

CONSULTATION DOCUMENT

Demand survey update and framework for an interim decision

for the provision of spectrum in the 800 MHz, 1800 MHz and
2600 MHz bands for the rollout of digital infrastructure



Bundesnetzagentur

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for the rollout of digital infrastructure

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I. Summary

Spectrum usage rights in the bands at 800 megahertz (MHz), 1800 MHz and 2600 MHz will expire at the end of 2025. The spectrum is currently being used by the three national mobile network operators and is contributing to the nationwide coverage of consumers with high-performance broadband services. The President's Chamber will be taking an objective, transparent and non-discriminatory interim decision on the re-provision of the spectrum.

The points of orientation published in January 2022 identified facts whose ongoing development is important for a decision on the provision of the spectrum. The position paper published in September 2022 subsequently aimed to drive forward the objective, transparent and non-discriminatory proceedings. It included an initial assessment from the President's Chamber on the next steps. This was not, however, binding nor did it pre-empt the exercise of discretion. In light of the expiry of the spectrum usage rights at the end of 2025, the President's Chamber aims to create planning and investment certainty for the market participants in good time. The position paper set out the President's Chamber's initial assessment that award proceedings are suitable for allocating spectrum when spectrum resources are scarce. The President's Chamber still generally considers this to be the case. However, the current situation presents factors suggesting that, unlike the course of action considered in the position paper, award proceedings should not be ordered but should be postponed to a later point in time.

1. Demand survey update as the basis for a decision

The President's Chamber assumes that the mobile network operators that indicated demand for spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands in the 2022 demand survey still anticipate their demand. The President's Chamber is calling on all interested companies to contribute to updating the demand survey for the spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands in order to verify this assumption (Annex 2).

If the President's Chamber's assumption is confirmed that the interested companies still anticipate the demand indicated in 2022, the Chamber will advocate the framework for an interim decision now being put out for consultation. The framework consists of not ordering award proceedings for the time being but extending the existing spectrum usage rights for an interim period.

2. Consideration of an interim decision

Having considered the various interests and the current assessment of the demand situation in the mobile market, there are strong regulatory reasons for not carrying out early open, transparent and non-discriminatory spectrum award proceedings in anticipation of the expiry of the current usage rights at the end of 2025. Instead, creating a larger framework for proceedings and including usage rights that will expire in 2033 is being considered as a second stage of action.

MFCN - spectrum usage rights expiring at the end of 2025 and 2033

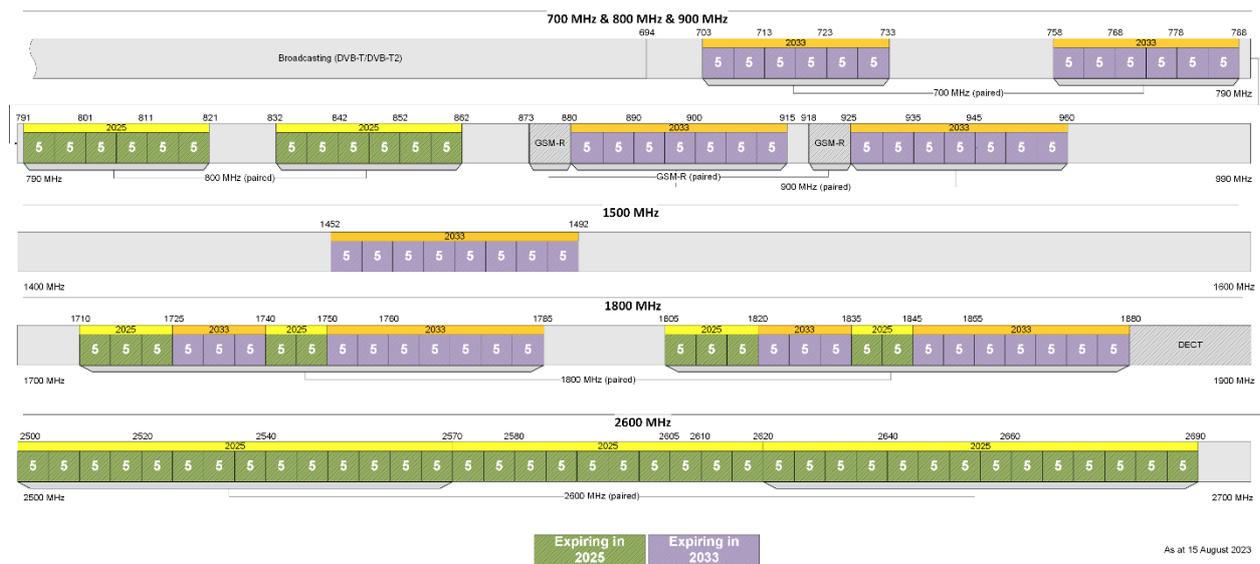


Figure 1 – Usage rights expiring in 2025 and 2033

The main reasons supporting the course of action being considered are set out below.

A larger framework for proceedings at a later point in time would make it possible to include more spectrum resources in the proceedings and counteract regulation-induced scarcity. A larger framework for proceedings would offer the companies concerned more opportunities for accessing spectrum.

- This relates first and foremost to the other usage rights for spectrum in the band at 1800 MHz that will expire at the end of 2033. In the President's Chamber's view, it would be advantageous in terms of spectrum regulation to recombine the spectrum in the 1800 MHz band that is currently divided into two groups with rights expiring in 2025 and 2033. In particular, it would have the advantage that more spectrum overall could be provided for award and the individual assignment holders could each exploit the technical potential in this band better.
- Joint provision of the spectrum could also make a contribution in terms of introducing new technologies and increasing spectrum efficiency with regard to the spectrum below 1 gigahertz (GHz). A larger framework for proceedings could give the network operators the opportunity to concentrate more on individual bands and acquire larger blocks of spectrum.
- Spectrum in the 800 MHz band is currently being used across nearly all the country to provide the current mobile coverage. According to the market, however, a similar amount of the other spectrum below 1 GHz will be needed for mobile broadband networks in the next few years. It would be possible to maintain the current coverage on the basis of the 800 MHz spectrum in an interim period until network rollout using the other spectrum below 1 GHz has progressed enough to provide adequate wide-area coverage.
- The interim decision being considered would make it possible for the established network operators to restructure the 900 MHz band themselves. In the position paper published in September 2022, the President's Chamber had suggested that it would be possible to consolidate current GSM traffic and therefore re-designate GSM spectrum for broadband mobile. In future, it would also be conceivable that all the GSM traffic could be served by one network. The interim extension being considered would allow

the market to develop appropriate solutions for such cooperation and implement them in the period up to 2030 if possible.

- Furthermore, the World Radiocommunication Conference 2023 (WRC 2023) will discuss, among other things, two bands that could be relevant to the provision of spectrum for the rollout of digital infrastructure. First, there is the question of the possible identification of the 6425-7125 MHz band for international mobile telecommunications (IMT). Second, there is the possibility of regulatory measures in the 470-694 MHz band as part of a review of the 470-960 MHz band.
- Moreover, the mobile market is currently undergoing significant changes, in particular with regard to the establishment of the fourth network operator and the operator's further network rollout as well as with regard to the implementation of the determinations on restoring competitive independence, which are the subject of ongoing proceedings. Postponing the award proceedings would enable the President's Chamber to incorporate the outcome of the relevant ongoing proceedings and developments into a decision. Depending on the outcome of the proceedings, it would be possible to include any spectrum becoming reavailable in the envisaged larger award proceedings for provision from 2031.

The President's Chamber is considering combining the interim extension with various measures aimed at promoting competition and mobile coverage.

With respect to promoting competition, it is considering the following:

- Rules for further promoting service-based competition that take account of the criteria of technology neutrality and non-discrimination.
- A negotiation requirement to enable national roaming for an interim period.

The President's Chamber will base the detailed rules on a forward-looking assessment of the market competitive conditions.

With respect to improving mobile coverage, it is considering the following:

- A coverage obligation for rural areas:
 - Each assignment holder would be required to provide coverage with a downlink transmission rate of at least 100 Mbps for at least 98% of households in areas where the population density is less than 100 inhabitants per square kilometre in each federal state at the latest as from 1 January 2029.
- A coverage obligation for transport routes:
 - Each assignment holder would be required to provide coverage with a downlink transmission rate of at least 100 Mbps for all major roads and coverage with a downlink transmission rate of at least 50 Mbps for all minor roads and inland waterways of the federal core network at the latest as from 1 January 2029.
 - It would not be possible to factor in coverage by other assignment holders.
- A cooperation requirement for gigabit coverage along railway lines:
 - Each assignment holder would be required to cooperate in establishing FRMCS infrastructure along railway lines.

3. Invitation to comment

The President's Chamber is inviting interested parties to submit their comments on the following considerations by 6 November 2023 in order to incorporate their interests within the consultation process (Annex 3).

II. Current situation

1. Spectrum

Spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands is currently assigned for mobile/fixed communications networks (MFCN) until 31 December 2025 as follows:

- Spectrum in the 800 MHz band
2 x 30 MHz (paired) at 791-821 MHz / 832-862 MHz
- Spectrum in the 1800 MHz band
Parts of the band comprising a total of 2 x 25 MHz (paired) at 1710-1725 MHz / 1805-1820 MHz and 1740-1750 MHz / 1835-1845 MHz
(other spectrum in the 1800 MHz band comprising 2 x 50 MHz (paired) is currently assigned until the end of 2033)
- Spectrum in the 2600 MHz band
2 x 70 MHz (paired) at 2500-2570 MHz / 2620-2690 MHz
50 MHz (unpaired) at 2570-2620 MHz

MFCN - spectrum usage rights expiring in 2025

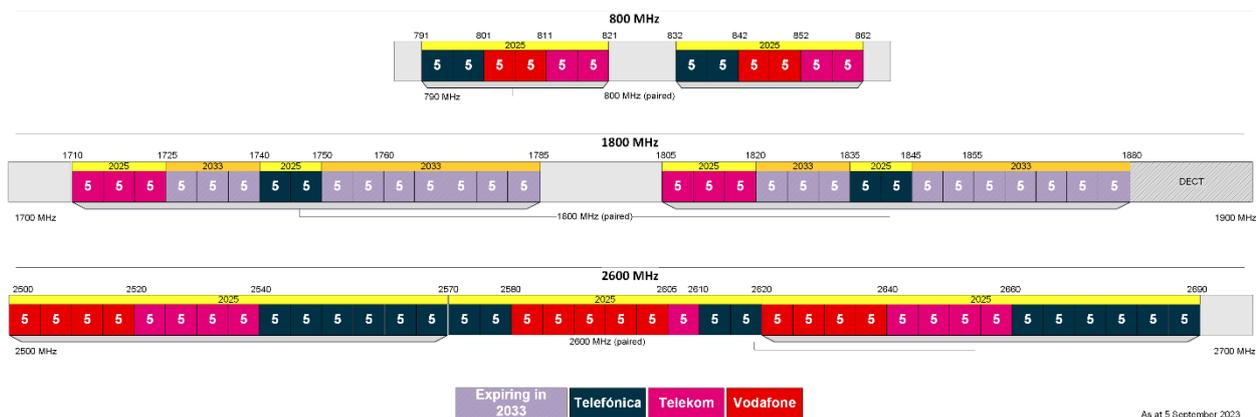


Figure 2 – Assignments at 800 MHz, 1800 MHz and 2600 MHz expiring at the end of 2025¹

- Spectrum at 2 GHz (unpaired)

¹ A full overview of MFCN assignments in the bands from 700 MHz to 3800 MHz and their expiry dates is available at https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/FrequencyAward2018/20200128_SpectrumDiagram_pdf.png?__blob=publicationFile&v=3.

