

1 Summary

The success of the energy transition depends on the expansion of the transmission system. A key basis for the expansion of the electricity grid is the German Energy Industry Act (EnWG), which was amended in 2011. The aim was to drive forward swift and sustainable expansion of the grid. A multi-stage process is used to find out where and how the transmission network needs to be expanded. The first process was begun in 2012.

A key part of the process of establishing requirements is the strategic environmental assessment (SEA). The SEA identifies, describes and evaluates the likely significant environmental effects associated with the grid expansion needed. Authorities and the public are also involved in the process.

In the years in which a network development plan (NDP) does not need to be presented, the transmission system operators (TSOs) have to submit an implementation report. This report provides details of the progress in implementing the most recently confirmed NDP.¹

This year's procedure focuses on establishing requirements for the target years 2025 to 2037/2045. The results of the SEA are documented in this environmental report.

What does the SEA include?

What is the process of establishing requirements?

The basis for grid expansion planning is the "scenario framework". The scenario framework sets out the likely development in the energy sector. It has been used as the basis to identify grid expansion requirements since 2012 for the mainland in the NDP and since 2013 for coastal waters in the offshore network development plan, which was included in the NDP. The four German TSOs TenneT TSO GmbH, Amprion GmbH, 50Hertz Transmission GmbH and TransnetBW GmbH draw up the NDP jointly, and the Bundesnetzagentur checks and confirms it.

The process of identifying requirements aims to ensure that only those projects that are really necessary for the energy industry and have been examined for their environmental impact are included in the Federal Requirements Plan. As of 2019, this process is no longer carried out annually but has been changed to a two-year process. Because of changes to legislation, the Bundesnetzagentur now provides the federal government with the NDP at least every four years. The NDP acts as a draft for the Federal Requirements Plan.

What is the purpose of the SEA?

Implementing plans like the Federal Requirements Plan has an impact on the environment and people. Environmental assessments aim to ensure that possible effects on the environment and people are taken into account when a plan or project is implemented. The SEA starts at the planning level and not when an individual project is already being implemented. The aim is for potential effects resulting from the

¹ See section 12d EnWG.

expansion of the extra-high voltage transmission network to be identified when preparing the Federal Requirements Plan. The SEA thus acts as an early warning system.

Are alternatives examined?

An SEA must consider alternatives in order to effectively protect the environment. Only reasonable alternatives should be considered. This means alternatives must:

- be feasible,
- be practicable at a reasonable cost and
- largely support the achievement of the plan's objectives.

Which projects are included in the Federal Requirements Plan also depends on other aspects, such as economic efficiency, which is not covered by the environmental assessment. As part of the approval of the Federal Requirements Plan, the legislators are required to consider all important aspects in combination and comparison with each other.

What is the environmental report?

The SEA identifies and evaluates the potential effects of the grid expansion on the environment. This environmental report describes these environmental effects.

Only potentially significant, that is likely severe, environmental effects on “protected assets” have been assessed. These protected assets are specified in the Environmental Impact Assessment Act (UVPG)² as:

- people, including human health³,
- fauna, flora and biodiversity,
- land, soil, water, air, climatic factors and landscape,
- cultural heritage and other material assets,
- interactions between the above protected assets.

What is the status of the current process of establishing requirements?

The scenario framework for the process of establishing requirements for the target years 2025 to 2037/2045 was approved on 30 April 2025.⁴ The TSOs launched a consultation on the first draft of the electricity NDP at beginning of December 2025. They submitted the revised plans to the Bundesnetzagentur for evaluation on 13 March 2026.

The basis for the NDP is the scenario framework that was drawn up by the TSOs and consulted on and approved by the Bundesnetzagentur. In this scenario framework, the Bundesnetzagentur approved a new structure of scenarios for this process. The intention is to reflect the clear, long-term goals of the current amendment to the Renewable Energy Sources Act (EEG) while also taking account of the future developments in electricity consumption, which cannot yet be predicted. All the scenarios meet the

² Section 2(1) UVPG

³ Also referred to below as “protected asset “humans””.

⁴ Bundesnetzagentur (2025)

objective of climate neutrality but take different routes (increasing the proportion of domestic hydrogen or intensive electrification) to different target states. Peak shaving for onshore wind and photovoltaic installations is again included in all scenarios.

The Bundesnetzagentur prepares a Federal Requirements Plan by carrying out an SEA based on the NDP. The SEA begins with a scoping exercise to define the methodology and level of detail for the assessment, among other things. The scope of the assessment was drafted with input from various public agencies. These agencies were primarily authorities whose environmental and health remits are affected by the NDP. Following this input, the scope of the assessment was defined and published in June 2026.⁵ This is the basis on which the draft environmental report was drawn up. The draft is the subject of a consultation running from 14 September to 27 November 2026 with the participation of specialists and the general public affected.

What has the Bundesnetzagentur examined for the environmental report?

The likely development of the energy industry as a basis of the network development planning is laid down in the scenario framework using certain assumptions (including proportions of fossil and renewable energies, increase in photovoltaic and wind installations, and annual consumption). The scenario framework approved by the Bundesnetzagentur for the NDP 2025/2045 includes three development pathways with the target year 2037 (Scenarios A 2037, B 2037 and C 2037) and three development pathways with the target year 2045 (Scenarios A 2045, B 2045 and C 2045).

In the environmental report for this year's SEA:

130 measures were assessed, comprising 117 overhead, 15 underground and 27 submarine/underground cable measures;

in addition, there were spatial alternatives for 15 measures, which were compared with the TSOs' proposal variants.

Because of the small differences between the networks in the scenarios, Scenarios A 2037, B 2037 and C 2037 were not presented separately as alternative overall plans this time round.

"Start network measures" were not assessed. These measures either have been implemented already, are in an ongoing planning approval procedure or their necessity has already been determined in the Power Grid Expansion Act (EnLAG). "Point measures", for example substations, were not assessed either. These measures are not part of the Federal Requirements Plan. They are therefore not covered by the SEA or the environmental report. Projects located in the exclusive economic zone (EEZ) of the North and Baltic Seas undergo an SEA carried out by the Federal Maritime and Hydrographic Agency (BSH) when the site development plan is drawn up.

⁵ Bundesnetzagentur (2026)

How does the Bundesnetzagentur go about the environmental report?

The SEA examines where and to what extent potential environmental effects are likely. And it examines how far these environmental effects are viewed to be significant.

The methodology for the SEA comprises eight steps. Steps 1 to 5 involve identifying the bases. Building on this, steps 6 to 8 involve deriving the results. Section 6 provides a detailed explanation of the improved methodology. The individual steps are outlined in brief below.

Step 1: identification of impact factors and environmental objectives (see section Fehler!

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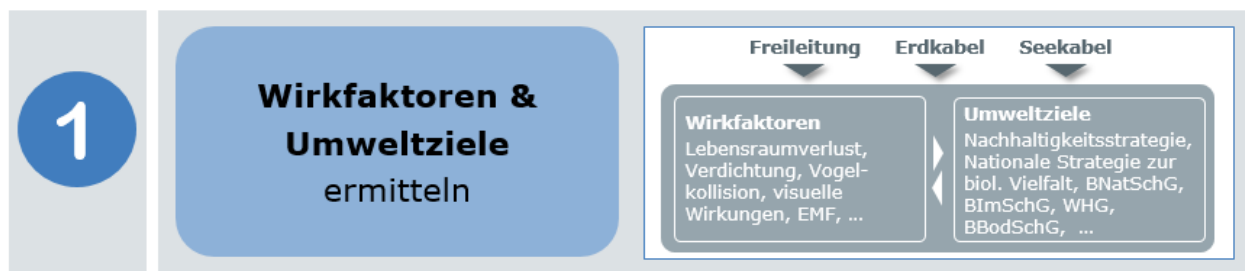


Figure 1: methodology step 1

The aim of the environmental report is to appraise possible effects of the grid expansion on the protected assets under the UVPG. The appraisal considers how and how strong the effects of the different types of implementation of the grid expansion (overhead, underground and submarine cables) are. These “impact factors” are first described in an abstract manner without reference to location. They are then evaluated with reference to the individual protected assets. For instance, the Bundesnetzagentur assesses the general effects of an overhead cable on the protected assets of fauna, flora and biodiversity, such as damage to habitats. Section 7 provides details of the impact factors in Tables 5 to 7. A more detailed description of the possible effects of extra-high voltage cables can be found at www.plus.netzausbau.de (in German).

