



# Final Report

**Final evaluation of the BESTGRID project with the scope of environmental consulting by NABU on the 380 kV transmission power line planning "Bertikow - Pasewalk" by system operator 50Hertz**



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## Preparation of the Project

### 1. Task

NABU is convinced that there are clear chances for nature protection through foresighted planning whether it regards infrastructure, electricity facilities or power lines. The organization is dedicated to find the best solutions for the project Bertikow-Pasewalk in terms of nature protection as early as possible instead of engaging in damage control afterwards. The basic decisions for location setting largely determines how environmentally friendly a project is. To exploit these chances as well as possible we have decided to become part of BESTGRID and accompany the planning procedure from the beginning, attend meetings and scoping, do stakeholder mapping and lend support for Environmental Impacts Assessments and investigation schemes. Since the Northeast of Germany is a hotspot of rare birds in Germany, bird protection is considered the most important environmental issue with regard to the Bertikow-Pasewalk project.

BESTGRID is a project funded by the EU since April 2013 to work towards modernising and expanding the current European electricity grid for the integration of a growing share of electricity from renewable sources. BESTGRID is coordinated by the Renewables Grid Initiative (RGI) and made up of four pilot projects located in Germany, Belgium and the UK. During the project TSOs and NGOs work together to improve local and public acceptance for grid development processes. Objectives of the project are to enhance transparency and public participation, to speed up permitting procedures by directly addressing or even surpassing environmental protection standards, and to encourage the implementation of constructive public engagement in permitting procedures for European energy infrastructure “projects of common interest (PCIs)”. The experiences with the new approaches that are developed with close cooperation between NGOs, TSOs and a research institute, will be evaluated. All lessons learned are widely spread across Europe through different communication measures and two handbooks on environmental impacts and public participation.

The expansion of renewable energies is a crucial part for reaching the existing climate protection targets of the German government and the EU and is therefore required by NABU. Linked to the politically resolved Energiewende the conversion and extension of the German high voltage power grid directly affects the concerns of nature protection. As part of the project the identification and addressing of central ecological questions regarding the erection of new power lines stand in focus for NABU. Another aspect for NABU's engagement within the project is to promote and discuss potential solutions for an environmentally save grid extension with the transmission system operators (TSO). NABU's experiences within the project flow directly in the work of NABU's umbrella organization BirdLife Europe who is partner of RGI.

The two BESTGRID projects in Germany are the grid extension planning subjects “SüdLink” and “Bertikow-Pasewalk”. Regarding the first, the local branch NABU Lower Saxony examined and evaluated possibilities to erect new power lines in the German low mountain region using SüdLink as a role model. The second project “Bertikow-Pasewalk” which is subject to this report, was handled by the main branch of NABU. The subject for the engagement is a new 380kv overhead line between Bertikow and Pasewalk that is to increase the power transmission capacity in the North-Eastern part of the 50Hertz control area. There already exists a 220kv power transmission line of approximately 30km, running between Bertikow (Brandenburg) and Pasewalk (Mecklenburg-West Pomerania). Relating to the demands that the energy transition brings

and the challenges that come with it, 50Hertz will replace this existing line with a 380kv line. For the higher-performing 380kv line new pylons will be erected along the entire route between the power distribution stations.

In specific the following tasks were processed:

*Up to proposal conference (Antragskonferenz) expected for March 2014:*

- Participation in the kick-off meeting
- Provision of relevant information related to the natural environment at relevant locations, including for example:
  - Information about protection status of the area, including interpretation of how the species for which the site is designated use the area and at which times of year.
  - Information on protected species using a site which might not have a protected status
  - Mapping of species' sensitivity to the proposed infrastructure, where appropriate
- Initial screening of available information to
  - point out information gaps that have to be covered within an environmental assessment
  - indication of particularly critical topics that are likely to raise resistance
- Identification of further key local stakeholders regarding natural environment concerns
- Participation at proposal conference (Antragskonferenz; September 2014)

*After proposal conference before regional conference (Regionalkonferenz):*

- Site visits to key locations together with the project promoter, further local experts and environmental authorities
- Input on scope and methodology if new studies are being commissioned
- Roundtable events with the two relevant administrative districts
- Input to final report which will be developed by BirdLife
- NABU shall publicly communicate its active role in the project

## **2. Preconditions on the project implementation**

### **2.1 The need for renewable energies and grids**

According to the German climate protection goals the emission of greenhouse gases is to be reduced by at least 40 percent until 2020 referring to 1990. The energy share of electricity production from solar, wind and other renewable energy sources shall be increased by 40-45 percent in 2025 and by 55-60 percent in 2035. Even today renewable energies have a share of approximately 25 percent and are second in the electricity mix.