When the usage rights for the spectrum at 1900.1–1905.1 MHz (5 MHz unpaired) and 2010.5–2024.7 MHz (14.2 MHz unpaired) expire, these bands will no longer be available for MFCN. This is in line with the conditions for subplans 290 and 293, included in the Spectrum Plan since October 2019, stating that the spectrum is only assigned for MFCN for a limited period of time.² ECC Decision (06)01 also no longer includes arrangements for this band for MFCN since its revision in 2012.³ Commission Implementing Decision (EU) 2020/667 of 6 May 2020 amending Decision 2012/688/EU relates solely to the paired band and does not provide for harmonisation of the unpaired bands at 2 GHz for MFCN.⁴

The following usage rights will expire on 31 December 2033:

- Spectrum in the 700 MHz band
2 x 30 MHz (paired) at 703-733 MHz / 758-788 MHz
- Spectrum in the 900 MHz band
2 x 35 MHz (paired) at 880-915 MHz / 925-960 MHz
- Spectrum in the 1500 MHz band
40 MHz (unpaired) at 1452-1492 MHz
- Spectrum in the 1800 MHz band
2 x 50 MHz (paired) in the sub-bands at 1725-1740 MHz / 1820-1835 MHz and 1750-1785 MHz / 1845-1880 MHz

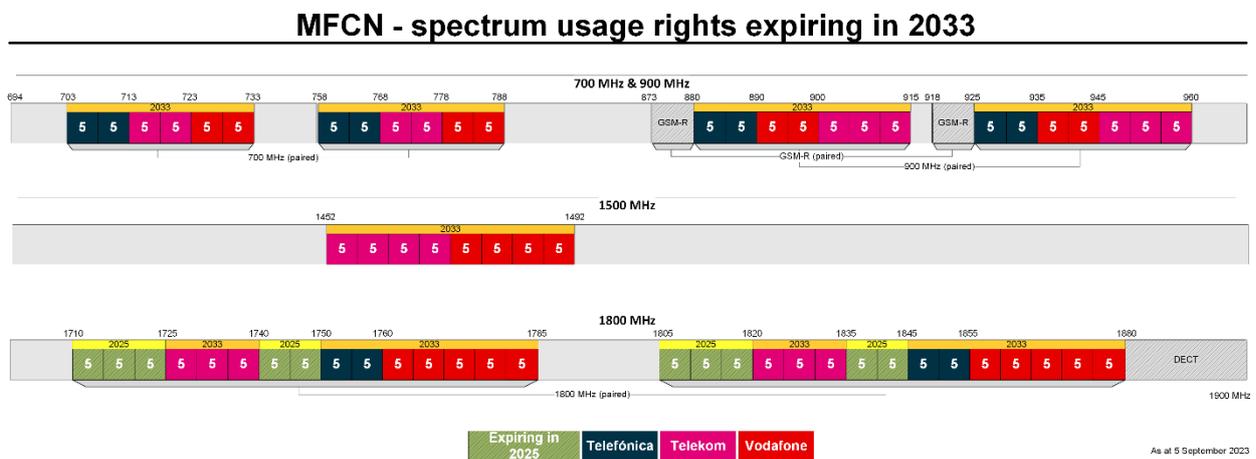


Figure 3 – Assignments at 700 MHz, 900 MHz, 1500 MHz and 1800 MHz expiring at the end of 2033

² The Bundesnetzagentur's Spectrum Plan is available at <https://www.bundesnetzagentur.de/DE/Fachthemen/Telekommunikation/Frequenzen/Grundlagen/Frequenzplan/frequenzplan-node.html> (in German).

³ ECC Decision (06)01 is available at <https://docdb.cept.org/download/2926>.

⁴ Commission Implementing Decision (EU) 2020/667 of 6 May 2020 is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32020D0667&from=EN>.

International bodies are currently considering the possibility of an additional allocation in the Radio Regulations to allocate the 470-694 MHz band internationally to the mobile service.

A decision on this will be taken at WRC 23 but would not oblige Germany to make use of this additional allocation. Implementation of the additional allocation in Germany would be a matter of national legislation. The Bundesnetzagentur will take into account the dynamic developments in the field of wireless technologies and their potential uses as well as the international and European frameworks in its future spectrum planning for this band. A study commissioned by the Bundesnetzagentur and published in December 2021 provides an overview of the diverse interests and possible future usage scenarios.⁵

2. Infrastructure level

The mobile market is essentially shaped by three established network operators, each with a similar number of subscribers.⁶ A fourth network operator entered the mobile market following the auction in 2019. The fourth network operator acquired spectrum usage rights in the 2 GHz and 3.4–3.7 GHz bands at the auction. The fourth network operator was then, and still is, active in the German mobile market as a service provider/mobile virtual network operator (MVNO) for other mobile networks. The spectrum usage rights assigned gave the fourth network operator the right and the obligation to roll out its own mobile network. The principle of competitive independence means that operators of mobile networks may not also act as service providers/MVNOs for another operator's network. Firstly, a network operator must ensure efficient spectrum use and meet coverage obligations with its own spectrum. Secondly, a network operator must not have an unfair competitive advantage from also acting as a service provider/MVNO for a competitor's network. This would reduce or distort competition in the medium term.

A decision was therefore issued on 20 October 2022 on the basis of the President's Chamber decision of 26 November 2018 (BK1-17/001) requiring the fourth network operator to end its sales operations by the end of 2023 and all its activities as a service provider/MVNO by the end of 2025.⁷ The operator has now requested the Bundesnetzagentur to change the deadline to end its sales operations for 5G services and extend it until September 2024. The Bundesnetzagentur will decide on the request in separate proceedings, in consultation with the established network operators and the fourth network operator.

With regard to the mobile network operators' business models, progress in network rollout is at different stages. All the established mobile network operators are subject to symmetrical coverage obligations that must

⁵ Available at <https://www.bundesnetzagentur.de/uhf-studie.html> (in German).

⁶ Mobile subscriber numbers based on operators' publications:

https://www.bundesnetzagentur.de/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Marktbeobachtung/Deutschland/Mobilfunkteilnehmer/Mobilfunkteilnehmer_node.html (in German).

⁷ The President's Chamber decision of 26 November 2018 (BK1-17/001) is available at

https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/FrequencyAward2018/20181214_Decision_III_IV.pdf?__blob=publicationFile&v=2.

be met at the latest by the end of 2024. The fourth mobile network operator is subject to different coverage obligations.

The Bundesnetzagentur imposed a requirement on the established network operators in the spectrum auction in 2019, obliging them to enter into negotiations for national roaming with the new market player. Alongside this, there was a roaming option for the market entrant from the European Commission's proceedings on the merger of the network operators Telefónica and E-Plus.

In view of this, a national roaming agreement was concluded between an established network operator and the fourth network operator for a basic period of five years, with options to extend. The agreement covers national roaming for the available 2G/3G/4G network coverage.

In August 2023 successful negotiations for national roaming took place between another established network operator and the fourth network operator for 5G services.

3. Service level

With their mobile offers, service providers and MVNOs help to strengthen competition at the service level and thus to promote consumer interests. The President's Chamber set the service provider regulation that currently applies in its last spectrum award decision in 2018. It includes a negotiation requirement (see President's Chamber decision of 26 November 2018 (BK1-17/001) point III.4.15).

The service provider regulation is the subject of controversy among market participants. Some call for stricter requirements in the form of service provider obligations. Others state that there is effective competition at the service level and that no further measures are needed (see Annex 1 for details).

In light of this, the Bundesnetzagentur is examining whether further measures are needed to promote competition at the service level. It is assessing the competitive conditions in Germany's mobile market and has commissioned an external study of the market's competitive conditions. The results of the study will feed into the decision on the provision of the spectrum.

III. Proceedings so far

The Bundesnetzagentur has already carried out a number of stakeholder consultations for the re-provision of the spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands for which usage rights expire in 2025.

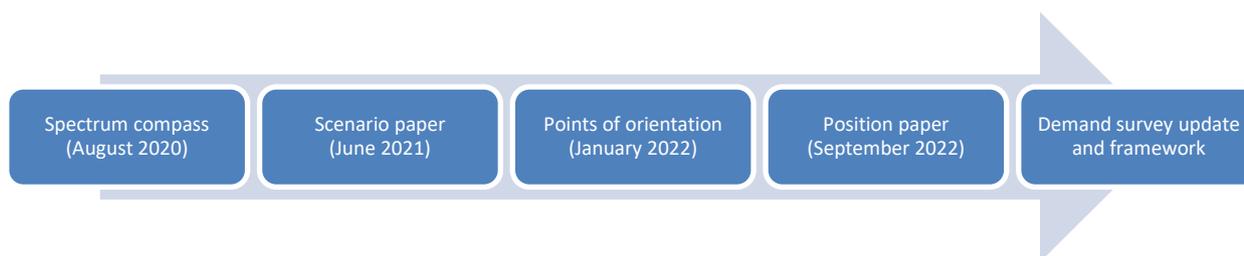


Figure 4 – Consultation process for the provision of the spectrum available as from 2026

This transparent consultation process serves to enable the President's Chamber to weigh up all the interests and concerns presented in light of the regulatory aims in objective, transparent and non-discriminatory proceedings in order to make a final decision on the provision of the spectrum and a decision on whether, and which, measures are needed to promote competition. The aim of the President's Chamber here is to take a forward-looking, non-discriminatory and balanced regulatory decision that will foster investment for the benefit of consumers.