In order to be able to evaluate potential effects on the environment, the applicable environmental objectives are also assessed, from which the significance of the affected environment can be derived. Section Fehler! Verweisquelle konnte nicht gefunden werden. lists the environmental objectives. Further information on this can also be found in the SEA for the Federal Requirements Plan 2019-2030 at www.netzausbau.de/umweltbericht (in German).

Step 2: selection of site categories and identification of potential conflicts (see section Fehler!

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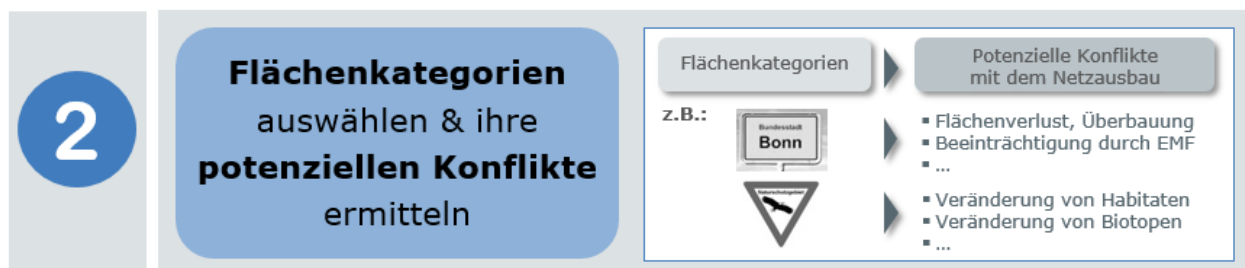


Figure 2: methodology step 2

The Bundesnetzagentur evaluates the likely significant environmental impact by trying to predict changes to the environment resulting from the grid expansion. The likely significant environmental effects are evaluated using the spatial environmental characteristics. The SEA for the Federal Requirements Plan looks at the whole country. Site categories (for example “nature conservation area”) are used to indicate environmental characteristics at this abstract planning level.

The Bundesnetzagentur selects site categories that appropriately represent likely significant environmental effects. These site categories are based on national standardised and site-related data. The Bundesnetzagentur takes account of the impact factors of the grid expansion and environmental objectives when selecting the categories (step 1 describes how the impact factors and environmental objectives are identified). Potential conflicts that could arise between environmental objectives and impact factors are identified for each site category. Each site category is assessed individually. Site categories usually represent several spatial and environmental characteristics relevant to conflicts. They can therefore also be used to represent several potential conflicts. For example, for the site category “floodplain” potential conflicts that may arise as a result of overhead cable measures include:

- disturbing and repelling sensitive animal species or
- changing habitats.

The SEA also takes account of sites with limited availability. These sites include raw material extraction areas and airports. They are only likely to be available for network expansion to a limited extent and may need to be avoided when subsequently planning routes. It may then be necessary to use adjacent sites that might be just as sensitive or even more sensitive to the construction of a power line. Sites with limited availability may affect power line construction planning, and the resulting environmental effects are therefore taken into account at an early stage.

Section 9 provides further details of the site categories in this SEA.

Step 3: assessment of potential conflicts (see section Fehler! Verweisquelle konnte nicht gefunden werden.)

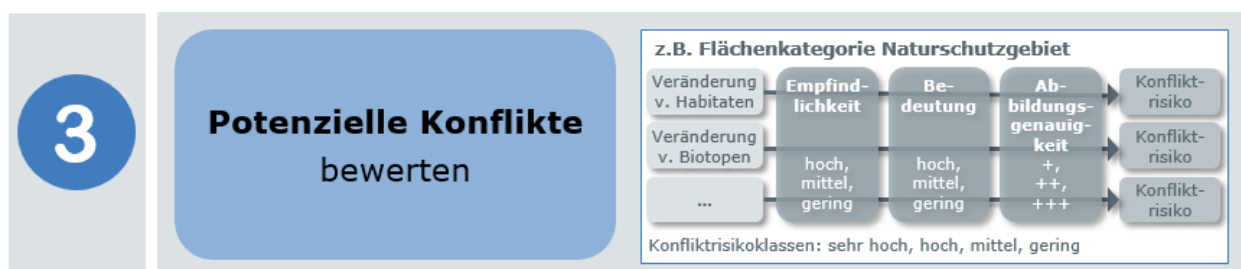


Figure 3: methodology step 3

In the third step, the Bundesnetzagentur determines a conflict risk for each potential conflict in a site category. To do this, each potential conflict is rated using the following parameters:

- sensitivity,
- significance,
- accuracy.

The sensitivity indicates how strongly an environmental characteristic reacts to the effects of different types of implementation. The reactions of the environmental characteristics are rated as:

- not particularly sensitive,
- sensitive or
- highly sensitive.

Figure 20 provides further details of the ratings for sensitivity.

The significance is an estimate of the legal and social value of a site category. It is evaluated for a site category as a whole. The potential conflicts are evaluated individually. The significance is rated as:

- generally relevant,
- relevant or
- highly relevant.

Figure 21 provides further details of how the significance is rated.

The accuracy represents how suitable a site category is for representing a potential conflict. It reflects the spatial and environmental characteristics and the associated conflicts of a site category in a way that is:

- very inaccurate (+),
- not very clear and accurate (++) or
- very clear and accurate (+++).

Figure 22 provides further details of this.

The individual parameters are first evaluated separately. The “sensitivity” and “significance” parameters are then merged into a conflict risk for each potential conflict using a matrix. The conflict risk for each potential conflict is lowered (++) or raised (+++) by one level according to the accuracy. If the accuracy is low (+), the conflict in question is not included in the evaluation any more. The conflict risk is categorised into one of four conflict risk classes:

- low,
- medium,
- high or
- very high.

The conflict risks of the site categories are evaluated separately for each type of implementation. The assessment tables of the site categories can be found in the annex “Description and assessment of site categories”.

Step 4: derivation of the conflict risk for the site categories (see section Fehler! Verweisquelle konnte nicht gefunden werden.)

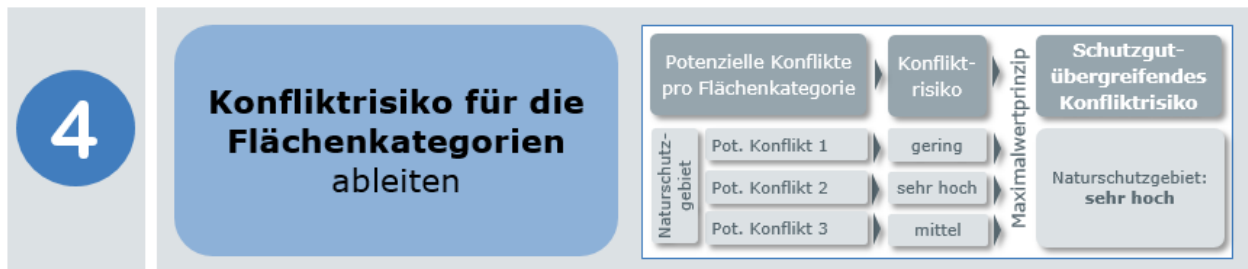


Figure 4: methodology step 4

One protected asset is allocated to each potential conflict risk of a site category. Conflict risks with the same protected asset are grouped together to determine a **conflict risk for each protected asset**. This is the highest conflict risk given to any of the potential conflicts in the group.

All the potential conflict risks of a site category are merged to produce a **conflict risk across all protected assets**.

The ratings for the conflict risks (conflict risk points) may be found in the annex “Explanation and assessment of site categories”.

Step 5: forming assessment areas for the measures (see section Fehler! Verweisquelle konnte nicht gefunden werden.)

Exactly where lines and routes will run is not decided on at the level of the Federal Requirements Plan. Only the grid connection points that have to be joined up are decided on. A way of delineating the assessment areas is therefore needed.

For the measures, the assessment areas will still be identified as in the previous SEAs.