The energy supply from several sources presents challenges: There are more but therefore smaller production units than before. The main load of produced renewable energies comes from volatile solar and wind power, which is not necessarily congruent with the power demand of consumers and industry at the same time. The necessary energy storage capacities and technologies are not sufficiently available yet. The electricity needs to be integrated into the power grid to be transported to the customers reliably. Additionally wind power production is highest in the northern part of the country to

be distinguished with below average population density and less economy share than the south and west, where the electricity needs to be transported to. The extension of the transmission and distribution system can therefore not be avoided.

NABU clearly supports the intended change to resource-conserving electricity production and attempts to massively reduce carbon emission by more energy efficiency and savings but also the increased use of renewable energies. The planned nuclear phase-out as central part of the Energiewende is welcomed as well, since for this way of energy production neither safety aspects, nor the problem of permanent disposal of nuclear waste, are solved. On the other hand the expansion of biomass production, wind (on-shore and offshore) and solar plants take place uncoordinated in many regions and has direct negative impacts on nature and landscape. Despite all eligible needs for renewable energies it is essential to secure high standards of spatial planning and choices for most environmentally compatible sites.

The rising energy production especially by wind power in North-Eastern Germany gives critical reason for the grid expansion, as for instance Bertikow-Pasewalk. The renewable energy plants in the region will have an increased capacity that is estimated to reach a total output of nearly 2 GW in the coming years.

## 2.2 Legal background for grid extension

To accelerate the extension of the transmission systems there were several laws newly adopted or newly ratified. The Grid Expansion Acceleration Act (NABEG) from 2011 regulates the procedures of grid planning and public participation for all new projects. In lights of the broad consensus on the need for grid extension for a more flexible energy system, the extent to which new routes are to be constructed and their precise location is yet to be determined. This will be enabled on a regular basis in a process consisting of five consecutive steps with significant public involvement. The aim is to equip the network landscape as quickly as possible and to reach the necessary decisions together with society as a whole. After the creation of a so called Scenario Framework about the assumed distribution of electricity production to the single sectors of the future, that allows transmission system operators to calculate expansion requirements for the next decade, the Network Development Plan (NEP) shows the required measures for a consistent grid. It must be confirmed by the Federal Grid Agency (Bundesnetzagentur) who estimates potential environmental damages in an environmental assessment. The NEP and the environmental report result in the Federal Requirements Plan. It has already legally determined the need for new grids in Germany in 2013 for the first time and has to get drawn up after every three years.

The next step depends on whether or not the planned extra-high voltage line crosses national or federal borders. If it does, it is not the relevant federal state authority but the Bundesnetzagentur which is responsible. The agency decides on the corridors proposed by the transmission system operators. It examines the route of the corridor in what is known as Federal Sectoral Planning, which includes a Strategic Environmental Assessment. The corridors determined (generally 1.000 meters wide) form the legally binding basis of the Planning Approval Proceedings. The TSO must take several alternative routes into consideration for each corridor. Their proposals are discussed publicly and assessed for their environmental compatibility. At the end, a planning approval decision is reached with the fixed routes.

Although the discussion on using ground cables as technical alternative to spare people and environmental interests is viral within the political discussion on grid extension, there are only a few transmission projects legally open for ground cables yet.

## 2.3 Planning state of Bertikow-Pasewalk

The project Bertikow-Pasewalk is legally determined in the Federal Requirements Plan from 2013. The project contains the replacement of an existing 220 kV transmission line between the substations of Bertikow near Prenzlau in Brandenburg and Pasewalk in Mecklenburg-Western Pomerania with a 380 kV transmission line to approximately 30 km in length. The form of alternating current transmission remains the same, while the capacity will be increased to 2,3 GW per circuit. The project is not one of the pilot projects for the use of ground cables and is therefore planned with overhead power lines. The TSO 50Hertz filed his application for opening the Federal Sectoral Planning in August 2014 to the Bundesnetzagentur, who is the process leading authority since the project crosses the boundaries of two Länder. The agency held the application conference on 24 September 2014. After gaining additional comments and advice from the public the Bundesnetzagentur published the determination of the scope for additional documents in November 2014.