The Bundesnetzagentur presented its initial ideas in the spectrum compass and scenario paper, which it published for public consultation in 2020 and 2021.^{8,9} It then published its points of orientation and demand survey on 24 January 2022 (Communication No 22/2022, Bundesnetzagentur Official Gazette 03/2022 of 9 February 2022, page 158 et seq) for stakeholder consultation.¹⁰ The points of orientation outlined the facts relevant to the future provision of the spectrum. They also set out aspects to be clarified and initial considerations about the duration of the spectrum usage rights, the competitive independence of the fourth mobile network operator, competition-related and coverage obligations, and the promotion of cooperation. The aim of the initial demand survey was to examine signs of possible spectrum scarcity. The Bundesnetzagentur published the position paper on 22 September 2022 following evaluation of the responses to the points of orientation (Communication No 175/2022, Bundesnetzagentur Official Gazette 19/2022 of 5 October 2022, page 954 et seq).¹¹ The position paper set out an initial assessment on the next steps in the

⁸The spectrum compass is available at

https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/SpectrumCompass2020.pdf?__blob=publicationFile&v=1.

⁹The scenario paper is available at

https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/CaseSzenarios2021.pdf?__blob=publicationFile&v=3.

¹⁰The points of orientation are available at

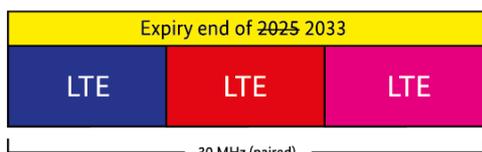
https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/OrientationPoints2022.pdf?__blob=publicationFile&v=1.

¹¹The position paper is available at

https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/PositionPaper2022.pdf?__blob=publicationFile&v=4.

provision of the spectrum, which was neither binding nor did it pre-empt the exercise of discretion by the President's Chamber. The position paper set out the President's Chamber's initial assessment that award proceedings are suitable for allocating spectrum when spectrum resources are scarce and not an extension of assigned spectrum usage rights, as called for by some market participants. The assessment was that an auction would be the most suitable method. To relieve the demand situation in the 800 MHz band, a spectrum swap with the 900 MHz band was proposed:

800 MHz band



900 MHz band

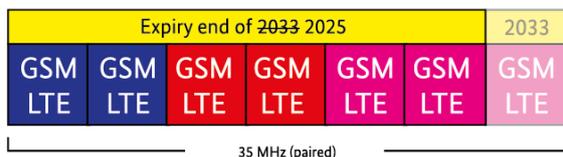


Figure 5 – Spectrum swap between the 800 MHz band and the 900 MHz band

The considerations about the spectrum swap included the following:

A spectrum swap would mean that the usage rights at 800 MHz would expire at the end of 2033 instead of the end of 2025. The usage rights at 900 MHz would expire at the end of 2025 rather than the end of 2033. The 900 MHz spectrum would then be awarded instead of the 800 MHz spectrum. This spectrum swap would secure the current LTE coverage on the basis of the 800 MHz spectrum for the longer term, but would also give new entrants an opportunity to receive spectrum below 1 GHz.

The Bundesnetzagentur provided initial impetus for further improvements in broadband coverage. There would therefore be more focus on the perspective of users. The position paper also presented a series of proven and new measures that, alternatively or in combination, were designed to improve coverage. Various means of promoting competition at the service level were also weighed up.

The insight from the responses to the position paper provided the basis for this consultation document on a demand survey update and framework for an interim decision.

IV. Updating the demand survey

The President's Chamber generally assumes that the forecasts of demand for spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands made in 2022 remain unchanged. However, because of the complexity of the proceedings and the particular significance of the decision to be taken for the market, the President's Chamber is calling on all interested companies to update their demand forecasts.

- Last year the President's Chamber requested indications from the market participants concerned about their anticipated spectrum demand on the basis of the points of orientation. The market participants presented forecasts of their spectrum demand in this initial demand survey. The President's Chamber subsequently published the position paper with its initial assessment that spectrum would be scarce.
- The President's Chamber generally assumes that the forecasts of spectrum demand remain unchanged. With regard to securing efficient spectrum use, taking into account the socioeconomic importance for telecommunications networks and the provision of coverage for consumers, the proceedings and the decision to be taken on the provision of the spectrum are of particular relevance for the market. On account of the complexity and the significance of the decision to be taken, the next steps in the proceedings must be based on a legally secure and stable factual basis.
- All interested companies are invited to participate in the demand survey update and to either confirm their demand for spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands or present a new spectrum demand forecast as set out in Annex 2.
- Official demand identification proceedings are not required by law, but they are tried and tested, informative proceedings that meet the criteria under Union law of objectivity, transparency and non-discrimination. If proceedings are not carried out (soon) before award proceedings are ordered, the Bundesnetzagentur is obliged to draw on information that offers a comparable guarantee for the identification of current spectrum demand that is to be made and is thus no less suitable as a basis for the forecast of an (in)sufficient amount of spectrum being available (see Federal Administrative Court ruling of 22 June 2011 (BVerwG 6 C 3.10)).¹²
- Here, the President's Chamber considers a demand survey update to be a suitable and appropriate means of identifying spectrum demand. The aim of this demand survey is to see whether the demand registered in response to the orientation points has changed. This makes it possible to verify the information currently available to the President's Chamber close in time to the decision on the provision of the spectrum. The demand survey update with its less complex procedural rules is also in the interests of simpler and swifter proceedings. The information gained in the demand survey update still offers a guarantee for the required identification of current spectrum demand that is comparable with formal demand identification proceedings, which are complex to carry out.
- The demand survey update is not restricted to those market participants that responded to the demand survey in 2022 but is open to all interested companies, therefore giving them the opportunity to register

¹² The Federal Administrative Court ruling of 22 June 2011 (BVerwG 6 C 3.10) is available at <https://www.bverwg.de/220611U6C3.10.0> (in German).

their demand as well. It is in the interests of all those involved to participate in the demand survey update and see whether their demand forecasts have changed. Unqualified expressions of interest are again insufficient to demonstrate eligible demand.

- The President's Chamber currently assumes that the forecasts of spectrum demand generally remain unchanged. If this assumption is confirmed and the spectrum demand registered indicates a scarcity of spectrum, an interim extension of the current usage rights will be considered in order to carry out transparent, objective and non-discriminatory proceedings at a later point in time (see second stage of action for details). If a scarcity of spectrum is not confirmed, a longer extension of the current usage rights in accordance with section 92(3) of the Telecommunications Act (TKG) could also be considered. However, the President's Chamber would like to point out at this stage of the proceedings that the actual identification of any surplus of demand would still be the subject of a separate decision by the Chamber, in line with established regulatory practice.

V. First stage of action: Not ordering award proceedings but extending usage rights for an interim period

The President's Chamber is considering not ordering award proceedings for the time being.

The President's Chamber is considering issuing an interim decision extending the current usage rights for the spectrum at 800 MHz, 1800 MHz and 2600 MHz by five years to cover the period between the expiry of the rights at the end of 2025 and re-provision of the spectrum as from 2031.

- It is specifically considering:
 - taking an interim decision in 2024 on not ordering award proceedings but extending current usage rights from the beginning of 2026 until the end of 2030 (stage 1);
 - taking a decision in transparent, open and non-discriminatory proceedings by 2028 on the long-term provision of spectrum usage rights as from 2030 within a larger award framework (stage 2).

1. Not ordering award proceedings

- The President's Chamber is considering not ordering award proceedings for the time being, based on its considerations about a demand survey update. Section 91(9) TKG gives the President's Chamber discretion when spectrum is scarce as to whether or not to order award proceedings.
- The President's Chamber acknowledges that current market demand for spectrum usage rights is a fundamental basis for a decision on the provision of rights. The following considerations of the President's Chamber are therefore conditional on the market demand identified in the first demand survey in January 2022 generally remaining unchanged and being confirmed in the above-mentioned demand survey update. If this is the case, the demand for spectrum usage rights in the bands in question in these proceedings would exceed the amount of spectrum becoming available and spectrum would therefore be scarce.
- Section 91(9) TKG gives the President's Chamber discretion when spectrum is scarce. The President's Chamber has the discretion when spectrum is scarce to decide that the assignment of spectrum should be preceded by award proceedings in accordance with section 100 TKG. This also means, however, that the President's Chamber can also decide not to order award proceedings. The President's Chamber is aware that its usual practice under the old TKG, at least, was to use its discretion when spectrum was scarce to decide to order award proceedings. A decision when spectrum is scarce not to order award proceedings is,

according to the Federal Administrative Court's case law for the old TKG, the exception to the rule because of conflicting fundamental rights positions.¹³

- The President's Chamber is currently considering using its discretion to decide not to order award proceedings for the time being but postpone them until a later point in time. In the President's Chamber's view, not ordering award proceedings until a later point in time is appropriate in light of the possibility of including further spectrum and in light of market and technological developments.
- A larger framework for proceedings at a later point in time would make it possible to include more spectrum resources in the proceedings and counteract regulation-induced scarcity. A larger framework for proceedings would offer the companies concerned more opportunities for accessing spectrum. The interim decision being considered also offers the possibility of taking into account emerging technical and market developments.

This could also serve in particular the regulatory objectives of fair and sustainable competition and efficient spectrum use as set out in section 2(2) paras 2 and 5 TKG.

- Joint provision of the spectrum can make a contribution towards introducing new technologies and increasing spectrum efficiency with regard to the spectrum below 1 GHz. The spectrum assignments in nearly all the bands are more or less symmetrical. Successive awards made it possible for each network operator to acquire a proportion of spectrum in each band. This almost symmetrical assignment of spectrum, as a rule comprising 2 x 10 MHz for each operator below 1 GHz and 2 x 20 MHz for each operator in the 1800 MHz, 2100 MHz and 2600 MHz bands (with exceptions), could conflict with current and future technological developments. A larger framework for proceedings could give the network operators the opportunity to concentrate more on individual bands and acquire larger blocks of spectrum.
- Spectrum in the 800 MHz band is currently being used across nearly all the country to provide the current mobile coverage. The President's Chamber is aware of the fact according to the market that this band currently forms the backbone for wide-area mobile broadband coverage. In the President's Chamber's view, the interim solution being considered would also be suitable to accommodate this fact. It would be possible to maintain the current coverage on the basis of the 800 MHz spectrum in the interim period until network rollout using the other spectrum below 1 GHz has progressed enough to provide adequate wide-area coverage. The President's Chamber assumes, however, that a similar amount of the other spectrum below 1 GHz will be needed for mobile broadband networks in the next few years. Here, the President's Chamber also anticipates that the established mobile network operators will also increase the density of their networks in the interim period because of the growing demand for particularly high data rates, which could lead to a general shift in the significance of the wide-area spectrum.
Not ordering award proceedings together with extending spectrum usage rights for an interim period would make it possible to counteract regulation-induced scarcity because more available wide-area spectrum (700 MHz, 800 MHz and 900 MHz) could be provided for award at the same time. In the President's Chamber's view, it would be advantageous in terms of spectrum regulation to combine the

¹³ Communication No 187/2021, Bundesnetzagentur Official Gazette 12/2021 of 30 June 2021, page 821 et seq (in German); also available in English at https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/FrequencyManagement/ElectronicCommunicationsServices/CaseSzenarios2021.pdf?__blob=publicationFile&v=3.

spectrum in the 700 MHz, 800 MHz and 900 MHz bands that is currently assigned with different expiry dates.