Forming assessment areas for all measures for which preferential areas do not have to be identified



Figure 5: Methodology step 5 for all measures for which preferential areas do not have to be identified

For the NDP measures, the straight line between the grid connection points is surrounded by a buffer. The buffer is designed in the ratio of length to width 2.5:1. For reinforcement measures, the line specified in the NDP 2025-2037/2045 is surrounded by a buffer in the same way. This means that assessment areas are constructed in the same way. Among other things, this prevents the design of the assessment area influencing the evaluation when comparing different types of implementation and forms of expansion.

The buffering also takes account of areas that are behind the grid connection points in the direction that the measure will run. To avoid unjustifiably large areas behind the grid connection points, these areas are calculated by forming a circle either around the mid-point of the straight line or, in the case of deviating lines to be reinforced between the grid connection points, around an auxiliary point. The circles have a maximum radius of 5 km.

Particular designs of the grid connection points require the assessment area to be adjusted. This applies to:

- measures with supports and/or search areas,
- measures with an assessment area that touches a national border and
- offshore transmission links.

The principle described is, however, always followed as far as possible.

Environmental effects that cross the national border are not evaluated at this level. However, the Bundesnetzagentur notifies the potentially affected neighbouring countries of the processes of establishing requirements and of the SEA.

Step 6: survey of measures (see section Fehler! Verweisquelle konnte nicht gefunden werden.)

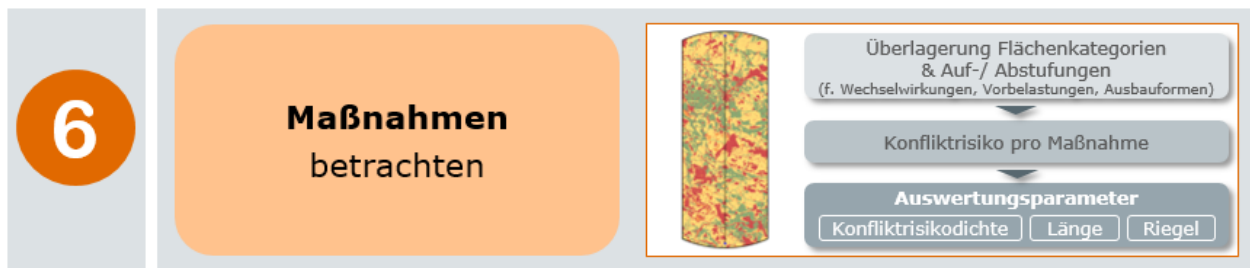


Figure 6: methodology step 6

The first step in the evaluation of the measures is to assess each measure individually. First the current state of the environment is described using the site categories. This is referred to as the “actual state”. Then the likely significant environmental impact is identified and evaluated.

The likely significant environmental impact of a measure is evaluated first for each protected asset and then across all protected assets.

A conflict risk density is calculated for the evaluation for each protected asset as follows. First the site categories with their conflict risk points in the assessment area are laid over each other on a map. Next the assessment area is divided up into 50 m by 50 m raster cells. Each raster cell is assigned the value of the conflict risk points of the site category in the cell. If there is more than one site category for a protected asset in a raster cell, the highest value is assigned as the value of the raster cell. The conflict risk points for each protected asset for all the raster cells in an assessment area are then added up. The conflict risk density of a protected asset is calculated by dividing this sum by the size of the assessment area in hectares.

The evaluation across all protected assets is made using the following parameters:

- conflict risk density across all protected assets,

- the expected length of the measure and
- possible bars.

Account is taken of:

- interactions,
- existing impacts and
- expansion forms

in a raster cell by adding and deducting conflict risk points. Section 9.2.2 provides a detailed explanation of how interactions are taken into account. The conflict risk density across all protected assets is calculated by dividing the sum of the conflict risk points for an assessment area by the size of the assessment area in hectares.

The expected length of a measure in the case of reinforcement measures is the length of the existing cable. The expected length in the case of new build measures is the length between the grid connection points “as the crow flies” multiplied by a “detour factor” of 1.3. This enables a comparison with the reinforcement measures.

Bars are possible obstacles that have to be crossed. They result from areas with the highest conflict risk, where applicable in conjunction with sites of limited availability.

The next step is to combine the three evaluation parameters. Figure 23 illustrates the process. The result is the final rating for the likely significant environmental impact of the evaluated measure: very small, small, moderate, large or very large.

The results are presented in fact sheets, which provide information on general characteristics of the measure such as:

- location in the assessment area,
- size of the assessment area,
- evaluation result of the measures and
- any partial evaluations taken.

Further details about the fact sheets are provided in part IV of the environmental report.

Step 7: survey of the overall plan (see section Fehler! Verweisquelle konnte nicht gefunden werden.)



Figure 7: methodology step 7

The survey of the overall plan is conducted on the basis of the results of the environmental effects described and evaluated for the individual measures. The significant environmental effects are evaluated as a whole. They are also evaluated in connection with effects on the protected asset "land" and the interactions. These are not reflected in the site categories (see section 9.2). The results of the surveys of measures are analysed as a whole. This makes it possible to also look at positive effects that are likely to arise when the plan is implemented, such as climate protection.

First the assessment area of the overall plan is formed. It comprises the individual assessment areas of the measures. The alternatives are not included. Then the actual state of the environment is described and the likely environmental impact assessed. This is done both for each protected asset individually and for all the protected assets together using the conflict risk density. The conflict risk density is put in relation to the Germany-wide conflict risk density to determine whether the conflict risk density in the potentially affected areas is average, above-average or under-average.

The overall plan is also evaluated with respect to:

- the total likely measure lengths of the types of implementation,
- the total size of expected land take and
- the distribution of areas that would form bars in the overall plan.

Step 8: comparison of alternatives (see section Fehler! Verweisquelle konnte nicht gefunden werden.)



Figure 8: methodology step 8

Step 8 involves comparing the reasonable alternatives with each other. The NDP 2025-2037/2045 includes other planning options, or “alternatives”, proposed by the TSOs for some of the measures. The planning preferred by the TSOs is the “proposal variant”. The comparison of alternatives involves comparing the likely significant environmental impact identified for the

- proposal variant and
- other planning options

for a measure with each other. The results are documented in fact sheets. The proposal variants and other planning options are compared using the following criteria:

- conflict risk points,
- conflict risk density,
- expected length of the measure and
- “bars”, that is, areas with a high risk of conflict that definitely have to be crossed when connecting the grid connection points.

The comparisons are used to give rankings. In the case of the conflict risk density, for example, the alternative with the lower conflict risk density is given rank 1 and the variant with the higher conflict risk density is given rank 2. The rankings for the alternatives are compared with each other. The alternative with the lowest ranking is preferable from the environmental perspective: it has the fewest likely significant environmental effects. In this environmental report, a preference is only given for alternatives when there is a clear difference of at least two ranks. The result is intended as a basis for the overall consideration to decide on the measures for the BBPLG.

The comparison of alternatives of the overall plan is based on comparing all the confirmed measures for each scenario. The likely significant environmental effects of the measures are identified, described and evaluated. The individual evaluations are summarised in an overall plan survey. It only makes sense to compare the different overall plans when they are very different from each other, which is not the case this time. Therefore, no comparison of the scenarios was carried out.

Consideration of the protected assets “land” and “interaction”

In contrast to the other protected assets, a different methodology is used for:

- the protected asset “land” and
- the protected asset “interaction”.

Land

The protected asset “land” has been included in the UVPG since the adoption of the Directive amending the environmental impact assessment Directive.⁶ It therefore needs to be taken into consideration in the environmental assessment. Section 9.2.1 provides further information on this.

Land used to be part of the protected asset “soil”. Now the effects of quantitative land take are assessed for land as a protected asset:

- for each measure; and
- at the overall planning level.

The assessment is quantitative and based on characteristics for a defined area.

The qualitative aspect of land as a protected asset is also assessed: it is fully covered by the evaluation of the effects on the other protected assets. The different intensities of land take (for example temporary or permanent) are also included.

Interaction between protected assets

The SEA for the Federal Requirements Plan is very abstract. The overall evaluation of the measures and alternatives therefore only identifies and evaluates the increased conflict risks resulting from interactions between the protected assets. Section 9.2.2 provides further information on this.

⁶ Directive 2014/52/EU.

There are interactions that occur regularly. These are already covered by the method for evaluating the conflict risks for the individual site categories. One example of an interaction expected to occur regularly is the interaction between the protected assets “soil” and “water”.

