all households in Norway. Only 52 of these networks have more than 1,000 connections. The construction of cable TV networks has primarily taken place in cities and towns, and there are big differences in coverage in various parts of the country.

According to the reported figures, UPC and CDK have 341,005 and 384,026 connections, respectively.⁹⁷

Canal Digital Kabel-TV (CDK) is a limited company that is wholly owned by Telenor ASA (cf. Appendix 6), whilst UPC Norge AS (UPC) is a limited company recently sold to the British investment company Candover.

It must be noted that NPT previously did not register independent networks with fewer than 11 connections. This means that the market share of the two large operators can be somewhat smaller than the figures above indicate. Another factor that may have certain importance is that part of CDK's connections are actually satellite connections (where for example a housing cooperative receives signals via satellite, but retransmits them to its residents on its own coaxial network, SMATV). This means that CDK has a somewhat smaller number of real cable connections. According to NPT's calculations, it is therefore likely that UPC and CDK are about equal in size and that they therefore jointly have approximately 80 per cent of the cable network market.

Although CDK's and UPC's customers are primarily housing cooperatives and other commonhold associations, individual households, institutions and companies are included in their customer base as well. CDK and UPC also sell channel packages to independent cable TV networks.

⁹⁵ Since the authorities' need for detailed information about cable TV networks was no longer present, registration of cable TV networks was concluded in 2003.

⁹⁶ Connections mean signal-carrying outlets installed on the user's premises. These figures do not include branch connections that have been installed up to the user's property but that are not yet connected. The market-related coverage of the infrastructure may therefore be approximately 30 per cent higher than the numbers in the "Connections" column.

⁹⁷ The numbers have been reported by UPC and Telenor, respectively, at NPT's request.

Table 2 shows the breakdown among own networks/connections and affiliated connections for UPC and CDK.

	UPC	CDK
Own networks	46	65
Affiliated networks	4,466	4,428
Own connections	117,365	178,465
Affiliated connections	184,124	205,561
Total number of connections	341,005	384,026

Table 2: Overview of UPC's and CDK's own connections and affiliated connections as of 1 January 2005
 (Source: Canal Digital Kabel and UPC, respectively, November 2005)

CDK and UPC offer analogue/digital cable TV and high-speed Internet. In addition, UPC offers telephone connections via the cable TV network. As of January 2005, UPC had approximately 32,000 digital TV subscribers, while CDK had 37,544.

Appendix 4 Digital terrestrial network

A digital terrestrial network is a terrestrial network of transmitters for digital television and/or digital radio. The digitisation of television broadcasts began already in 1994 (USA, satellite) and in the Nordic region starting in 1998. The distribution of broadcasts via satellite is fully digitised, whilst cable network operators have started to upgrade their networks for the distribution of digital TV. The European Broadcasting Union (EBU) reckoned that digital broadcasts on terrestrial networks will be under way in most countries in Europe during 2005.

As part of a Nordic agreement in 1998, a common Nordic frequency plan for digital television was drawn up. In Norway room was found for three digital frequency networks (multiplexes) corresponding to capacity required for transmitting 20-25 television channels simultaneously.

The first Report to the Storting (White Paper) on digital television was issued in 1999. The licence for a digital terrestrial network was advertised in 2002, and Norges Televisjon (NTV) was the only applicant. NTV was then owned by TV2 and NRK, each with fifty per cent. In June 2003, Report No. 44 (2002-2003) to the Storting relating to a digital terrestrial network for television was issued. The Storting resolved in February 2004 that a digital broadcasting network is to be built and that transmissions on analogue terrestrial networks can be closed down by 2007. At the same time, the Storting demanded that the coverage degree for the digital terrestrial network should be increased from NTV's proposal in the application. This meant that NTV requested an extension of the licence period, from 12 to 15 years. The Ministry of Transportation and Communications and Ministry of Culture and Church Affairs, which share the licensing authority, granted this under the provision that the extended DTT licence be readvertised.

After the advertisement for interested parties in March 2005, Telenor Broadcast announced its interest for applying in May, and the new licence was advertised in June 2005. Telenor now applied together with TV2 and NRK as a new NTV constellation, which was established in September 2005. NTV is owned by the three constellation partners, each with a one-third stake. NTV was the sole applicant. At the same time, the three constellation parties established a new company, NTV Pluss, to operate pay TV on the platform. NTV's application confirmed that revenues from NTV Pluss' pay TV operations will represent an important source of income in the form of capacity sales for the licence holder.

In the application, NTV is obliged to roll out before the analogue shutoff three signal packages with capacity for 20-25 TV channels with the new video compression standard MPEG-4. A further two signal packages with capacity for 20 TV channels can be rolled out after frequencies are released by the analogue shutoff and if NTV finds it commercially profitable. According to NTV's tentative rollout plan, the network will be rolled out successively from 2007 to 2009, and shutoff of the analogue transmissions will take place consecutively in each region. The final region with full transition to digital transmission is planned for fourth quarter 2008. On 1 June 2006, NTV was awarded the licence for rolling out and operating the digital terrestrial network and has now completed negotiating the final licence terms and conditions.