- Not ordering award proceedings together with extending spectrum usage rights for an interim period would also make it possible for the established network operators to restructure the 900 MHz band themselves. In the position paper published in September 2022, the President's Chamber had suggested in the context of the proposed spectrum swap that it would be possible to consolidate current GSM traffic and therefore re-designate GSM spectrum for broadband mobile. In future, it would also be conceivable that all the GSM traffic could be served by one network. There are still a number of applications, in particular sensors, that cannot readily be replaced, taking into account economic aspects as well as sustainability targets. The course of action being considered would allow the market to develop appropriate solutions for such cooperation and implement them in the interim period up to 2030 if possible.
- Not ordering award proceedings at the present time would make it possible to harmonise the length of spectrum usage rights in the same bands because the spectrum could be awarded in joint proceedings for the same length of time. This relates to the other usage rights for spectrum in the band at 1800 MHz that will expire at the end of 2033. In the President's Chamber's view, it would be advantageous in terms of spectrum regulation to recombine the spectrum in the 1800 MHz band that is currently divided into two groups with rights expiring in 2025 and 2033. In its view, this band is key to future mobile coverage with regard to technical developments. The increase in the density of the mobile networks could lead to a shift in the significance of the wide-area spectrum. Up until now, above all the spectrum below 1 GHz (700 MHz, 800 MHz and 900 MHz bands) was key because it was possible to provide wide-area coverage relatively cost-effectively with large cell radii. However, the growing demand for high data rates means that it will be increasingly necessary to use spectrum in higher bands with shorter ranges. It is therefore expected that the importance of the spectrum immediately above 1 GHz, including the 1800 MHz band, will increase further.
- In light of this, providing all the spectrum in the 1800 MHz band, which is key to mobile coverage, at the same time would have the advantage that more spectrum overall could be provided for award and current demand could be satisfied better overall. This could help to counteract the risk of regulation-induced scarcity effectively, in particular in this band.
Providing all the spectrum at the same time would also have the advantage that the individual assignment holders could exploit the technical potential in this band better. It would open up the possibility of acquiring contiguous spectrum blocks of more than 20 MHz and therefore create the basis for more efficient use in the interests of spectrum efficiency. While blocks of 20 MHz are sufficient for the maximum channel size for 4G, larger spectrum blocks can be used for subsequent technologies. Although it is possible to achieve larger channel bandwidths by combining several spectrum blocks in the same or different bands, it is generally preferable to have contiguous spectrum blocks because the restrictions at the block edges are then smaller and best possible use can therefore be made of the spectrum.
- Moreover, the mobile market is currently in transition, in particular with regard to the establishment of the fourth network operator and the operator's further network rollout as well as with regard to the implementation of the determinations on restoring competitive independence, which are the subject of ongoing proceedings. Not ordering award proceedings but issuing an interim decision would enable the President's Chamber to incorporate the outcome of the relevant ongoing proceedings and developments into a later decision. Depending on the outcome of the proceedings, it would consequently be possible to

include any spectrum becoming reavailable in the envisaged larger award proceedings for provision from 2031. This would serve the regulatory objectives of ensuring efficient and interference-free spectrum use (section 2(2) para 5 TKG), ensuring fair competition and promoting sustainable competitive telecommunications markets (section 2(2) para 2 TKG) and safeguarding user and consumer interests (section 2(2) para 3 TKG).

- Furthermore, WRC 2023 will discuss, among other things, two bands that could be relevant to the provision of spectrum for the rollout of digital infrastructure. First, there is the question of the possible identification of the 6425-7125 MHz band for IMT. Second, there is the possibility of regulatory measures in the 470-694 MHz band as part of a review of the 470-960 MHz band. Other use of the 470-694 MHz band is also being discussed. A decision on the future use of these two bands will be taken at European and national level.
- With respect to the new fourth network operator's registered demand for the spectrum usage rights in question in these proceedings, the President's Chamber is satisfied that the demand can be adequately accommodated in the course of action being considered. Firstly, the President's Chamber is only considering postponing award proceedings for an interim period at most; it will therefore be possible to satisfy the demand for spectrum after a relatively short period of time, given proof of compliance with the requirements relating to reliability, financial capacity and specialist knowledge for admission to the award proceedings. The Chamber anticipates that the possibility of then providing larger amounts of spectrum will relieve the scarcity situation and further improve the new fourth network operator's chances of acquiring spectrum. Secondly, the President's Chamber believes that current developments in implementing national roaming and the negotiation requirement being considered would provide the operator with an adequate alternative to acquiring its own spectrum for just the interim period.
- The President's Chamber would like to point out as a precaution that the interim decision being considered would not generally restrict the entry of a hypothetical new entrant in the German mobile market. Firstly, the decision being considered would only be interim and the period of extension short; the decision would therefore not be restrictive or prohibitive in terms of acquiring spectrum and entering the market in the near future. Instead, the envisaged larger framework for proceedings at a later point in time would provide a better starting point for potential new entrants early on, in particular in view of the larger amount of spectrum that would then be available. Secondly, the interested companies are free to position themselves in the market in the short period covered by the interim decision, for instance by first acting as service providers.

2. Extending usage rights by five years

The President's Chamber is considering issuing an interim decision extending the current usage rights for the spectrum at 800 MHz, 1800 MHz and 2600 MHz by five years on request to cover the period from the beginning of 2026 until the end of 2030.

- The President's Chamber acknowledges the market's ever-growing need for legal and planning certainty with regard to the use of the spectrum after 2025. It aims to accommodate this need and take a balanced decision on subsequent use of the spectrum in a timely and appropriate manner and in close consultation with the parties concerned.

- With regard to the course of action being considered of not carrying out award proceedings until a later point in time, the President's Chamber aims to take a balanced interim decision that complies with the spectrum regulation requirements and evaluations of the TKG. In light of the possibility of extending current usage rights for an interim period, the regulatory objectives set out in sections 2 and 87 TKG and, in particular, the provisions of section 91(9) and section 92(2) sentence 3 TKG are key and require the President's Chamber to take account of other defined objectives of spectrum regulation, such as promoting technical efficiency, competition or the interests of potential new entrants. With this in mind, the President's Chamber is planning to combine the interim extension being considered with spectrum regulations aimed in particular at promoting competition and further improving mobile coverage.
- In the President's Chamber's view, the period of time for which usage rights would be extended should be restricted. Extending usage rights would enable the President's Chamber to take an appropriate decision within a larger framework for provision, but at the same time take into account the restrictions associated with extending the rights on the occupational freedom of the mobile network operators and potential new entrants and adequately address the intrinsic risks for market and competition in compliance with the statutory provisions of section 2, section 87, section 91(9) and section 92(2) sentence 3 TKG. The President's Chamber is therefore basing its considerations about the possible length of an extension on the principle "as much as necessary, as little as possible".
- In line with these considerations, the President's Chamber's view is that a decision on the re-provision of the spectrum usage rights should be taken within a larger framework in 2028.
 - This would be five years before current assignments expire and therefore an adequate timescale to include in particular the other spectrum in the 1800 MHz band for which usage rights expire at the end of 2033.
In the President's Chamber's view, taking a decision on provision five years before the spectrum becomes reavailable would still provide adequate time between the decision and the possible start of use of the spectrum with regard to planning and investment certainty.
 - The current market movements described and ongoing regulatory proceedings, in particular with regard to the establishment of the fourth network operator, will have come to an end or progressed further by 2028 and can therefore provide a reliable basis for a decision within a larger framework for provision and in particular for the possible inclusion of reavailable spectrum:
 - Additional coverage obligations imposed on the fourth network operator in terms of the degree of coverage would need to be met at this point or expected to be met at a later point in time: the operator must provide coverage for at least 25% of households by 31 December 2025 and for at least 50% of households by 31 December 2030.
 - The determinations on the principle of competitive independence and the associated changes in business activities would need to have been implemented by that point in time (end of sales operations first and end of all activities as a service provider/MVNO by the end of 2025).
- In the President's Chamber's view, this would provide a reliable basis for a decision in 2028. The President's Chamber's proven practice is to take a final decision on the re-provision of spectrum usage rights two to three years before rights expire in light of the need for planning and investment certainty in the market. A decision in 2028 is therefore suitable to create the necessary planning certainty for the market within an adequate timescale with regard to re-provision from 2031.

- Here, the President's Chamber would like to point out that the length of the interim extension being considered is also consistent with the legal concept in section 92(3) sentences 1 and 4 TKG ("15+5 rule"), which is based on EU provisions and generally assumes an extension of five years to be appropriate in terms of ensuring investment and planning certainty.
- In addition, the President's Chamber anticipates that national implementation of the above-mentioned policy decisions at WRC 2023 will be adequately planned by then.
- The President's Chamber would like to point out that fees are charged for the assignment of spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands for nationwide use for MFCN in accordance with the Bundesnetzagentur's special ordinance on fees for spectrum assignment. The formulae for calculating the fees for subsequent assignments under B.0.3, B.0.6 and B.0.8 of the ordinance also include a factor for the length of the assignment. The fees would therefore properly reflect the actual (possibly short) length of the assignments under the interim decision being considered.

VI. Framework for interim spectrum assignments

The President's Chamber aims to make its considerations about the framework for interim spectrum assignment transparent at an early stage in order to give the market legal and planning certainty in good time. This is intended to promote the predictability of regulation. The objective is to take a balanced and non-discriminatory decision on the provision of spectrum that would promote investment in improved infrastructure.

The future spectrum assignment will, in accordance with section 99 TKG, include defining the nature and scope of the spectrum use, where this is necessary to ensure efficient and interference-free use of the spectrum, and the general criteria for an extension pursuant to section 92(3) sentence 6 TKG.