50Hertz offered 13 alternating routing corridors for the new power line to be erected and was prompted in the scoping to research 15 varieties of routing. Included are three options for using existing power lines and traffic infrastructure to bundle with the new route, a 110 kV distribution line, the route of existing 220 kV transmission line and a federal highway (A20). To enable a legal decision for the most sustainable corridor the spatial resistance has to be determined and the different subjects of protection to be pondered in the following steps. The corresponding Federal Sectoral Planning process is planned to be closed at the end of the year 2015. The subsequent Planning Approval Proceeding is supposed to start early 2016. The new 380 kV line shall go in to operation in 2019.

## Expiration and implementation

### 3. Project management

The project has been promoted and implemented by the federal association of the Nature And Biodiversity Conservation Union (NABU). Responsible for the implementation for all project components was Eric Neuling, policy officer for power grids and nature conservation, in the NABU headquarters.

On the side of the TSO in charge and member of the BESTGRID network Dr. Dirk Manthey, project communication officer at 50Hertz was responsible for the organization of joint events and the regular exchange with NABU.

Coordination work and the BESTGRID project management in general was in the hand of Antina Sander, Deputy Executive Director of RGI.

### 4. Project operations

Project component	2014												2015			
	JAN	FEB	MRZ	APR	MAI	JUN	JUL	AUG	SEP	OKT	NOV	DEZ	JAN	FEB	MRZ	APR
Participation in kick-off meeting	21.															
Provision of relevant information related to environment at relevant locations																
Initial screening of available information (info on gaps for EA, critical topics)																
Identification of further key local stakeholders																
Participation at information events			11. +13.													
Participation at proposal conference									24.							
Site visits to key locations																13.
Input on scope and methodology																
Roundtable events									18.							13.
Input to final report																
Public communication of active role in the project																

#### 4.1 Project kick-off

The project kick-off took place on 21 January 2014 at the 50Hertz headquarters. Participants were Antina Sander and Andreas Reinhardt (RGI), Dr. Dirk Manthey and Nadja Konersmann (50Hertz) and Eric Neuling (NABU). Mr Manthey gave an overview on the main project scheme of Bertikow-Pasewalk, the time frame and the first planning documents. He mentioned the regional stakeholders which have been met for initial information on the project by then, which measures were planned to inform the public and when and also showed some impressions of dialogue events from other grid projects of 50Hertz. He also introduced the names of the staff involved in the project Bertikow-Pasewalk. By 50Hertz it is favored that the new line will be built along the route of the old 220kv line. This way, as little as possible of pristine nature will be affected. However, the line may occasionally skew off the intended route in order to increase distances to residential areas or reduce strains on the environment. As soon as the new line is operational and an appropriate probationary period has passed, the old 220kv line will be dismantled. Aside of these substantive information organizational matters for the next project steps were captured between 50Hertz, NABU and RGI.

## 4.2 Participation on Information events of 50Hertz

50Hertz has implemented a range of events and different formats to inform all stakeholders and the public about the project, alternative routes and the new legal permitting process. The first two events for informing the citizens and local stakeholders and for answering questions were held by 50Hertz on 11 March 2014 in Prenzlau and 13 March 2014 in Pasewalk. At both events were more stakeholders present than citizens. 50Hertz documented both venues and all questions raised. Both events were attended by NABU. A protocol is enclosed to this report.

## 4.3 Provision of relevant information on natural environment

The information to relevant literature sources and on the natural environment was given throughout the project to the TSO at the information events, at the round tables and site visits, at the proposal conference and in internal project meetings.

The following sources were used for NABU's input on environmental matters or directly provided to the TSO:

- *Series of 5 NABU guidelines on nature conservation topics effected by grid extension*, NABU & BfN (2013-2014)
- *Planning material of 50Hertz*, 50Hertz/IBUe (2014)
- Ryslavy et al. (2012): *Die Brutvögel in Brandenburg und Berlin – Ergebnisse der ADEBAR-Kartierung 2005-2009*, Hrsg. ABBO
- FNN-Hinweis: *Vogelschutzmarkierung an Hoch- und Höchstspannungsfreileitungen*, VDE/FNN (2014)
- *Natura-2000 site characteristics*, BfN map service: <http://www.geodienste.bfn.de/schutzgebiete>
- Runge K., Meister P., Rottgart E. (2012): *BMU-Studie „Ökologische Auswirkungen von 380-kV-Erdleitungen und HGÜ-Erdleitungen“ – Bericht der Arbeitsgruppe Umwelt*. Schriftenreihe des Energie-Forschungszentrums Niedersachsen, Band 4.2

## 4.4 Identification of further key local stakeholders

In correspondence with the actions taken by 50Hertz to inform and involve stakeholders NABU put some research on further persons and institution of proposed interest on the project. There were a few regional stakeholders named enclosed to the application. At an early preparation state for the first Round Table (4.6) 30 additional contacts were shared with 50Hertz for the Email- and mail distributor (see enclosure). The main focus laid on local NGO members and local conservation experts.