As described in step 4, the conflict risks across all protected assets are identified for the site categories. All the protected assets and their interrelationships are assessed together and evaluated. The protected assets are divided into three groups to identify increased conflict risks resulting from interactions:

- abiotic protected assets,
- biotic protected assets and
- anthropogenic protected assets.

This is illustrated in Figure 35. Each group comprises the protected assets between which interaction is expected to occur regularly.

Increased conflict risks are assumed given the following conditions:

- a site has protected assets that already have an increased conflict risk; an increased conflict risk has at least three conflict risk points;
- these protected assets are assigned to at least two different protected asset groups.

If both of the conditions are met, one conflict risk point is added to the total for the affected area.

The fact sheets give the size of the areas for which there is an increased conflict risk because of interactions between the protected assets.

What significant environmental effects are likely?

Effects of the overall plan

The Bundesnetzagentur assessed the likely significant environmental effects of the 130 confirmed measures of the NDP 2025-2037/2045. The measures comprise 117 overhead, one underground and 12 submarine/underground cable measures. The individual measures are each assessed in a fact sheet. The fact sheets can be found in part IV.

Figure 9 shows where in Germany the assessment areas for the measures assessed are located. It shows that all federal states are potentially affected by confirmed measures from the NDP 2025-2037/2045. The assessment area for the overall plan results from the individual assessment areas of the measures assessed. The individual areas range from about 1 km to 736 km in length and cover from a few hectares to several federal states.

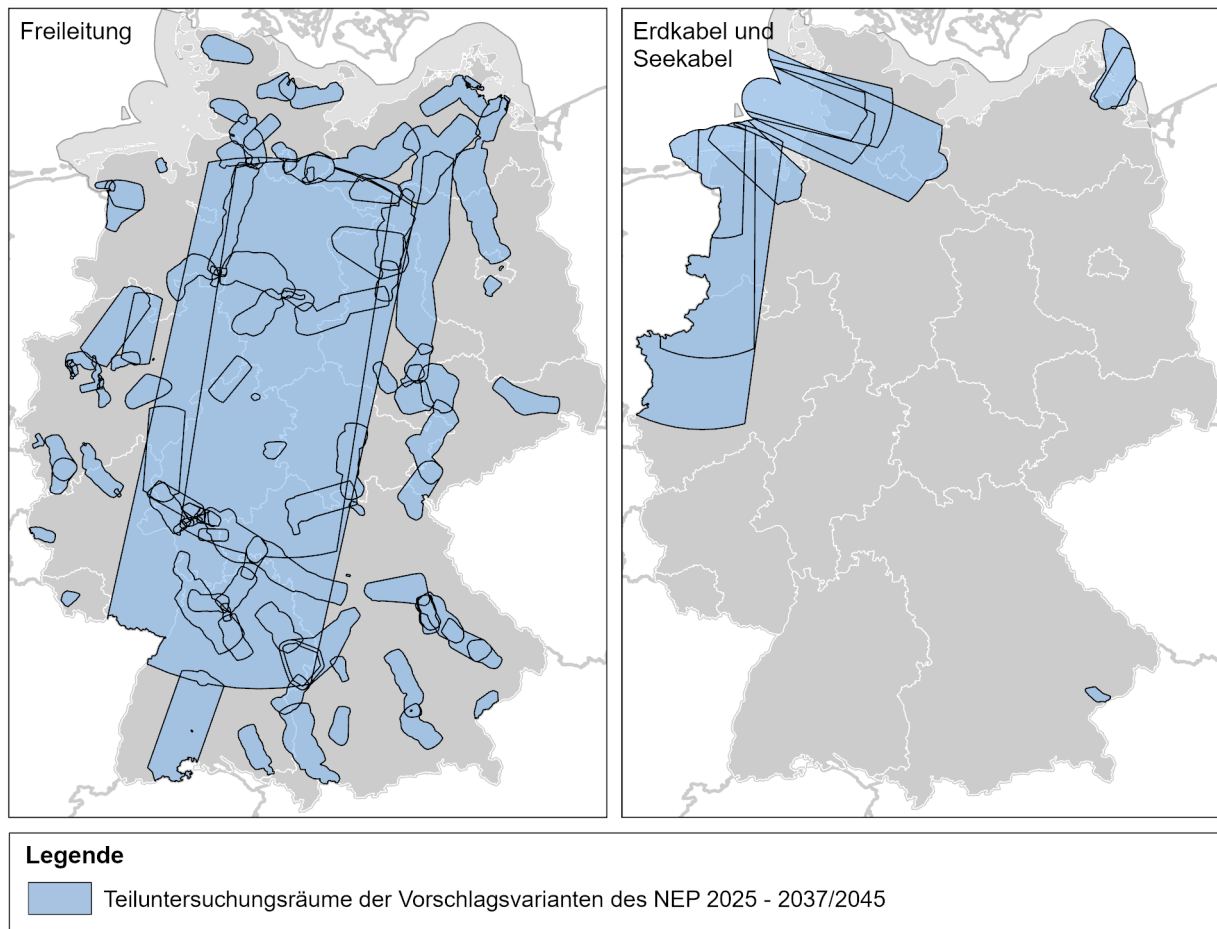


Figure 9: assessment areas of confirmed overhead and confirmed underground/submarine cable measures

The following chart (Figure 10) shows a breakdown of the ratings for the environmental effects of all measures. The ratings are explained below.

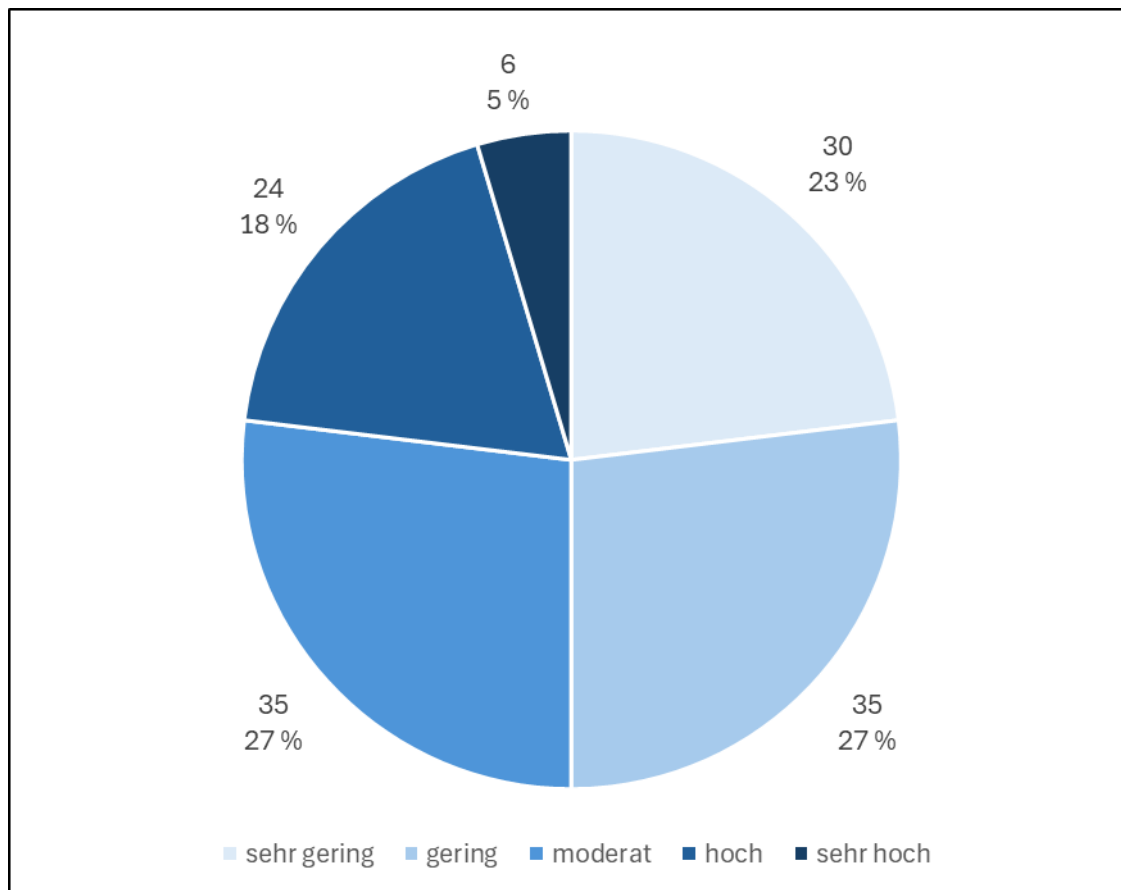


Figure 10: breakdown of the evaluation of likely significant environmental effects of confirmed measures

For about 23% of the confirmed measures, significant environmental effects on the protected assets are likely on a very small scale with respect to the conflict risks identified, the expected measure length and the bar situation. This corresponds to 30 of the total of 130 measures.