Under section 99(3) TKG, it is possible to attach secondary conditions to a spectrum assignment and to subsequently amend the spectrum, the secondary conditions attached to a spectrum assignment and the defined nature and scope of the spectrum use in a proportionate manner in order to secure efficient and interference-free use of spectrum, the other regulatory objectives set out in section 2 TKG and the objectives of spectrum regulation set out in section 87 TKG. The Bundesnetzagentur must promote effective competition and avoid distortions of competition in the internal market when assigning spectrum for telecommunications services and amending and extending spectrum assignments (section 105(1) TKG).

In light of this, the President's Chamber is considering taking appropriate measures aimed at promoting competition at both infrastructure and service level when it assigns spectrum for an interim period.

The President's Chamber is also considering imposing proportionate secondary conditions for coverage with high-quality, high-performance, nationwide and uninterrupted wireless voice and data services for all end-users, which would drive forward broadband coverage and usable quality of service in rural areas, with regard to the five-year extension period. This is in line with the regulatory objectives set out in sections 2 and 87 TKG and in particular with the regulatory principle laid down in section 2(3) para 5 TKG, according to which due account should be taken of the variety of conditions relating to infrastructure, competition, the circumstances of end-users and, in particular, consumers in the various geographic areas within Germany.

1. Measures aimed at further promoting competition

The President's Chamber is considering combining the extension with measures aimed at promoting competition. The President's Chamber is basing its decision on an objective and forward-looking assessment of the market competitive conditions.

- The Bundesnetzagentur must promote effective competition and avoid distortions of competition in the internal market when assigning spectrum and amending and extending spectrum assignments (section 105(1) TKG). If spectrum is so scarce that it is not possible for every company to roll out its own networks and participate in competition, it is necessary to take a close look at measures aimed at promoting competition. This is especially true when spectrum usage rights are extended and therefore not available to competition for an interim period.

- The Bundesnetzagentur is currently assessing the competitive conditions in the German mobile market in accordance with section 105(3) TKG. The assessment covers both the wholesale and the retail mobile market and the interaction between the two. The assessment of the competitive conditions takes into account market conditions and available benchmarks. The assessment includes an ongoing external study of the competitive conditions commissioned by the Bundesnetzagentur. The results of this study will feed into the President's Chamber's decision.
- An assessment of competition at the service level must take account of the market shares of the companies independent of the mobile network operators that exert competitive pressure on the operators. The penetration of the market by the latest wireless technologies, such as 5G, and provision for service providers are also extremely important for promoting competition at the service level and should be taken into account in the criteria. The quality characteristics of the wholesale products also influence competitive conditions at the service level. These could include the degree of coverage, data volume per end-user and (maximum) upload and download speeds. The development of wholesale and retail prices could also be relevant for the assessment.
- The President's Chamber included measures aimed at promoting competition, in particular in the form of negotiation requirements, in its spectrum award decision in 2018. Implementation of the current negotiation requirements is being evaluated. The above-mentioned assessment also takes into account whether or not additional measures to maintain or achieve effective competition are necessary and the effect of these measures on market participants' current or future investments, in particular in network rollout.

a. Service providers

The President's Chamber is considering combining the interim extension with measures aimed at promoting service-based competition. The President's Chamber is weighing up various options, ranging from a negotiation requirement to an offer requirement.

- The President's Chamber is aware of the controversial discussion among market participants about the effectiveness of a requirement for negotiations with service providers. Some call for more extensive obligations, while others expressly reject this call and argue that constructive negotiations are in progress. This applies in particular with regard to the provision of 5G mobile services for service providers and MVNOs. Service providers are companies that offer mobile services in their own name and for their own account but do not have their own mobile network infrastructure. MVNOs are companies that offer mobile services in their own name and for their own account and have their own mobile network infrastructure.
- Provider diversity from end-users' perspectives is as high as before. Several dozen mobile brands offer mobile services via various distribution channels such as retail outlets or online. Contrary to the view of some, service providers are continuing to contribute to competition even after the end of the service provider obligation under the UMTS licences.
- The current negotiation requirement from the President's Chamber decision in 2018 obliges assignment holders to enter into negotiations with suitable service providers on sharing wireless capacity.

Negotiations should be non-discriminatory and should not restrict the capacity to be provided to certain services, wireless technologies or applications.

- The current company-related negotiation requirement, like spectrum regulation as a whole, is designed to be technologically neutral. Assignment holders must negotiate on wholesale products based on all available mobile generations, including the latest wireless technology.
- The President's Chamber is considering various possible measures aimed at promoting competition, from imposing a regulation similar to the current negotiation requirement to imposing an offer requirement.
- The President's Chamber, taking into account market conditions, is basing its decision as to whether, and which, measures are needed to promote competition on an objective and forward-looking assessment of the market competitive conditions and the question of whether such measures are necessary to maintain or promote effective competition.

The Chamber is also mindful of the fact that the measures being considered to promote competition must also comply with the Federal Administrative Court's requirement that "justified interests of the other market participants must be taken into account and balanced elsewhere" (Federal Administrative Court ruling of 26 January 2011 (BVerwG 6 C 2.10, margin no 26)).¹⁴

- The assessment of the market competitive conditions should take account of the following facts, among other things:
 - A fourth mobile network operator acquired spectrum in the auction in 2019. As a rule, the higher the number of market participants stimulating infrastructure-based competition, the lower the need for measures to promote service-based competition. However, the fact should also be taken into account that this has not yet led to any nationwide mobile service offers beyond the company's MVNO activities.
 - The fourth mobile network operator is expected to gain access to 5G roaming services and switch roaming partners. The President's Chamber assumes that the consequent reavailability of a wholesale provider's wholesale capacity will stimulate competition at the service level.
 - Successful contractual negotiations will result in contracts being concluded between service providers/MVNOs and assignment holders for wholesale services, including 5G wholesale products.
 - MVNOs have switched contractual partners to gain access to wholesale services on different conditions from assignment holders.
- Subject to the ongoing study of the competitive situation and the further assessment of the market competitive conditions, the President's Chamber is considering taking the following aspects into account when deciding which measures are needed to promote competition. The President's Chamber is presenting these aspects for consultation now to create more planning certainty for the market:
 - The future measures for service-based competition would be technologically neutral. This would make it possible for service providers to acquire wholesale products based on all available mobile generations, including the latest wireless technology. The President's Chamber would like to point

¹⁴ The Federal Administrative Court ruling of 26 January 2011 (BVerwG 6 C 2.10) is available at <https://www.bverwg.de/260111U6C2.10.0> (in German).

out that it recognises a mobile network operator's right to innovative competition when selling a product, as long as service providers have the chance to catch up with this competitive advantage and the operator does not therefore develop a long-term unique selling point. With regard to the provision of 5G wholesale products, however, the President's Chamber would like to make its view clear that the level of innovation does not necessarily justify such competition. On account of developments in recent years, 5G wholesale products represent the next step in technical progress rather than actual innovation.

- The future measures would include a non-discrimination obligation. Assignment holders would not be able to treat service providers differently without an objective reason. The President's Chamber takes the view that assignment holders would still need to offer mobile services to service providers on the basis of objective criteria, in a comprehensible manner and in line with demand. This applies in particular to terms and conditions for wholesale products. The aim is to avoid discrimination between sales to affiliated service providers and sales to independent service providers. In the President's Chamber's view, a possibility would be having an auditor to monitor compliance with the non-discrimination obligation.
- With regard to companies with their own network elements (MVNOs), the President's Chamber would like to point out the following:
The above considerations generally apply to MVNOs as well. Based on the wording of section 3 para 1 TKG, MVNOs are generally covered by the term "telecommunications service provider". A telecommunications service provider means anyone who provides telecommunications services. Connecting an MVNO to an assignment holder's network can, however, be associated with more demanding technical requirements (including physical connection of the networks, network capacity, network security and commercial confidentiality). In light of these differences, it would seem appropriate to make a case-by-case assessment for each MVNO based on the principle of non-discrimination.
- A reporting requirement is being considered. Assignment holders would be required to report regularly and/or on request on the offers made to meet requests for wholesale products and on the main contract information.
- Any measures to promote competition must be proportionate. They must also be proportionate within the context of all the requirements and obligations. Here, the fact would need to be taken into account that an interim decision is being considered that would be accompanied by an interim extension and measures to improve coverage.

b. National roaming

The President's Chamber is considering imposing a negotiation requirement for national roaming for the period of the interim decision in light of current developments in the market.

The negotiations must be technologically neutral and non-discriminatory.

- The President's Chamber, taking into account market conditions, will base its upcoming decision on an objective and forward-looking assessment of the market competitive conditions and of the likely effects of such measures on existing and future investments.

- In connection with access to national roaming, the fact would need to be taken into account that the fourth network operator would not have access to further spectrum for several years if usage rights were to be extended for an interim period. This applies in particular to the spectrum below 1 GHz, which is key for both indoor coverage and wide-area coverage. The President's Chamber is aware that the possibility of national roaming is very important especially when new companies are entering the market.
- The President's Chamber is considering imposing a negotiation requirement for national roaming for the period of the interim decision. A negotiation requirement for national roaming was imposed as part of the spectrum award proceedings in 2018 as follows: *"Upon request by other nationwide assignment holders, assignment holders must, in compliance with telecommunications and antitrust law, engage in negotiations on the shared use of existing nationwide networks (roaming) and on infrastructure sharing. On this basis, holders of nationwide spectrum assignments must conduct negotiations on cooperation for national roaming."* The negotiations must be technologically neutral and non-discriminatory. Current negotiations on roaming contracts show that the negotiation requirement is effective.
- With regard to entering into cooperation for national roaming, the President's Chamber still takes the view that assignment holders would in any case need to ensure efficient spectrum use and meet coverage obligations with their own spectrum. In the event that the fourth network operator entered into cooperation for national roaming with an established operator, it would be necessary to look at the implications of the period of the cooperation for spectrum regulation and competition on a case-by-case basis.
- The current considerations are subject to the ongoing study of the competitive situation and the further assessment of the market competitive conditions. In addition, they can only reflect the current status with regard to ongoing negotiations in the market. The President's Chamber's decision may need to take account of further developments.

2. Measures aimed at improving mobile coverage

Measures aimed at improving mobile coverage are being considered as part of the interim decision.

Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 sets out key digital targets aimed at promoting the digital transformation in Europe.

One focus is on the need for secure, resilient, performant and sustainable digital infrastructure. All populated areas must be covered by next-generation wireless high-speed networks with performance at least equivalent to that of 5G.