## 4.5 Participation at proposal conference

Later than planned at the project start of BESTGRID 50Hertz was able to hand in the application documents for Federal Sectoral Planning of the project Bertikow-Pasewalk on 5 August 2014. The Bundesnetzagentur as permitting authority has held an application conference on 24 September 2014 in Torgelow north of Pasewalk (agenda enclosed). The conference was open for the public. About 80 stakeholders from politics, local authorities, businesses, NGOs and private persons participated.

Regarding to § 7 NABEG in the proposal conference subject and scope for the Federal Sectoral Planning of the lining corridors are being discussed. In Torgelow it was primarily discussed to which extent the proposed corridors are or will be in consensus with the requirements of spatial planning of the federal states and to what extent and

detail of information it must be included in the environmental report in accordance with § 14g EIA Act. Basis of the application conference is the proposal corridor shown in the application and the suitable alternatives.

50Hertz presented the determined three corridors (with interlinking elements 13 different routing options all together). Details from the presentation of spatial and environmental matters were that bottlenecks for planning within the evaluated corridors are protected habitats according to § 30 Federal Nature Conservation Act (BNatSchG) but which can be spanned according to the TSO. There are also prohibition zones like the federal highway and existing and planned wind parks, which were discussed more detailed addressing the liability of regional plans and necessary distance from wind turbines. Relevant information was added. Other topics that were asked about regarding the environmental aspects were data availability regarding avifauna and landscape, FFH compliance check, landscape assessment (affection by height of poles, options for bundling, visibility analysis by TSO). The conference ended as soon as all points from the agenda were sufficiently consulted.

Pursuant to § 7 (4) NABEG the Bundesnetzagentur shall reflect the results of the proposal conference indicating the scope of the Federal Sectoral Planning and determines the required content of the documents submitted by the project proponent pursuant to § 8 NABEG. 50Hertz is currently preparing these documents.

#### 4.6 Roundtable events

There were two so called Roundtable events were implemented within the BESTGRID project. Due to external factors the planning procedure for the Bertikow-Pasewalk power line were delayed and consequently the first round table could be scheduled for the end of the summer the earliest. So the first of these Roundtable events was held in Pasewalk on 18 September 2014. To give a comprehensive overview on potential conflicts that are relevant for planning and on BESTGRID itself, the event was organized in cooperation with Deutsche Umwelthilfe (DUH) e.V. and 50Hertz. NABU's and DUH's part was to actively participate and to present their findings (official speaking slot in the agenda) to local authorities, answer questions and function as a sparring partner. While NABU shed light on the topic of nature conservation concerns and risks, DUH was responsible for the moderation of the whole event and the topic of electromagnetic fields that was to be taken up by 50Hertz in a coming up mobile information tour through the region starting in October lasting ten days. The Roundtable took place from 4 to 8 pm to ensure that people could join numerously during a work day.

##### Venue and speakers Roundtable I

Time	Speaker	Institution	Topic of presentation
4:10 pm	Teréz Jánosy	50Hertz	Current planning status and process outlook
4:20 pm	Theresa Schneider	Renewables Grid Initiative (RGI)	Bertikow-Pasewalk as pilot project within the EU project BESTGRID
4:30 pm	Liv Becker	Deutsche Umwelthilfe (DUH)	DUH as partner of the BESTGRID project
4:45 pm	Eric Neuling	NABU	NABU as partner of the BESTGRID project
4:50 pm	Eric Neuling	NABU	Importance of bird protection in grid planning & landscape and habitat impairment
6:15 pm	Michael Hahne	Techn. University Berlin	Electric and magnetic fields at power lines
6:30 pm	Dr. Hannah Heinrich	2h-engineering	Review on electric and magnetic fields
6:40 pm	Dr. Dirk Manthey	50Hertz	Preparation of the information tour with the Mobile Citizen Office

After the introduction on the project partners involvement and the project Bertikow-Pasewalk as such, NABU’s input contained two different conservation aspects presented in two separate parts (full presentation enclosed):