For about 27% of measures, or 35 of the 130 total confirmed measures, significant environmental effects on the protected assets are likely on a small scale with respect to the conflict risks identified, the expected measure length and the bar situation.

For 35 measures or about 27% of the confirmed measures, significant environmental effects on the protected assets are likely on a moderate scale.

Meanwhile, for 24 of the 130 confirmed measures, and thus just over 18% of the total, significant environmental effects on the protected assets are likely on a large scale.

For six measures, or around 5% of the 130 total confirmed measures, significant environmental effects on the protected assets are likely on a very large scale.

Next the interactions between protected assets are evaluated. This results in an increased conflict risk over an area of 1,424,095 hectares in the overall plan. Figure 45 shows the areas with an increased conflict risk.

Finally, the environmental impact of the overall plan is evaluated across all protected assets. The environmental effects of the individual measures are identified based on the:

- expected length of the measure,
- its conflict risk density and
- its bar situation.

Figures 11 and 12 show the ratings of the measures for each type of implementation and where the measures are located in Germany.

The overhead cable measures frequently have better ratings compared with the projects with underground cabling priority and offshore transmission links. This is due to the following reasons.

- Underground and submarine cable measures are generally longer than overhead cable measures, based on the distance between grid connection points.
- The conflict risk density calculated for underground and submarine cable measures is generally based on the whole assessment area. If overhead cables are planned as reinforcement measures, the conflict risk density of the “near zone” is used for the rating. This tends to be better because the conflict risk points are downgraded.

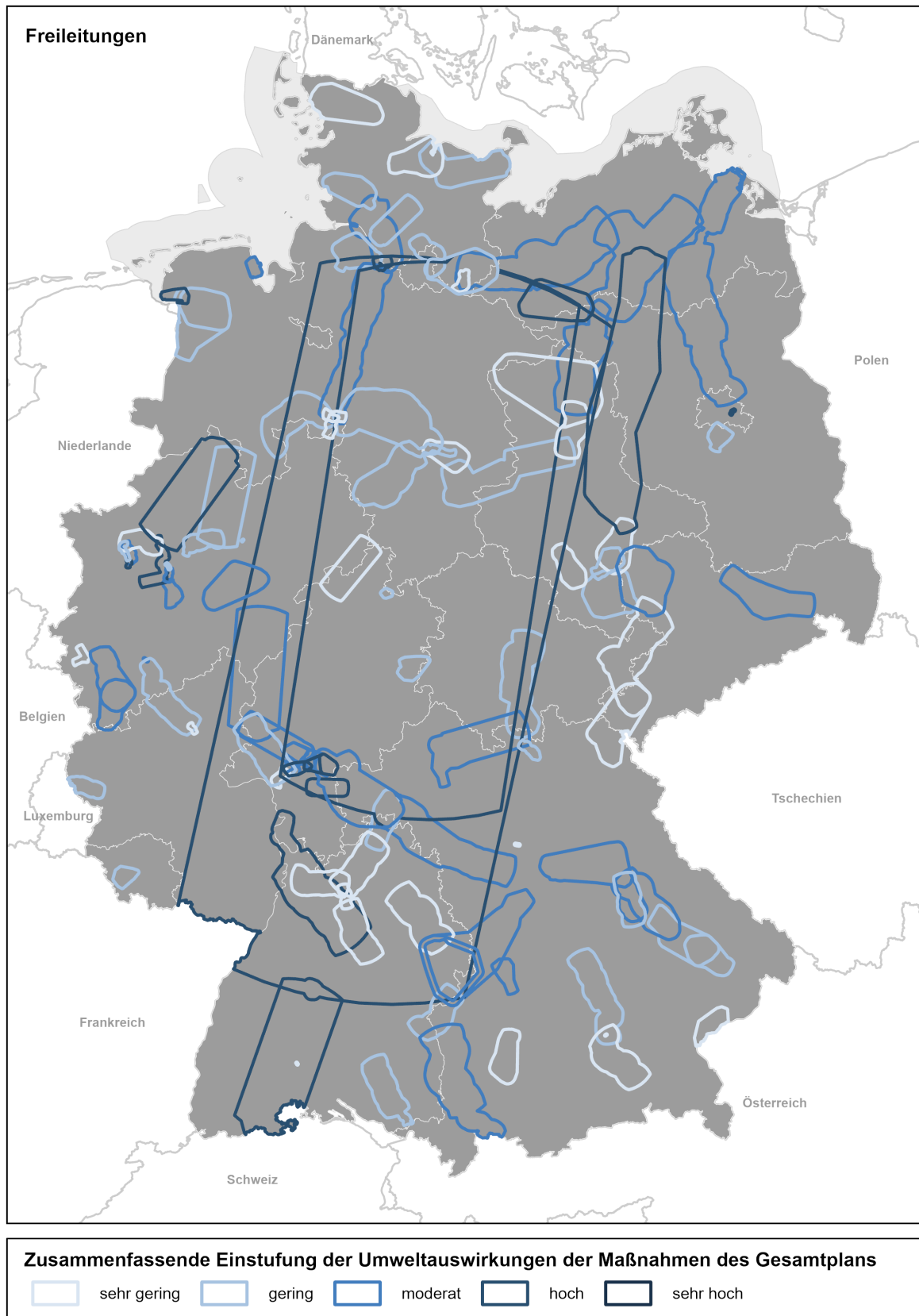


Figure 11: results of the evaluation of the confirmed measures of the second draft of the NDP 2025-2037/2045 across all protected assets pursuant to the UVPG (overhead cables)