The Bundesnetzagentur's Advisory Council set out clear targets for improving mobile coverage and promoting competition in the mobile market in its decision of 19 June 2023. The Advisory Council's proposals aim to set the course for future-proof mobile coverage in line with demand.

Even though providing coverage for white spots requires particular effort and resources, the Advisory Council believes it is essential to identify instruments for the provision of coverage and to drive forward provision.

The Advisory Council stresses the importance of effective competition as it can have a positive effect on quality and pricing. In particular, there should be non-discriminatory access for service providers and MVNOs in the wholesale market.

The President's Chamber is taking account of the EU's digital targets and the Advisory Council's decision in the current proceedings.

a. Setting coverage obligations

The President's Chamber is considering setting obligations aimed at improving mobile coverage for rural areas, transport routes and railway lines.

One of the President's Chamber's aims when extending the assignments for an interim period would be to improve mobile coverage by imposing coverage obligations (section 92(3) sentence 6 and (5) sentence 2 in conjunction with sections 87 and 2 TKG). The obligations seem necessary in order in particular to drive forward broadband coverage and usable quality of service in rural areas and to guarantee end-to-end coverage with uninterrupted voice and broadband data services along transport routes (section 87(2) para 1 TKG). A suitable instrument for meeting these objectives are obligations defining the level of coverage to be provided with the spectrum and the deadline for achieving this level (see section 100(4) para 4 TKG).

The President's Chamber's considerations about the coverage obligations take account of the fact that the spectrum would only be assigned for an interim period. The President's Chamber therefore plans to design the coverage obligations so that network operators realise the full potential for optimising mobile coverage as quickly as possible. Subsequent award proceedings would then provide the opportunity to build on this and improve mobile coverage further in the medium to long term. The President's Chamber is therefore making in particular the following considerations:

Improving coverage

- Uninterrupted coverage with high-performance mobile broadband services is essential for many areas of life in Germany. Reliable mobile coverage enables access to education, health services and other key fields, in particular in rural areas. Mobile communications can contribute to digital transformation in industry and automation in industrial environments.
- The way in which end-users perceive and use telecommunications services has changed over the last few years. End-users expect continuous, nationwide coverage with mobile services as far as possible, including in rural areas and along transport routes. Further improvement in coverage is also essential for Germany's viability internationally as a location for business and investment.
- Here, coverage obligations make a key contribution, including with regard to achieving the regulatory objectives set out in section 2 TKG and the objectives of spectrum regulation set out in section 87 TKG. Section 87(2) para 1 TKG sets in particular the following targets for coverage if possible by 2026:
 - high-quality, high-performance, nationwide and uninterrupted wireless voice and data services for all end-users;
 - better broadband coverage and usable quality of service in rural areas;

- end-to-end, uninterrupted access to voice and broadband data services of public mobile communications for all end-users, at least along major and minor roads and all railway lines and waterways.
- Rollout obligations, among other things, have led to significant progress in improving mobile coverage in the past few years. Cooperation among network operators has also resulted in considerable success in improving coverage for less densely populated areas and transport routes. There is, however, still potential for improvement. The coverage obligations would aim to enable more potential to be realised even if the spectrum usage rights were extended for an interim period.

Current mobile coverage

The following progress has been made in the rollout of mobile networks:

- Each established mobile network operator has coverage with a downlink transmission rate of 100 Mbps available for at least 98% of households in each federal state.
- Each established mobile network operator has coverage with a downlink transmission rate of at least 100 Mbps available for nearly all motorways.
- Each established mobile network operator has coverage with a downlink transmission rate of at least 100 Mbps available for more than 98% of all major roads.
- The level of coverage for minor roads is also very high, although operators have until the end of 2024 to meet the coverage obligation. Only 0.1% (about 60 kilometres) of minor roads do not have coverage with a transmission rate of at least 50 Mbps from at least one mobile network operator. The level of coverage achieved by the individual mobile network operators ranges from 98% to just under 100%.
- The busy railway lines, which are to have coverage with a transmission rate of at least 100 Mbps, have nearly full coverage from at least one of the three mobile network operators; the degree of coverage provided by each of the three operators individually is over 99%. The other railway lines, which are to have coverage with a downlink transmission rate of 50 Mbps by the end of 2024, already have coverage from each of the established network operators; the degree of coverage provided by each operator is also over 99%.
- Road and railway tunnels do not yet have full coverage.
- Additional coverage obligations for transport routes must be met by 31 December 2024. The President's Chamber expects that this will lead to a further improvement in the coverage situation.

Necessity for setting new coverage obligations

- In setting new coverage obligations, the President's Chamber would be pursuing the regulatory objectives set out in sections 87 and 2 TKG, in particular section 87(2) para 1 TKG.
- In the President's Chamber's view, imposing new coverage obligations seems necessary in order to ensure the above-mentioned regulatory objectives (section 92(5) sentence 2 TKG). Firstly, the coverage obligations from the spectrum award in 2010 are no longer adequate to drive further forward the provision of uninterrupted mobile services in rural areas across the country. Secondly, the existing

obligations are no longer adequate to guarantee end-to-end, uninterrupted coverage with mobile services along transport routes (section 87(2) para 1 TKG). New, more extensive obligations are therefore needed to ensure the objectives of spectrum regulation, particularly because it is not necessarily to be expected that the assignment holders will drive forward network rollout sufficiently in the areas targeted by section 87(2) para 1 TKG.

- In addition, there have been considerable changes in the coverage situation and new coverage obligations are needed to reflect the new situation.
- The President's Chamber is considering imposing new coverage obligations that would focus more on the above-mentioned user expectations and perspectives. The President's Chamber assumes that the assignment holders' network planning already takes into account these end-user aspects to a certain extent.
- The Advisory Council responded to the Bundesnetzagentur's position paper on the 2025 spectrum award in its decision of 19 June 2023.¹⁵ Its response set out, among other things, objectives relating to coverage quality, mobile reception under difficult reception conditions, and coverage for white spots. The President's Chamber will address these aspects when imposing new obligations.
- The President's Chamber aims to drive forward achievement of the above-mentioned regulatory objectives with the interim decision. It is considering imposing the following coverage obligations in order to further improve user experience.

b. Improving coverage in rural areas

Each assignment holder would be required to provide coverage with a downlink transmission rate of at least 100 Mbps for at least 98% of households in areas where the population density is less than 100 inhabitants per square kilometre in each federal state at the latest as from 1 January 2029.

- In accordance with section 87(2) para 1 TKG, one of the President's Chamber's priority objectives is to improve coverage in rural areas. Mobile network rollout in these areas is key to promoting equivalent standards of living in urban and rural areas in terms of telecommunications services.
- The President's Chamber is therefore considering setting the following obligation:
Assignment holders would be required to provide coverage with a downlink transmission rate of at least 100 Mbps for at least 98% of households in areas where the population density is less than 100 inhabitants per square kilometre in each federal state at the latest as from 1 January 2029.
- Each of the three established mobile network operators currently has coverage with a transmission rate of at least 100 Mbps available for well over 99% of households nationwide. Each of the operators has coverage with a transmission rate of 50 Mbps available for almost 100% of households nationwide. The actual coverage available for households varies according to the population density of their area. In areas

¹⁵ The Advisory Council's decision of 19 June 2023 is available at

https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Allgemeines/Bundesnetzagentur/BeiraeteundAusschuesse/Beirat/Beschlusse/BeschlussBeirat19062023-TOP2.pdf?__blob=publicationFile&v=6 (in German).

with 100 or more inhabitants per square kilometre, the percentage of households with available coverage is more or less the same as the nationwide average for both 50 Mbps and 100 Mbps. In areas with fewer than 100 inhabitants per square kilometre, the percentage of households with access to coverage with 100 Mbps is lower than the nationwide average. Each mobile network operator provides coverage for between 96% and 97% of households in these sparsely populated areas nationwide. In the majority of federal states, more than 97% of households in sparsely populated areas have coverage with 100 Mbps from the individual mobile network operators, but in some federal states only about 90% of households have coverage. Even though only about 11% of all households are in sparsely populated areas, more than half of the households not provided with coverage with 100 Mbps by the individual mobile network operators are in these areas.

- In light of this analysis of the current coverage situation for sparsely populated areas, such an obligation seems suitable, necessary and appropriate. The obligation could ensure that rural areas also benefit from an improvement in mobile broadband coverage.
- The obligation would serve the regulatory objectives set out in sections 2 and 87 TKG.
- The obligation would advance the objective of nationwide coverage with voice and data services. In particular, it could drive forward broadband coverage in sparsely populated areas and consequently in rural areas. The President's Chamber anticipates that this would improve the equivalence of standards of living in terms of telecommunications services in accordance with section 2(2) para 3(d) and section 87(2) TKG. The aim of the obligation would ultimately be to provide access to mobile services across a wider area overall.
- The deadline of 1 January 2029 specified in the obligation would serve the objective set out in section 87(2) para 1 TKG of coverage as soon as possible. The obligation would relate to all rural areas and would therefore give network operators a large degree of flexibility for their rollout strategies.
- The President's Chamber assumes that the obligation would lead to an improvement in coverage from users' perspectives. The increase in capacity in a radio cell is also expected to increase the data rate that users can expect to receive near the cell edges.
- In the President's Chamber's view, this obligation would also be suitable and necessary to improve mobile coverage in rural areas. It also seems to be a suitable way of improving coverage for households in unserved or underserved areas. The coverage obligation would also be suitable for providing access to mobile services across a wider area in general in order to provide coverage for households in rural areas as well as for areas in which end-users move around and temporarily stay.
- The measure being considered here also seems appropriate. The President's Chamber is taking into account the fact that each of the established mobile network operators is required to have coverage with at least 100 Mbps available for at least 98% of households in each federal state by the end of 2022. It is also taking into account the fact that more than 99% of households in sparsely populated areas nationwide already have coverage available with a downlink transmission rate of at least 50 Mbps. Lastly, the President's Chamber is taking into account the fact that the obligation for coverage for households in sparsely populated areas can be met flexibly.

c. Improving mobile coverage along transport routes

Each assignment holder would be required to provide coverage with a downlink transmission rate of at least 100 Mbps for all major roads and coverage with a downlink transmission rate of at least 50 Mbps for all minor roads and inland waterways of the federal core network at the latest as from 1 January 2029. It would not be possible to factor in coverage by other assignment holders.