**a) Importance of bird protection**

- Significance of the planning area: currently relevant spatial factors, setting of protected areas
- Effects of overhead transmission lines on birds: habitat devaluation, increased predation and collision risks
- Examples of planning related and potentially effected bird species in the project area: Common crane, Eurasian curlew, Lesser spotted eagle, Red-necked grebe
- Environmental Assessment in the Federal Sectoral Planning
- Relevant bird related criteria for alternative routing consideration within the strategic environmental assessment: protected areas, current data, habitats to be possibly left out
- Options for prevention and mitigation of negative impacts: Pole design
- Options for compensatory measures (outlook for Planning approval process)
- Conclusion, helpful literature and NABU demands

**b) Landscape and habitat impairment**

- Effects of overhead transmission lines: Habitat degradation in open and forest dominated areas and for different species groups
- Options for prevention and mitigation of negative impacts
- Opportunities for nature through grid expansion: ecological lining management & synergies with habitat relinking concepts
- Helpful investigations for alternative routing consideration at the Landscape conservation area “Pasewalker Kirchenforst”
- Conclusion and NABU demands

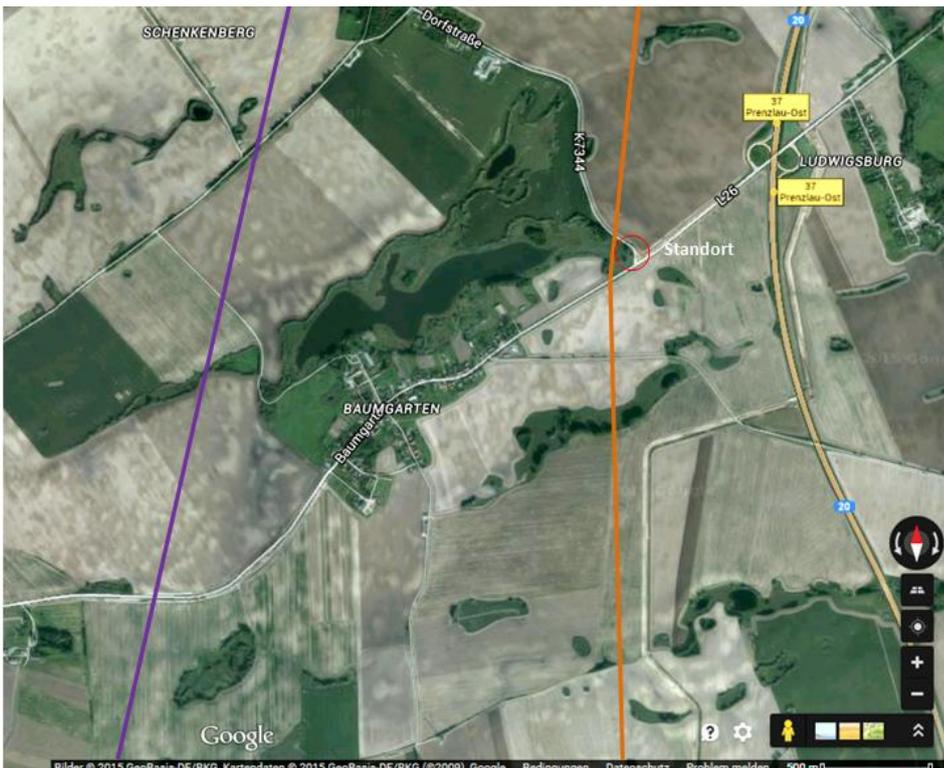
The second roundtable took place on 13 April 2015 in Prenzlau. It was split as one part of the event after the site visits (4.7) carried out in the morning. Almost 40 participants took part. Different than the first roundtable it was implemented and moderated only by NABU as NGO and organized together with 50Hertz. The aim was to deepen the insights on nature conservation issues of the broader overview gained at the first roundtable to a similar audience. Resolving from the risk analysis of Bertikow-Pasewalk NABU chose to put the emphasis of the event on bird protection. After an overview on the planning state and a roll back on the conservation issues all together regarding Bertikow-Pasewalk, there was a speech on technical solutions of transmission poles for sparing the environment by 50Hertz, followed by two presentations on findings about bird collision risks and what experiences have been made to reduce them. After the presentations NABU put his receivables up for discussion. The event ended at 4:30 pm.