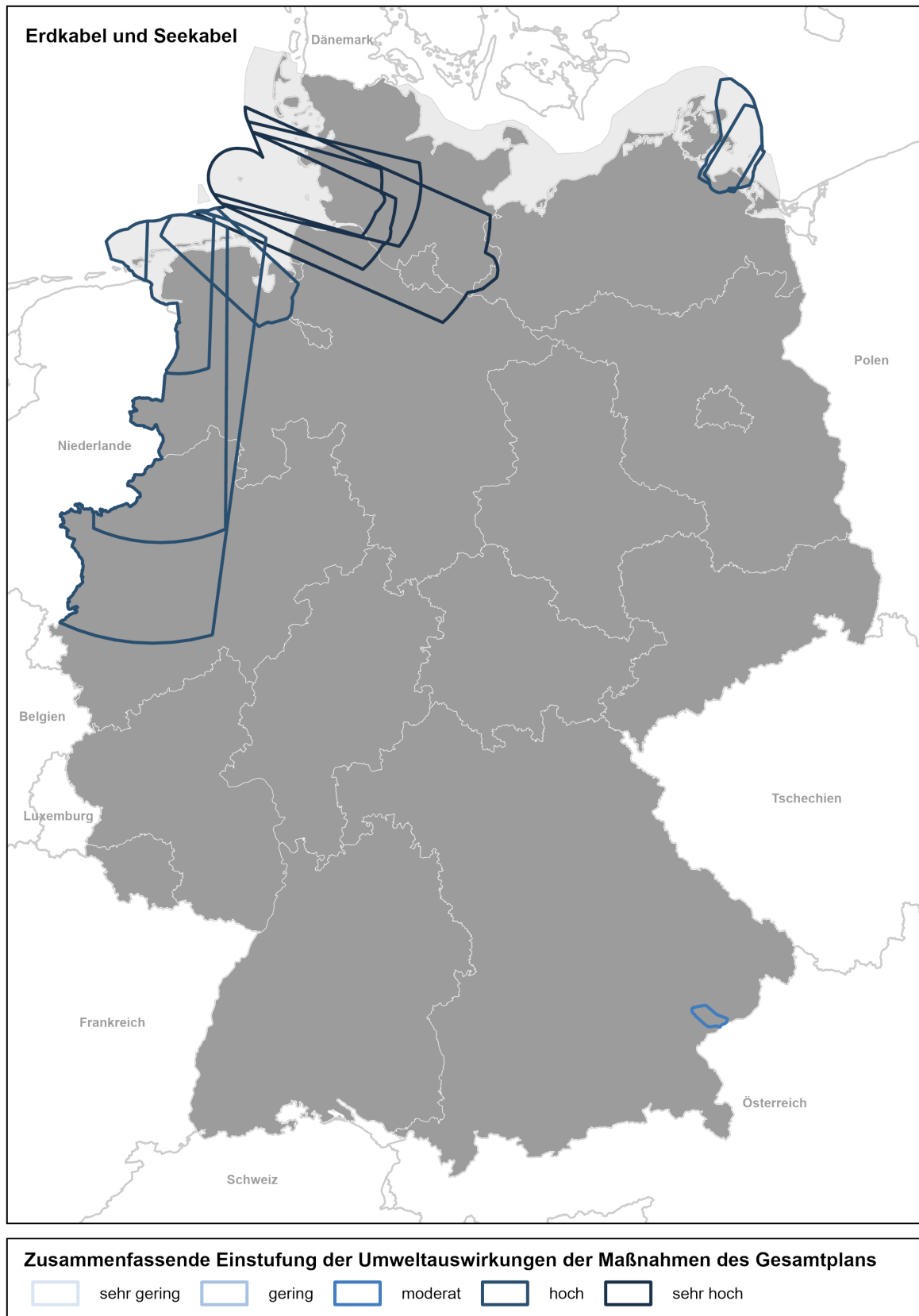


Figure 12: results of the evaluation of the confirmed measures of the second draft of the NDP 2025-2037/2045 across all protected assets pursuant to the UVPG (underground and submarine cables)

Cumulative effects

The overall plan has sites where the assessment areas and therefore the potential impact areas of the measures overlap. It is assumed that in these sites there is a greater probability of cumulative effects of the overall plan.

The assessment areas of overhead, underground and submarine cables overlap across an area totalling 14,893,973 hectares, corresponding to about 64% of the total assessment area. There is a maximum of 10 overlaps of assessment areas.

Figure 13 shows where there may be cumulative effects on the nature areas in Germany. It also shows how the risk of the cumulative effects of the overall plan is rated.

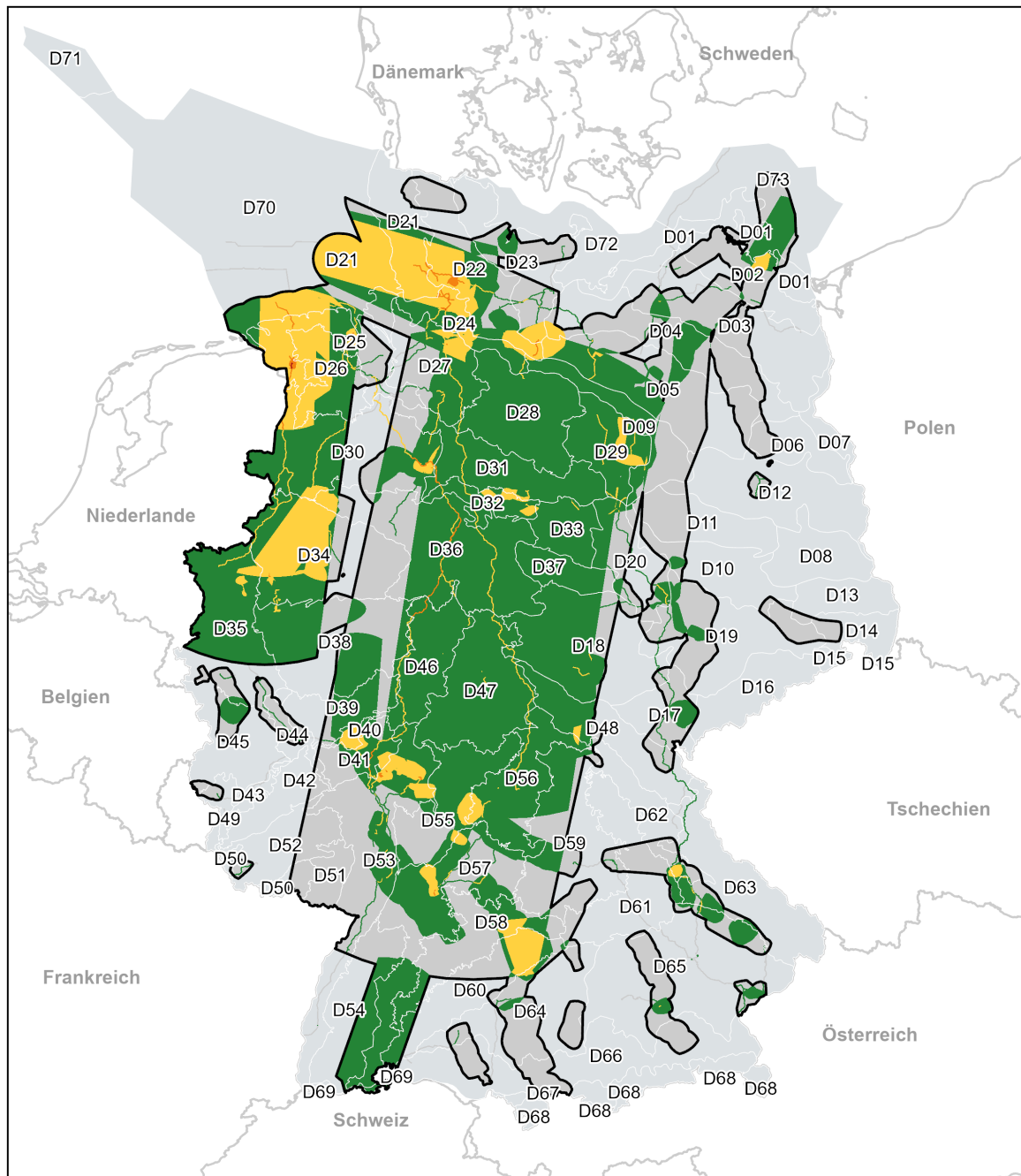
The risk of cumulative effects of the overall plan is rated as high if seven to nine assessment areas overlap. This is the case in parts of the following nature areas:

- D21 Schleswig-Holsteinische Marschen and Nordseeinseln,
- D22 Schleswig-Holsteinische Geest,
- D23 Schleswig-Holsteinisches Hügelland,
- D24 Unterelbeniederung (Elbmarsch),
- D25 Ems-Weser-Marsch,
- D26 Ostfriesisch-Oldenburgische Geest,
- D27 Stader Geest,
- D30 Dümmer Geestniederung and Ems-Hunte-Geest,
- D31 Weser-Aller-Tiefland,
- D32 Niedersächsische Börden,
- D34 Westfälische Tieflandsbucht,
- D36 Unteres Weserbergland and Oberes Weser-Leinebergland,
- D41 Taunus,
- D46 Westhessisches Berg- und Beckenland,
- D53 Oberrheinisches Tiefland and Rhein-Main-Tiefland,
- D57 Neckar- und Tauberland, Gäuplatten and
- D70 Deutsche Bucht (excluding Felssockel Helgoland).

The risk of cumulative effects of the overall plan is very high in parts of the following nature areas:

- D24 Untere Elbeniederung (Elbmarsch),
- D25 Ems-Weser-Marsch and
- D30 Dümmer Geestniederung and Ems-Hunte-Geest.

More than 10 assessment areas overlap here.