Rollout of the digital terrestrial network will cost an estimated NOK 1.5 billion. Even if the relevant equipment prices have fallen considerably since the previous licence

round, the coverage requirement has increased from 92 to 95 per cent. In accordance with the Storting's resolution, 95 per cent of households are to be able to receive signals from the digital terrestrial network. The other 5 per cent can be covered by other forms of distribution.

NTV stated in the application that they wish to lease the transmitter network from an external turnkey supplier. 14. July 2006 NTV signed a contract with Norkring for such a turnkey delivery. The agreement with Norkring covers rollout and operation for 15 years.

Appendix 5 Telenor⁹⁸

Telenor Broadcast Holding AS (Telenor Broadcast) is part of the Telenor Group. The Broadcast business area takes in all broadcasting activities, including content and interactive services for television.

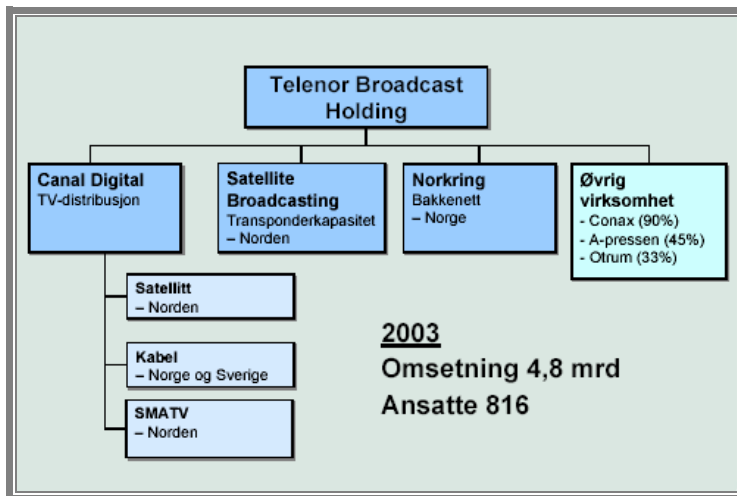


Figure 7: Organisation chart, Telenor Broadcast Holding
(Source: Telenor Broadcast)

Telenor Broadcast comprises the business areas Canal Digital (both cable and satellite), Norkring, Conax and Telenor Satellite Broadcasting. Telenor Satellite Broadcasting owns and operates two Thor satellites situated at 1° West and leases capacity on an Intelsat satellite that is also placed at 1° West. Together with terrestrial infrastructure in Norway, the UK, Finland, Denmark and Sweden, this constitutes a digital TV platform that distributes 125 TV stations and 64 radio stations to more than 2.5 million households in the Nordic region with the aid of DTH, CATV and SMATV. Telenor has entered into an agreement for the purchase of yet another satellite that will be put into orbit in fourth quarter 2007. The new satellite will also cover the increasing need for capacity for HDTV and broadband services.

Norkring provides distribution and contribution services for audio, video and data on terrestrial network structures. Norkring provides transmission capacity in the product areas analogue national and regional/local terrestrial broadcasting of television and radio. The company owns and has the use of approximately 2,700 transmitter systems with technical transmitter installations. Norkring also leases space in its systems for installation of technical equipment owned by others, such as for instance Telenor Networks, Telenor Mobil, NetCom etc.

Norkring provides the following services:

- Transmitter networks for radio, local as well as national (FM, DAB and AM)

⁹⁸Source: Telenor's and Norkring's websites, www.telenor.no, www.norkring.no

- Transmitter networks for television, local as well as national (analogue terrestrial network as well as a test network for DTT)
- Data broadcasting
- Co-location/installation of other operators' equipment
- Transmission services (both analogue and digital, e.g. digital trunk network (DTN) and Digital Electronic News Gathering (DENG))
- Occasional broadcasts (transmissions in Norway and across borders in connection with special events such as the World Cup, European Cup, Olympics, news events and the like)
 - Contribution for occasional broadcasts, audio and video
 - Satellite News Gathering (SNG, digital and analogue)
 - Digital Electronic News Gathering (DENG)
- Uplink, downlink and space segment
- Broadband over DTT-IP

Canal Digital is in charge of distributing broadcast content to end users via cable (CATV), satellite (DTH) and satellite feeds to smaller, independent cable networks (SMATV – shared antenna systems).

Canal Digital is primarily a content provider which buys and sells/distributes television content packages. With the exception of interactive services, Canal Digital does not produce content itself.

Telenor's cable TV company, previously Telenor Avidi, was incorporated into Canal Digital Norge in February 2004, and in that connection changed its name to Canal Digital Kabel TV (CDK). Otherwise see Appendix 3.