**Venue and speakers Roundtable II**

Time	Speaker	Institution	Topic of presentation
1:30 pm	Teréz Jánossy	50Hertz	Current planning status and process outlook
1:50 pm	Eric Neuling	NABU	Overview on nature conservation conflicts
2:10 pm	Martin Heumüller	50Hertz	Possibilities of pole designs
2:40 pm	Frank Bernshausen	Planungsgruppe für Natur und Landschaft	Collision risks for birds
3:10 pm	Dr. Beate Kalz	Büro für Tierökologie	Experiences with bird collision protection markers at the Oder river

## 4.7 Site visits to key locations

NABU and 50Hertz organized two excursions to route sections of the existing 220 kV power line on 13 April 2015. It was considered to be of high value for the 31 participants to get an impression of the impact of overhead transmission lines on landscape and conservation matters at site. Explanations of the project manager Teréz Jánossy and technical manager Oliver Britz of 50Hertz helped to answer questions of the participants. The travel to the single sites was realized with a bus trip.



First site visit stop at Baumgartener See with existing 220 kV power line (orange) and another 110 kV power line (purple)

The first site visited was a power line section right at the Baumgartener See, a small, long stretched lake near the village of Baumgarten in Brandenburg. It showed exemplarily a typical situation of a small water body in an agricultural landscape with reed beds and natural shore and transition areas surrounded by fields and grassland. Breeding and resting water birds like geese or cranes, that feed on the fields sleep in or at the stretch of water and therefore have to fly over the power line regularly meaning an increased collision risk.

The second site visit led the excursion participants to the Pasewalker Kirchenforst, a protected site for landscape preservation. Within the project area it is the largest forest. The existing 220 kV power line meets two other transmission lines at the southern edge of the forest coming from south west. They lead parallel another 2 km through the Pasewalker Kirchenforst to the Pasewalk substation. Mostly pine trees grow here but there are also dry open heath habitats within the current routing of the overhead power lines, originating from the frequent route management and the necessary removal of new growth. Regarding the new planning the central question was, if the new line should run through the forest by replacing the old one or bypass the forest. There

were also possibilities discussed of taking up one or both of the 110 kV systems to reduce the land use.



Second site visit stop at Pasewalker Kirchenforst with existing 220 kV power line (orange) and another 110 kV power line (purple)

After arrival from the second excursion stop the second roundtable event started at the location in Prenzlau (4.6).

#### 4.8 Input on scope and methodology

Input on scope and methodology has been given to 50Hertz in several ways. For once there have been the presentations NABU gave to nature conservation issues for Bertikow-Pasewalk within the Roundtable events and which also contained recommendations for the scope. Furthermore, NABU has commented on the annex to the planning-relevant species from the application documents and has provided a list of the collision estimation of birds occurring in the territory (based on works by the Federal Agency for Nature Conservation (BfN)). These information were also provided to the Bundesnetzagentur as planning and approval authority. By attending the proposal conference of the Bundesnetzagentur (4.5) the chance was used to also place suggestions to the planning of Bertikow-Pasewalk.

## 4.9 Public communication

NABU publically communicated its active role within the BESTGRID project and its aims at workshops or other events throughout the whole project duration and will continue to do so after the project final. It also put up a website on the cooperation on the associations homepage in June 2014 in correspondence with 50Hertz. It is to be found here: <http://www.50hertz.com/de/Netzausbau/Projekte/380-kV-Freileitung-Bertikow-Pasewalk/Meldungen>