Legende

 Naturräume  Gesamtuntersuchungsraum

Kumulative Auswirkungen aufgrund sich überlagernder Untersuchungsräume und Verläufe des BBPIG

 kein Risiko  geringes Risiko  mittleres Risiko  hohes Risiko  sehr hohes Risiko

Naturräume

D01 - Mecklenburgisch-Vorpommersches Küstengebiet	D24 - Unterelbeniederung (Elbmarsch)	D50 - Pfälzisch-Saarländisches Muschelkalkgebiet
D02 - Nordostmecklenburgisches Tiefland mit Oderhaffgebiet	D25 - Ems-Weser-Marsch	D51 - Pfälzer Wald (Haardtgebirge)
D03 - Rückland der Mecklenburg-Brandenburgischen Seenplatte	D26 - Ostfriesisch-Oldenburgische Geest	D52 - Saar-Nahe-Berg- und Hügelland
D04 - Mecklenburgische Seenplatte	D27 - Stader Geest	D53 - Oberrheinisches Tiefland und Rhein-Main-Tiefland
D05 - Mecklenburg-Brandenburgisches Platten- und Hügelland sowie Luchland	D28 - Lüneburger Heide	D54 - Schwarzwald
D06 - Ostbrandenburgische Platte	D29 - Wendland und Altmark	D55 - Odenwald / Spessart und Südrhön
D07 - Odertal	D30 - Dümmer Geestniederung und Ems-Hunte-Geest	D56 - Mainfränkische Platten
D08 - Spreewald und Lausitzer Becken- und Heideland	D31 - Weser-Aller-Tiefland	D57 - Neckar- und Tauberland / Gäuplatten
D09 - Elbtalniederung	D32 - Niedersächsische Börden	D58 - Schwäbisches Keuper-Liasland
D10 - Elbe-Mulde-Tiefland	D33 - Nördliches Harzvorland	D59 - Fränkisches Keuper-Liasland
D11 - Fläming	D34 - Westfälische Tieflandsbucht	D60 - Schwäbische Alb
D12 - Mittelbrandenburgische Platten und Niederungen sowie Ostbrandenburgisches Heide- und Seengebiet	D35 - Kölner Bucht und Niederrheinisches Tiefland	D61 - Fränkische Alb
D13 - Oberlausitzer Heideland	D36 - Unteres Weserbergland und Oberes Weser-Leinebergland	D62 - Oberpfälzisch-Obermainisches Hügelland
D14 - Oberlausitz	D37 - Harz	D63 - Oberpfälzer und Bayerischer Wald
D15 - Sächsisch-Böhmisches Kreidesandsteingebiet	D38 - Bergisches Land / Sauerland (Süderbergland)	D64 - Donau-Iller-Lech-Platten
D16 - Erzgebirge	D39 - Westerwald	D65 - Unterbayerisches Hügelland und Isar-Inn-Schotterplatten
D17 - Vogtland	D40 - Lahntal und Limburger Becken	D66 - Voralpines Hügel- und Moorland
D18 - Thüringer Becken und Randplatten	D41 - Taunus	D67 - Schwäbisch-Oberbayerische Voralpen
D19 - Erzgebirgsvorland und Sächsisches Hügelland	D42 - Hunsrück	D68 - Nördliche Kalkalpen
D20 - Mitteldeutsches Schwarzerdegebiet	D43 - Moseltal	D69 - Hochrheingebiet und Dinkelberg
D21 - Schleswig-Holsteinische Marschen und Nordseeeinseln	D44 - Mittelrheingebiet (mit Siebengebirge)	D70 - Deutsche Bucht (ohne Felssockel Helgoland)
D22 - Schleswig-Holsteinische Geest	D45 - Eifel und Vennvorland	D71 - Doggerbank und angrenzende zentrale Nordsee
D23 - Schleswig-Holsteinisches Hügelland	D46 - Westhessisches Berg- und Beckenland	D72 - Westliche Ostsee
	D47 - Osthessisches Bergland (Vogelsberg und Rhön)	D73 - Östliche Ostsee
	D48 - Thüringisch-Fränkisches Mittelgebirge	
	D49 - Gutland (Bitburger Land)	

Figure 13: evaluation of the risk of cumulative effects of the overall plan in nature areas

Connection with other evaluations (Natura 2000 assessment)

The projects in the Federal Requirements Plan can potentially affect Natura 2000 areas. The SEA therefore examines if the Federal Requirements Plan is compatible with Natura 2000 areas by means of a Natura 2000 assessment. This assessment is appropriate to the planning stage of the Federal Requirements Plan. It examines whether Natura 2000 areas are potentially affected in the assessment areas. This is described in section 12. Next the environmental report identifies whether Natura 2000 areas form a “bar”. Bars definitely need to be crossed when implementing a measure. The fact sheets state whether such bars exist.

The Natura 2000 assessment indicates the following potential effects on Natura 2000 areas:

- A total of 4,189,726 hectares of Natura 2000 areas are located within the total assessment area, corresponding to around 18% of the total assessment area.
- In the total assessment area, 42 of the 130 measures have bars due to Natura 2000 areas.

The subsequent planning levels examine whether the bars or the areas likely to be affected will actually result in a significant impact on Natura 2000 areas, taking account of conservation objectives and preventive and reduction measures.

Comparison of alternative measures

The Bundesnetzagentur compared spatial alternatives for 15 measures. The assessment of the alternatives for specific measures was based on the alternative planning options proposed by the TSOs in the second draft of the NDP 2025-2037/2045 that the Bundesnetzagentur identified as “reasonable alternatives” and “not obviously unlikely”.

The Bundesnetzagentur compared the alternatives using four comparative parameters for the environmental effects. All of the benchmarks identified are included in the relevant fact sheets for the “Presentation and evaluation of measures” (see part IV) and in fact sheets for the “Comparison of alternatives” (see part IV no 4).

Figure 14 summarises the results of the comparison of alternatives to provide a better overview. This makes it easier for them to be taken into account when deciding on the acceptance of/amendment to the Federal Requirements Plan. Each proposal variant with its alternative planning option(s) is listed below the project number and name from the Federal Requirements Plan or, if the measure is not in the Federal Requirements Plan, the project number and name from the NDP. The measures are listed in numerical order. The alternatives that are preferable from an environmental perspective are marked with the symbol ▲. Alternatives that are clearly worse are marked with the symbol ▼. There are better alternatives to these from an environmental perspective, even if it was not possible to identify a single preferable alternative in the comparison. No preference has been identified for the other alternatives.

Proposal	Alternative planning options	Figure on page
P27: grid reinforcement between Wehrendorf and Ohlensehlen		Fehler! Textmarke nicht definiert.
M52a: Wehrendorf – Ohlensehlen	M52a mod: point Lemförde – Ohlensehlen	
	▲	
Project no 75 BBPlG: grid expansion Siersdorf – Zukunft – Verlautenheide		Fehler! Textmarke nicht definiert.
M689: Siersdorf – Zukunft –Verlautenheide	M689 mod: Siersdorf – Verlautenheide – Zukunft	
P471: grid expansion Grosskrotzenburg/west – Frankfurt-Ostend – Frankfurt-Griesheim		Fehler! Textmarke nicht definiert.
M816: district Bornheim/Ostend (Frankfurt am Main) – district west (Frankfurt am Main)	M816 mod: district Bornheim/Ostend (Frankfurt am Main) – districts Ost/Bergen-Enkheim (Frankfurt am Main)/Bad Vilbel	
	▲	
P475: grid expansion between Frankfurt-Griesheim and Schwanheim		Fehler! Textmarke nicht definiert.
M823: district west (Frankfurt am Main) – Schwanheim	M823 mod: district west (Frankfurt am Main) – Kriftel	
P478: grid expansion between Stegau, Stade/west, search area Hemmoor and Alfstedt		Fehler! Textmarke nicht definiert.
M829a/M829b/M829c: Mehlbek – point Hetlingen – point Lühesand – Stade/west (Elbe crossing) – Stade/west – Hemmoor – Alfstedt	M828a/M828b/M828c: Mehlbek – Elbe crossing B 431 south of Roßkopp (Wewelsfleth) – L 111 east of Allwörden (Freiburg (Elbe)/Wischhafen) – Hemmoor – Alfstedt	
P486: grid reinforcement and expansion Grosskrotzenburg/west – search area Frankfurt/north – search area Bommersheim		Fehler! Textmarke nicht definiert.
M837: districts east/Bergen-Enkheim (Frankfurt am Main)/Bad Vilbel – Oberursel (Taunus)/Bad Homburg vor der Höhe	M837 mod: districts Ost/Bergen-Enkheim (Frankfurt am Main)/Bad Vilbel – district Bornheim/Ostend (Frankfurt am Main)	