- Each assignment holder would be required to provide coverage with a downlink transmission rate of at least 100 Mbps for all major roads and coverage with a downlink transmission rate of at least 50 Mbps for all minor roads and inland waterways of the federal core network at the latest by 1 January 2029.
- Unlike the obligations relating to transport routes from the President's Chamber decision in 2018, which allowed other assignment holders' coverage to count towards the target coverage in order to avoid the obligation being disproportionate, the President's Chamber does not consider this to be appropriate for the obligations in question in these proceedings.
- The coverage obligation for transport routes seems to be proportionate.
 - The obligation would serve the target set out in section 87(2) para 1 TKG of end-to-end, uninterrupted access to broadband data services along transport routes. The aim is for all end-users to benefit from an improvement in mobile coverage, regardless of the network operator. The current coverage situation along transport routes shows that some sections still only have mobile broadband coverage from one or two network operators (known as grey spots). The provision of coverage for grey spots is therefore still very important to guarantee a better user experience for all mobile customers.
 - The obligation would also serve the objective of nationwide coverage with voice and data services. The obligation could help to achieve better mobile coverage from all assignment holders for the areas around these transport routes as well as for the transport routes themselves. The areas around the transport routes that are currently only served by one or two mobile network operators could be provided with coverage as well.
 - The coverage obligation would also be suitable and necessary to take account of these aspects. In particular, coverage from each of the network operators along the transport routes would benefit all end-users, and there does not appear to be any milder means of accommodating this objective.
 - In the President's Chamber's view, requiring each of the established mobile network operators to provide their own coverage for the above-mentioned transport routes seems appropriate, given that the level of coverage is already high. It can be assumed that infrastructure is already in place along the transport routes that would enable full coverage by each operator. It should therefore be possible to provide cost-effective coverage, possibly even without the need for new masts, considering the options for cooperation similar to the grey spot cooperation projects.
 - Coverage for tunnels should also accommodate future requirements. Network coverage in tunnels from outside has natural limits. Cooperation with the tunnel operators would therefore be needed to enable suitable infrastructure to be put in place in the tunnels. In view of the impact of tunnel closures on the flow of traffic, network rollout should be designed to accommodate future requirements. The obligations for transport routes would also apply as a minimum requirement for coverage in tunnels as part of the transport routes.

d. Improving mobile coverage along railway lines

With regard to coverage for railway lines, the President's Chamber is considering requiring spectrum assignment holders (mobile network operators and railway line operators) to cooperate in establishing mobile and FRMCS infrastructure along railway lines. This would serve the objective of providing gigabit coverage along railway lines.

- The President's Chamber is considering requiring the assignment holders to share passive and active infrastructure and jointly roll out infrastructure for the provision of telecommunications services along railway lines with a view to improving coverage (section 99(2) paras 1 and 3 TKG).
- The President's Chamber is placing a focus on cooperation to enable gigabit coverage and the joint rollout of FRMCS infrastructure along railway lines. The assignment holders (mobile network operators and railway line operators) would be required to cooperate to enable gigabit coverage and the joint rollout of FRMCS infrastructure along railway lines.
- The coverage and usage situation on the rail network is as follows:
Dedicated mobile communications infrastructure immediately near the tracks is needed to be able to provide high data rates to about 1,000 users in a train at high speed at the same time. Mobile signals also need to be able to reach the inside of the trains, for example through windows or using repeaters. This requires cooperation between mobile network operators, railway infrastructure undertakings and train operators. In light of this, an obligation for coverage with a required data rate or for full coverage by each of the established mobile network operators, similar to the other transport routes, does not seem expedient.
- Here, the President's Chamber would also take into account, if necessary, possibilities for holders of spectrum usage rights to reasonably deploy publicly funded infrastructure (section 100(4) para 4 TKG).
- Joint rollout of FRMCS and mobile services also seems appropriate in view of possible interference given uncoordinated use of FRMCS and mobile communications in the adjacent bands at 900 MHz and 1800 MHz.

e. Proportionality of the coverage obligations as a whole

- The coverage obligations presented above would aim to ensure the expansion of the three mobile networks in rural areas and along transport routes. An assessment of each of the two individual elements has shown that they would be proportionate. In addition, the overall scope of the coverage obligations also seems proportionate.
- The President's Chamber is taking into account the principle of proportionality in its overall assessment in order not to place an unreasonable burden on private-sector undertakings in a market economy. The President's Chamber is basing its determination of reasonable obligations on the current mobile coverage situation described above.
- The overall scope of the obligations being considered seems to be necessary in order to noticeably advance the regulatory objectives set out in sections 2 and 87 TKG. As stated above, each individual element is necessary in itself. Firstly, the obligations would be necessary in order to promote an

improvement in coverage in sparsely populated areas. Secondly, the obligations would be necessary in order to improve coverage along transport routes. In addition, the President's Chamber recognises a shift in end-users' needs from coverage for households to end-to-end access to broadband telecommunications services everywhere across the country. The two elements of the coverage obligations together could improve user experience within a short period of time because they would improve mobile coverage across the country overall.

- Taken together, the obligations being considered would be appropriate. Here, the President's Chamber is taking into account each operator's current high level of coverage along transport routes and current coverage for sparsely populated areas.
- When defining the level of coverage to be provided and the deadline for achieving this level, the President's Chamber would take into account the regulatory objectives set out in sections 2 and 87 TKG as well as possibilities for holders of spectrum usage rights to reasonably share or jointly deploy publicly funded infrastructure (see section 100(4) para 4 TKG).
- The President's Chamber's assessment of proportionality also takes into account the possibilities for cooperation between the mobile network operators. Cooperation between the mobile network operators can help to achieve the statutory coverage targets and contribute to the proportionality of the coverage obligations being considered (section 87(2) para 1 TKG). The Bundesnetzagentur would welcome new cooperation projects between the mobile network operators beyond their existing projects, subject to the provisions of spectrum regulation and competition law.
- Cooperation builds on the operators' rollout of their mobile networks using their own resources, which is why market-driven cooperation projects are generally preferable to those imposed under a statutory obligation. The mobile operators know from their network planning which form of cooperation is suitable in each case to drive forward broadband rollout in the interest of their customers.
- In the President's Chamber's view, broad cooperation (such as sharing active network elements) could be made possible in regulatory terms in particular for areas where it does not seem feasible for more than one network operator to roll out infrastructure using its own resources or in areas with sensitive radio equipment (such as satellite receiving equipment) or observatories (such as the geodetic observatory in Wettzell). This would not affect the assessment under competition law by the individual competition authorities responsible.

f. Monitoring the obligations

- The above-mentioned obligations would be accompanied by a requirement to report regularly and in detail on progress in rollout, rollout plans and the status of negotiations. This would enable the Bundesnetzagentur to monitor compliance with the deadlines for meeting the targets and to take supportive action if necessary. It would also make progress in rollout transparent to the public.
- The President's Chamber aims to focus more on user perspectives and incorporate user experience when monitoring coverage obligations. The President's Chamber would nevertheless still ensure that coverage obligations are monitored on the basis of objective criteria. The current technical parameters for the coverage obligations would therefore generally apply for the interim extension period in order to give the assignment holders planning certainty.

- The President's Chamber is also considering retaining the familiar requirements for regular and ad hoc reporting from the spectrum award in 2019. Under these requirements, spectrum assignment holders are obliged to provide the Bundesnetzagentur on request with a written report on progress in spectrum use, network build, network rollout and rollout plans.

The aim of imposing a reporting requirement is to ensure that the coverage obligations are met. It is still appropriate for the Bundesnetzagentur to be kept up-to-date about progress in spectrum use in order to guarantee that all spectrum assignment holders use their spectrum swiftly. It still seems necessary to be able to request individual reports on a flexible basis in order to ensure efficient spectrum use.

VII. Second stage of action: Award framework for spectrum provision from 2031

The President's Chamber is planning to provide the usage rights at a later point in time in objective, transparent and non-discriminatory proceedings for use from 2031.

- Extending the spectrum usage rights for an interim period and then re-providing the spectrum in a larger framework for proceedings implies two successive stages of action; each stage has a different regulatory scope and binding effect because of the different envisaged assignment periods.
- The considerations presented above about the framework for an interim decision all relate to the first stage of action in the period from 2026 to the end of 2030.
- Objective, transparent and non-discriminatory award proceedings would be carried out to provide the spectrum in question in these proceedings for MFCN in the period from 2031. A decision on these proceedings would be taken about two years before the spectrum usage rights in question expire (second stage of action).

1. Objective, transparent and non-discriminatory proceedings

- Carrying out objective, transparent and non-discriminatory award proceedings at a later point in time would make it possible to provide the spectrum at 800 MHz, 1800 MHz and 2600 MHz in line with demand.
- It would also make it possible to include more spectrum resources in the proceedings and counteract regulation-induced scarcity. A larger framework for proceedings would offer the companies concerned more opportunities for accessing spectrum (see V.). This could also serve in particular the regulatory objective of fair and sustainable competition as set out in section 2(2) para 2 TKG.
- Joint provision of the spectrum can make a contribution in terms of introducing new technologies and increasing spectrum efficiency. A larger framework for proceedings could give the network operators the opportunity to concentrate more on individual bands and acquire larger blocks of spectrum.
- This relates first and foremost to the other usage rights for spectrum in the band at 1800 MHz that will expire at the end of 2033. In the President's Chamber's view, it would be appropriate in terms of spectrum regulation to combine the spectrum in the 1800 MHz band that is currently divided into two groups with rights expiring in 2025 and 2033.
- Carrying out objective, transparent and non-discriminatory proceedings at a later point in time would also enable the President's Chamber to include any spectrum becoming (re)available in the envisaged larger award proceedings for provision from 2031. This would serve the regulatory objectives of ensuring efficient and interference-free spectrum use (section 2(2) para 5 TKG), ensuring fair competition and promoting sustainable competitive telecommunications markets (section 2(2) para 2 TKG) and safeguarding user and consumer interests (section 2(2) para 3 TKG).
- In light of this, the President's Chamber is already making initial considerations about a possible framework in connection with the second stage of action. These first considerations are intended to

structure further discussions and involve the market in the President's Chamber's considerations at an early stage.

- Before carrying out award proceedings, the Bundesnetzagentur would define the conditions for the use of the spectrum, including the level of coverage to be provided with the spectrum and the deadline for achieving this level.
- With regard to the provisions of section 92(3) TKG, the President's Chamber sees more scope for defining the level of coverage and the deadline for achieving this level in the second stage of action.