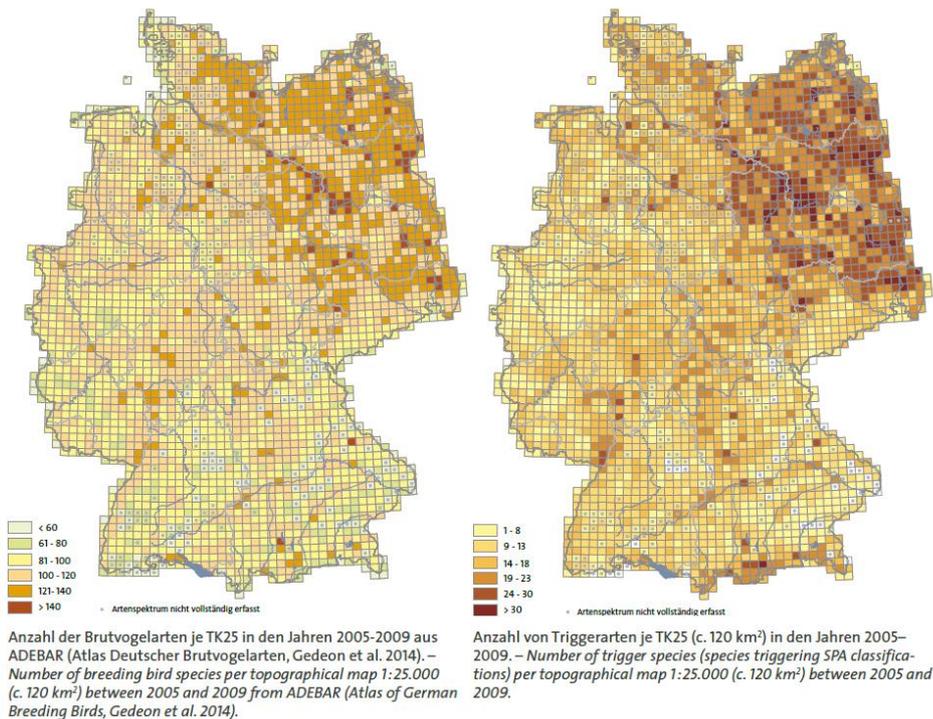
# Project results and evaluation

## 5. Results and evaluation

### 5.1 Provided information on natural environment

Looking at the setting of legally protected sites the main focus on bird protection issues seemed most necessary. Birds are the most effected group of species by overhead power lines because of their collision risk and the avoidance of high poles in open landscapes. Although protected Natura 2000 sites were left out of the applied corridor proposals there are seven Special Protected Areas for birds (SPA) surrounding the planning area in all directions (enclosed planning map). Within the proposed corridor variations there are mostly protected habitats (§ 30 BNatSchG) of small size scattered evenly in the agricultural landscape. They are left out of commercial land use and partially filled with water or grown with trees or extensive grassland. They are potential breeding sites for ground breeders or waterfowl. Especially the erection of new poles would affect these small habitats and forested areas. Then also species from other groups like certain plants, invertebrates, small mammals and bats are at risk. The erection of new poles of power lines is locally limited and therefore subject to more detailed environmental assessments at a later planning stage. Birds instead are more mobile by avian activity and often gather in larger groups. Sensitive breeding and resting species are therefore most relevant at this planning stage about the decision on the future routing of power lines and the type of poles.

Besides the direct effects on birds, a publication on bird distribution and abundance shows impressively the importance of the region looking at all German breeding and trigger bird species (with SPA classification).



NABU analyzed the species setting of the SPA characteristics, compared it with distribution data of proven breeding birds in the grid squares of the study area in Brandenburg that were collected in the mapping program ADEBAR (ABBO 2012). Then these species were selected which show a very high and high collision risk (VDE/FNN 2014) with overhead power lines. The reason for this analysis is, that besides other factors, proved presence of these species in the area might have relevance for the selection of the preferred corridor.

**Species under the Council Directive 2009/147/EC with very high collision risk breeding in the planning area:** Common crane (*Grus grus*), White stork (*Ciconia ciconia*), Eurasian Bittern (*Botaurus stellaris*), Little Bittern (*Ixobrychus minutus*), Lapwing (*Vanellus vanellus*), Eurasian curlew (*Numenius arquata*), Common snipe (*Gallinago gallinago*)

**Species under the Council Directive 2009/147/EC with high collision risk breeding in the planning area:** Eurasian woodcock (*Scolopax rusticola*), Northern shoveler (*Anas clypeata*), Common teal (*Anas crecca*), Garganey (*Anas querquedula*), Common pochard (*Aythya ferina*), Red-necked grebe (*Podiceps grisegena*), Corn crake (*Crex crex*), Little crake (*Porzana parva*), Spotted crake (*Porzana porzana*), Black-headed gull (*Chroicocephalus ridibundus*), Common tern (*Sterna hirundo*), White-tailed eagle (*Haliaeetus albicilla*), Osprey (*Pandion haliaetus*), Lesser spotted eagle (*Clanga pomarina*)

The complete list was provided by NABU to the TSO before the proposal conference and is enclosed to this report. It remains necessary to get a better understanding on the use of the area by resting migratory birds, which are also included in the SPA characteristics and the FFN guidelines but were not considered in the mapping program

NABU also handed over a selection of areas with potential conservation concerns based on a survey along the existing power line in form of a photo documentation and also corresponding supplement to the habitat protection planning map 5 with possible