Proposal	Alternative planning options		Figure on page
P509: grid expansion and reinforcement Limburg – Oberursel (Taunus)/Bad Homburg vor der Höhe – Eschborn – Kriftel			Fehler! Textmarke nicht definiert.
M784: Limburg – Oberursel (Taunus)/Bad Homburg vor der Höhe – Eschborn – Kriftel	M784 mod: Arpe – Oberursel (Taunus)/Bad Homburg vor der Höhe		
P540: grid reinforcement and expansion: Vieselbach – Altenfeld – search area Schalkau – state border TH/BY (Mast 77) – search area Münnerstadt – search area Eltingshausen – Grafenrheinfeld			Fehler! Textmarke nicht definiert.
M1001: state border TH/BY (point Roth/Mast 77) – Münnerstadt/Maßbach – Oerlenbach/Poppenhausen – Grafenrheinfeld	M1001 mod: state border TH/BY (point Roth/Mast 77) – Würgau – Ludersheim		
▲			
P555: grid expansion between Hardebek and Steinburg district			Fehler! Textmarke nicht definiert.
M1004: Hardebek – Sommerland	M1004 mod: Hardebek – Audorf – Wilster – Sommerland		
▲			
P635: grid expansion search area Grabowhöfe – search area Kyritz – search area – search area Zerbst – Marke			Fehler! Textmarke nicht definiert.
M635a: Grabowhöfe – Kyritz/Wusterhausen (Dosse) – Jerichow – Zerbst (Anhalt) – Marke	M635a mod: Putlitz/Süd – Kyritz/Wusterhausen (Dosse) – Jerichow – Zerbst (Anhalt) – Marke		
	▲		
P650: grid expansion search area Salzwedel – search area Osterburg			Fehler! Textmarke nicht definiert.
M650a: Salzwedel/Wallstawe/Apenburg-Winterfeld – Osterburg (Altmark)/Goldbeck/Rochau/ Bismark (Altmark)/Stendal	M650a mod: Salzwedel/Wallstawe/Apenburg-Winterfeld – Erxleben/Ingersleben		
P656: grid expansion search area Ludwigslust – search area Brunow			Fehler! Textmarke nicht definiert.
M656a: Karstädt/Ludwigslust/Göhlen/Picher – Brunow/Ziegenderdorf/Berge	M656a mod1: Karstädt/Ludwigslust/Göhlen/ Picher – Görries	M656a mod2: Karstädt/Ludwigslust Göhlen/ Picher – Parchim south	
▼			
P701: grid expansion Arpe – point Limburg			Fehler! Textmarke nicht definiert.
M1101: Arpe – Limburg an der Lahn/Runkel/Brechen	M1101 mod1: Arpe – Eschborn	M1101 mod2: Arpe – Oberursel (Taunus)/ Bad Homburg vor der Höhe	
▲			
P709: grid expansion and reinforcement Kusenhorst – Eiberg – Selbeck			Fehler! Textmarke nicht definiert.
M1109: Kusenhorst – Eiberg – Selbeck	M1109 mod: Kusenhorst – Selbeck		
NOR-16-1: HVDC link NOR-16-1			Fehler! Textmarke nicht definiert.
M266: Border Corridor IV/V – Hardebek	M266 mod2: Border Corridor IV/V – Henstedt-Ulzburg		

Figure 14: overview of comparison of alternatives for specific measures

Alternative overall plans

Overall there are only very small differences between Scenarios A 2037, B 2037 and C 2037 in the second draft of the NDP 2025-2037/2045.

According to the second draft of the NDP, there are:

- 119 measures in Scenario A 2037,
- 125 measures in Scenario B 2037 and
- 130 measures in Scenario C 2037.

Figure 81 shows the assessment areas of the scenarios.

Figure 15 shows a breakdown of the ratings for each individual scenario. The breakdown also shows that there are hardly any differences between the scenarios, which is why no detailed comparison of the scenarios is presented.

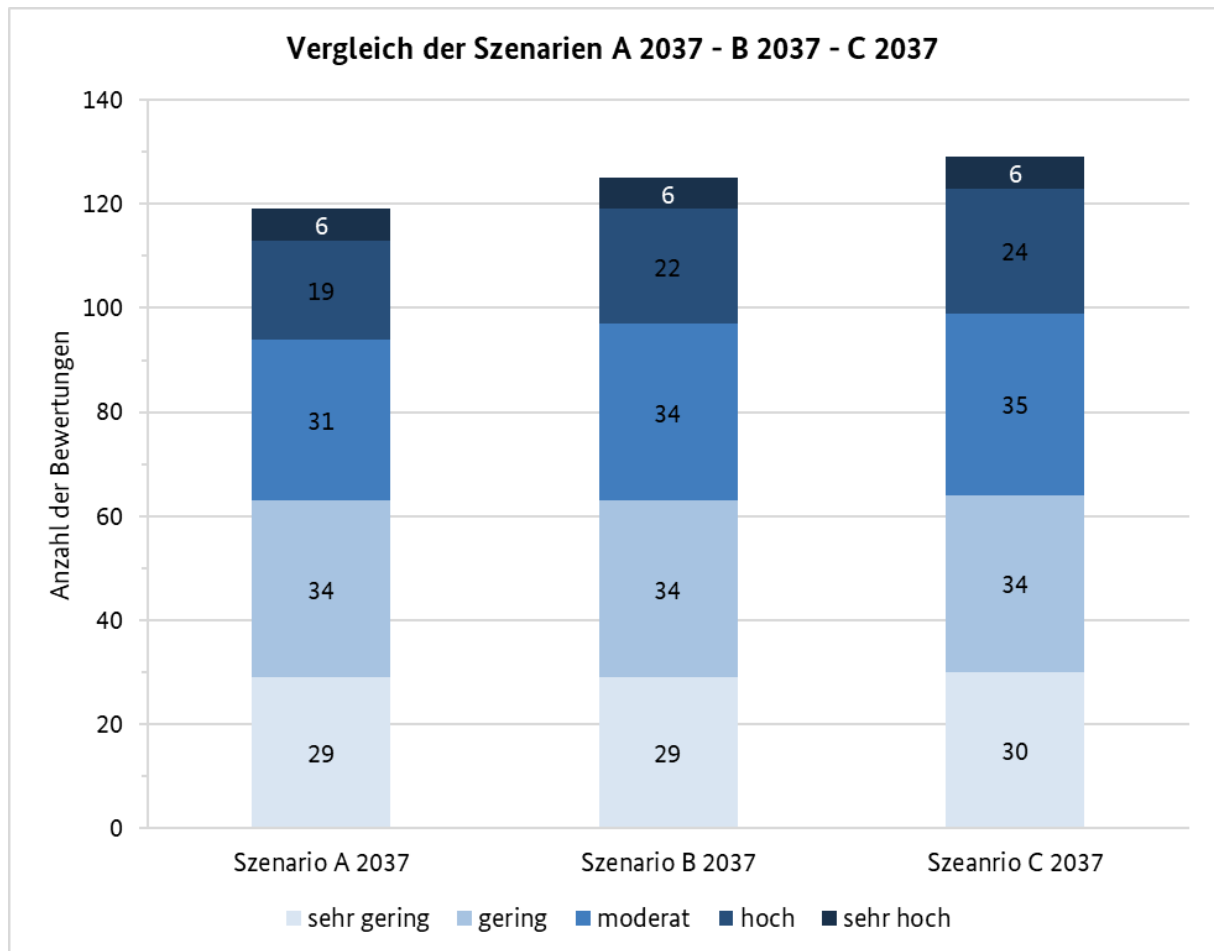


Figure 15: comparison of overall assessments for Scenarios A 2037, B 2037 and C 2037

Sources:

Bundesnetzagentur (2025): Genehmigung des Szenariorahmens 2025-2037/2045 (April 2025). Download at: [Genehmigung des Szenariorahmens 2023-2037/2045](#) (last accessed: 24 July 2026).

Bundesnetzagentur (2026): Bedarfsermittlung 2025-2037/2045. Festlegung des Untersuchungsrahmens für die Strategische Umweltprüfung; Stand Juni 2026. Download at: [Festlegung des Untersuchungsrahmens für die Strategische Umweltprüfung](#) (last accessed: 14 July 2026).