2. Strengthening user perspectives

- The President's Chamber is considering imposing more extensive obligations within the larger framework for proceedings. The aim here is to take greater account overall of user perspectives. The parameters for coverage obligations and for monitoring the obligations would therefore be developed further.
- The increasing use of mobile equipment, such as smartphones, tablets and laptops, and new technologies will lead to an increase in the demand for mobile services everywhere across the country. In light of this, the design of future obligations should take into account that the obligations need to be based more on area and that the requirements for network capacity will increase further.
- In addition, future obligations should focus on the coverage quality that users can actually experience, in other words the mobile coverage that users can expect to access with their terminal equipment. The parameters for coverage obligations and for monitoring the obligations would be developed further and would take account of measurements from users' perspectives. The Bundesnetzagentur has already presented the first data from users' perspectives with its mobile communications monitoring data.¹⁶ The Bundesnetzagentur would continue to develop its mobile communications monitoring in the interim period and would develop a suitable method that still ensures that coverage can be assessed objectively and that takes account of user experience.
- Attaching relevant area and quality requirements to coverage obligations could also be considered. Consumers expect mobile coverage inside buildings or in vehicles such as cars and trains. What is ultimately important for users is whether they can also expect (uninterrupted) coverage in buildings or vehicles.
- Here, obligations for mobile coverage in buildings and vehicles would generally be conceivable. However, it should also be taken into account that it is difficult to verify individual physical characteristics and that network operators only have limited scope for access and influence inside buildings and vehicles.
- Further findings from studies and measurements by the radio monitoring and inspection service are therefore needed before coverage in buildings and vehicles can be incorporated into future obligations.

¹⁶ The mobile communications monitoring map is available at <https://gigabitgrundbuch.bund.de/GIGA/DE/MobilfunkMonitoring/start> (in German).

3. Coverage obligations and public funding

- Assessments of the current coverage obligations show that more than 99% of households nationwide already have coverage with 50 Mbps. The majority of the remaining households are in areas where demand is low because of the very low population density and where the costs for providing coverage are extremely high, which often means that the provision of coverage is not economically feasible. Funding mobile infrastructure therefore remains a key means of providing coverage to unserved areas.
- When defining the level of coverage to be provided and the deadline for achieving this level at a later point in time in the second stage of action, the President's Chamber would take into account the regulatory objectives set out in sections 2 and 87 TKG as well as possibilities for holders of spectrum usage rights to reasonably share or deploy publicly funded infrastructure.
- The President's Chamber will consider within the larger framework for proceedings whether to interlink funding and coverage obligations by taking into account public funding and the associated possibilities for reducing costs. Here, the use of public funding could contribute to the proportionality of obligations in the future proceedings. Funding can help to advance rollout in areas where the rollout by operators using their own resources and the coverage obligations currently have their limits.

Annex 1

Summary of responses to the position paper

The Bundesnetzagentur received 17 responses in the consultation on the position paper. Respondents included mobile network operators, service providers and MVNOs, Deutsche Bahn, federal and state ministries and the Bundeskartellamt.

The respondents essentially said the following regarding the position paper:

The responses to the proposal for an award in the form of an auction were mixed. Some respondents welcomed an early award. However, some called for the individual assignment of spectrum to individual market participants as a restriction. Some respondents were expressly opposed to an auction. It was said that a critical look should be taken at the spectrum scarcity anticipated in the position paper and in particular when the anticipated demand would actually become effective in the market. Here, there were calls for extensions, at least for an interim period. Some calls for an extension were restricted to the specific spectrum in the 800 MHz and 1800 MHz bands.

Some respondents said that the considerations set out in the position paper did not adequately justify the choice of auction proceedings. The regulatory objectives needed to be weighed up much more thoroughly. Against an impending recession, significant investments would be needed for network rollout. An auction would limit the financial resources available. An auction would take financial resources from the market that would be urgently needed to fund rollout and would therefore be in conflict with the coverage target.

Respondents generally welcomed the Bundesnetzagentur's proposal for a spectrum swap between 800 MHz and 900 MHz or 700 MHz as an innovative means of securing wide-area mobile coverage. Responses from the current assignment holders were, however, mixed:

- The fourth network operator welcomed the spectrum swap but pointed out that the 900 MHz spectrum had poorer technical and economic conditions. This needed to be compensated for financially. The fourth network operator should then also have the 900 MHz spectrum reserved because the established mobile network operators' assignments would be extended. Irrespective of this, the potential for interference with railway mobile communications needed to be eliminated.
- One assignment holder supported the swap between 800 MHz and 900 MHz but advocated first an extension for the spectrum below 1 GHz. Compatibility with railway mobile communications needed to be addressed in the event of a spectrum swap. A swap with the 700 MHz spectrum was rejected. A choice would increase fragmentation of the spectrum and prevent the harmonisation of assignment expiry dates.
- A second assignment holder rejected a swap with 900 MHz or 700 MHz spectrum, arguing that this would not solve the scarcity problem.
- A third assignment holder made it clear that a spectrum swap with 900 MHz seemed questionable and a swap with 700 MHz even more so. The bands were needed for 4G and 5G coverage. The loss of spectrum would lead to a deterioration in coverage.

With regard to mobile coverage, the various measures considered in the position paper were welcomed by some respondents but were critically discussed by the four network operators. All the network operators

called for moderate coverage obligations. Future coverage obligations should also remain proportionate and apply equally to all holders of low band spectrum assignments. Coverage obligations beyond the existing obligations would be beyond that necessary in terms of economic efficiency. The established mobile network operators take the view, however, that the fourth network operator should be subject to further obligations in the interests of equality. By contrast, the fourth network operator takes the view that further obligations would not be permissible or reasonable until expiry of the spectrum assignments in 2033. Furthermore, non-discriminatory proceedings needed coverage obligations that were not disadvantageous but that could realistically be met. Setting quality parameters (in advance) was also viewed critically by some respondents because it would not be clear before an auction which spectrum would be available to which network operator. Other parties, including Deutsche Bahn, called for railway-related obligations.

All the respondents generally welcomed cooperation in mobile network rollout where infrastructure-based competition and parallel rollout by more than one mobile network operator were not economically feasible. The respondents shared the view that cooperation could certainly have a positive effect on coverage. The assignment holders firmly rejected a cooperation requirement.

With regard to service-based competition, the service providers/MVNOs still called for, or specifically requested, service provider obligations that would make concluding contracts compulsory. Incentive models for more service-based competition as considered in the position paper were viewed as unequal or unsuitable. The established network operators opposed service obligations and incentive models.

With regard to national roaming, the new fourth network operator stated that the Bundesnetzagentur was required to guarantee it access for national roaming to the networks of the established network operators in accordance with section 105 TKG.

With regard to competitive independence, it was stated in particular that the Bundesnetzagentur had set the fourth network operator binding deadlines to establish competitive independence and that compliance with the deadlines needed to be ensured. With regard to acquiring spectrum in these proceedings, the fourth network operator welcomed that the position paper had made it clear that any company could register demand for spectrum and seek to participate in the future spectrum award.

Annex 2

Demand survey update

The Bundesnetzagentur is now gathering updated indications from companies concerned about their anticipated spectrum demand in addition to comments from interested parties.

- The demand survey update serves to identify whether there have been any changes to the forecasts of spectrum demand made in 2022. The demand survey update is not restricted to those market participants that responded to the demand survey in 2022 but is open to all interested companies.
- In the demand survey, the market participants concerned or new entrants should present their anticipated demand for spectrum as realistically as possible and substantiate it as far as possible. The Bundesnetzagentur does not merely intend to collect data on the likely existing pure demand for spectrum but also to gather specific information on its origin, taking account of the current and forecast market, competitive and technical conditions and requirements.
- The demand indicated by all market participants will also be assessed with regard to the efficient use of spectrum, including with a view to the national use of already assigned spectrum and meeting existing coverage obligations.
- The Bundesnetzagentur acknowledges that indications of spectrum demand at this stage of the proceedings do not have the binding nature of formal demand identification proceedings at a later date. Nevertheless, it is evidently in the interests of all concerned to forecast spectrum demand as realistically as possible in the demand survey update. It would be neither productive nor in the interest of those concerned to simply register expressions of interest or, as it were, maximum requirements not covered by plausible network rollout plans.
- The information should be based, as far as possible at this stage of the proceedings, on the future planning horizon given in the TKG of up to 20 years.

Interested companies are hereby requested to either confirm their demand for spectrum in the 800 MHz, 1800 MHz and 2600 MHz bands as of 1 January 2026 as forecast in the demand survey in spring 2022 or present a new spectrum demand forecast

by 6 November 2023

quoting "Bedarfsaktualisierung"

electronically in PDF format (copying and printing must be enabled) by email to

referat212@bnetza.de

or in writing to

Bundesnetzagentur

Referat 212

Tulpenfeld 4

53113 Bonn.

Each company presenting a new spectrum demand forecast must provide an account of its:

- reliability
- specialist knowledge
- financial capacity and
- demand for spectrum using a spectrum usage concept.

An additional version in which any business and trade secrets and/or personal data have been blacked out, together with a list justifying the blacked-out parts, is to be submitted.

Annex 3

Invitation to comment

The President's Chamber is inviting interested parties to submit their comments on the considerations in order to incorporate their interests within the consultation process.

Comments on the framework for an interim decision are to be submitted in German

by 6 November 2023

quoting "Stellungnahme Rahmenbedingungen"

electronically in PDF format (copying and printing must be enabled) by email to

referat212@bnetza.de

or in writing to

Bundesnetzagentur

Referat 212

Tulpenfeld 4

53113 Bonn.

An additional version in which any business and trade secrets and/or personal data have been blacked out, together with a list justifying the blacked-out parts, is to be submitted.

It is intended to publish the responses on the Bundesnetzagentur website. Respondents are therefore asked to give their consent to publication when they submit their comments.

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List of terms and abbreviations

2

2G – transmission method for second-generation mobile communications

3

3G – transmission method for third-generation mobile communications 13

4

4G – transmission method for fourth-generation mobile communications 13

5

5G – transmission method for fifth-generation mobile communications

D

downlink – communications link where the flow of data is from the telecommunications network to the terminal equipment 8

E

ECC Electronic Communications Committee 11

F

FRMCS Future Railway Mobile Communication System 8

G

GHz gigahertz – unit of electromagnetic frequency 7

L

Long Term Evolution – fourth-generation mobile communications transmission method
low band spectrum – spectrum below 1 GHz – wide-area spectrum

M

Mbps megabits per second – unit for the data transmission rate 8
MFCN mobile/fixed communications networks 11
MHz megahertz – unit of electromagnetic frequency
MVNO mobile virtual network operator

N

national roaming – terminal equipment can use different network operators' mobile networks both in the home country and abroad

U

UMTS Universal Mobile Telecommunications System – third-generation mobile communications transmission method 25

W

WRC World Radiocommunication Conference

Publisher's details

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