Appendix 6 Norges televisjon (NTV)⁹⁹

Norges televisjon (NTV) has been awarded the licence to build and operate a digital terrestrial television network (DTT) in Norway. The licence was issued by the Ministry of Transport and Communications (SD) and Ministry of Culture and Church Affairs (KKD) in cooperation.

NTV is owned equally by NRK, TV 2 and Telenor Broadcast Holding AS (about Telenor, see Appendix 5). NTV was initially established on 15 February 2002 by NRK and TV 2 with a view to obtaining a licence to establish and operate Norway's future terrestrial transmission network for digital television. Under an agreement signed 16 September 2005, Telenor joined the company, so that each of the three shareholders have one-third of the shares.

The business model for NTV's licence application is based on a structure with two independent companies with an identical ownership structure. NTV will be licence holder and platform operator, while another company, NTV Pluss, called NTV II in the application, is to establish pay TV distribution on the platform and offer services to end users. However, owners of the two companies will be the same.

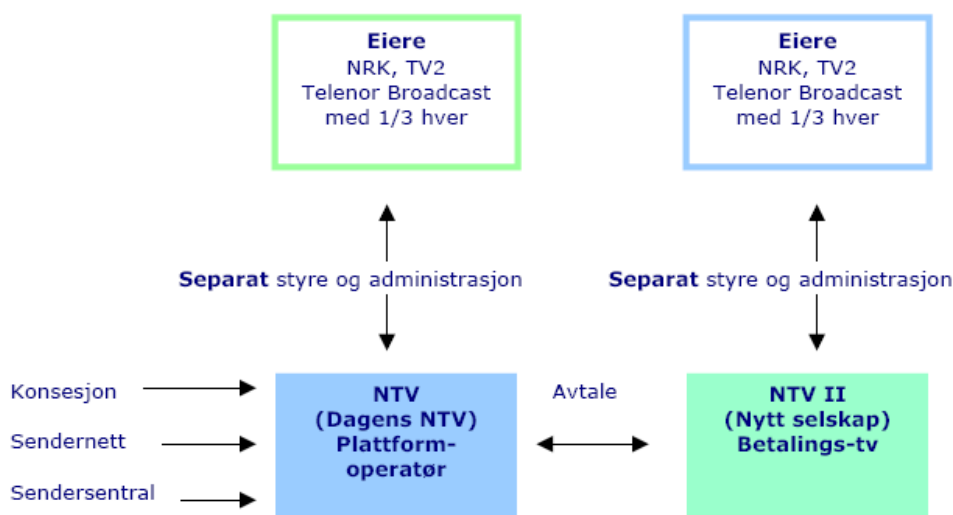


Figure 8: Organisation chart for NTV in connection with the DTT application.
(Source: NTV's licence application)

The shareholder agreement between the three partners establishes that all agreements between the companies and owners, and among the companies, shall be negotiated and entered into at arm's length. This means that the agreements shall be negotiated on commercial terms. NTV shall be a neutral operator of the platform and have the technical and operative responsibility for building, launching and operations. The agreement with Norkring states that Norkring will be the company that will build and own the actual network. NTV will lease the transmission network from Norkring. On

⁹⁹Source: NTV's website <http://www.norgestelevisjon.no/>

the other hand, NTV Pluss will establish and operate pay TV operations on the DTT platform, including negotiating and signing agreements with broadcasters for the transmission service and engaging in sales, marketing and customer support vis-à-vis end users.

In its licence application, NTV furthermore pointed out that all other negotiations, *inter alia* on the building of the transmitter network and access to the transmission service for pay TV operators and individual broadcasters, shall also be non-discriminatory and take place at arm's length. The same principles have been underlined in the text of the licence.

Appendix 7 The frequency bands

The overview below shows today's and planned use of frequencies for broadcasting on the terrestrial networks in Norway.

47 ←→ 68	87.5 ←→ 108	174 ←→ 223 ←→ 240	470 ←→ 790 ←→ 862				
Band 1	Band 2	Band 3	Bands 4 and 5				
Analogue TV NRK1 Will be shut down and used for other purposes, possibly military.	Analogue Radio NRK P4 Kanal24 Local radio The licences expire in 2014. Not decided what the band is to be used for.	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Analogue TV NRK1 </td> <td style="width: 50%; vertical-align: top;"> T-DAB </td> </tr> </table>	Analogue TV NRK1	T-DAB	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Analogue TV NRK2 TV2 Local television DTT for NTV </td> <td style="width: 50%; vertical-align: top;"> Analogue TV Possibly DTT </td> </tr> </table>	Analogue TV NRK2 TV2 Local television DTT for NTV	Analogue TV Possibly DTT
Analogue TV NRK1	T-DAB						
Analogue TV NRK2 TV2 Local television DTT for NTV	Analogue TV Possibly DTT						

Figure 9: Overview of the frequency bands for broadcasting in Norway
 (Source: NPT)

In addition, frequencies have been set aside for DAB on:

T-DAB on L-band 1 1452 – 1479.5 MHz
 S-DAB 1479.5 – 1492 MHz