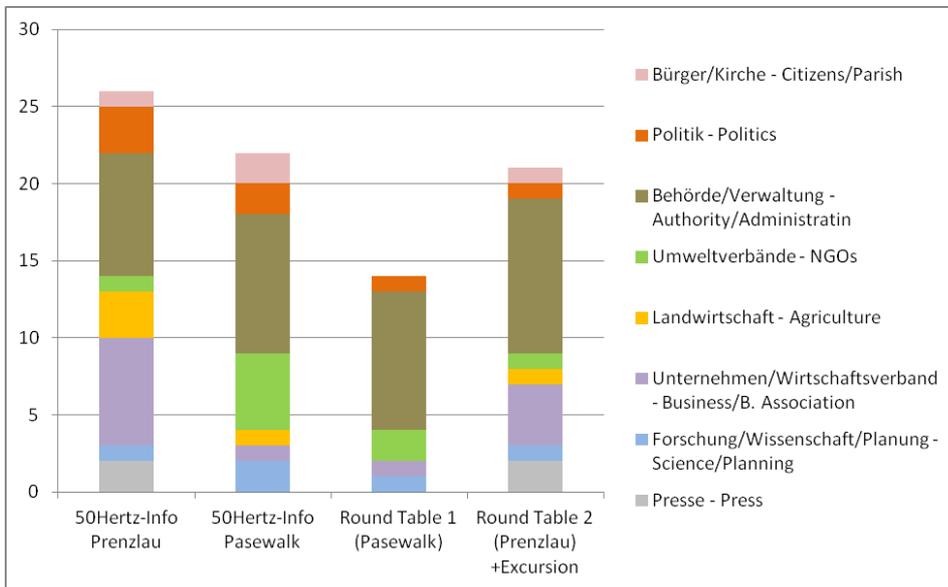
bottlenecks for habitat and bird protection. It was picked up in the first round table presentation of NABU and is enclosed to this report.

**The main potentially conflicting areas are:**

- Grünower See
- Baumgartener See
- Tornow
- Forest edge west of Schönfeld
- Small humid forest patch south of Damerow
- Pasewalker Kirchenforst

Regarding alternative routing options there was one additional demand stated by the regional branch of NABU in Mecklenburg-Western Pomerania. After the information event of 50Hertz in Pasewalk (4.2) they have made the suggestion to provide an additional route option going east around the Pasewalker Kirchenforst. 50Hertz added this corridor option in his application presentation at the proposal conference (segment 10). Also all the provided information is directly linked to NABU’s input on scope and methodology (5.7). It was accepted by 50Hertz and was passed on to the contracted Environmental Planning Office IBUE. At this state of planning it remains uncertain how this input is being handled by the TSO for the update of the application documents relying on the legal enforcement (§8 NABEG).

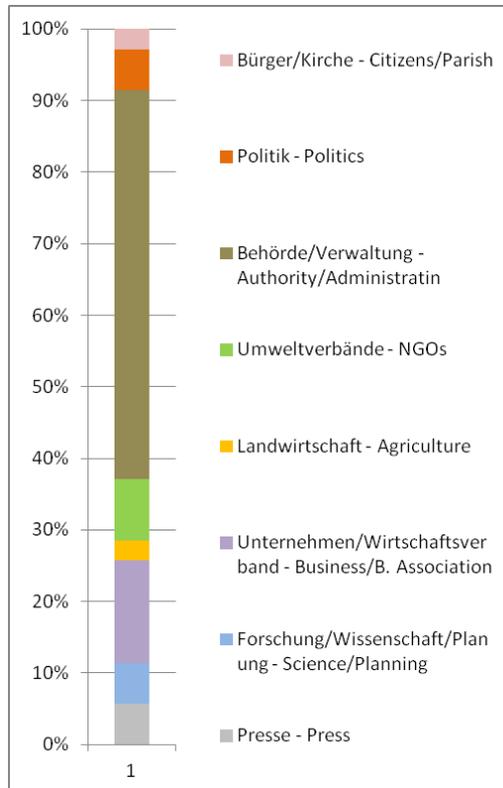
**5.2 Key local stakeholders**



*Distribution of stakeholder groups at 50Hertz- and BESTGRID events (counted not single participants but institutions)*

The formation of stakeholder groups is similar at all project events. The majority of participants were local and regional authorities. In Brandenburg more business- or business association representatives were present than in Mecklenburg-Western Pomerania. There were not as many citizens with a personal interest attending. Congruent was also the little share of local NGO representatives or conservationists.

The NGO members participating were either involved in BESTGRID from an outside or supervising point of view and the ones from a regional level attended only one of the 50Hertz information events. It was a specific project attempt to involve more local environmental stakeholders and to get advice from local conservation experts on the planning of Bertikow-Pasewalk. Although the stakeholder mapping brought up another 16 NGO contacts out of 30 additional stakeholders it was not possible to create a significant interest on attending any or more than one of the project events. Some background information on the reasons from single local conservationists for little participation reasons contained:



Distribution of stakeholder groups at BESTGRID Roundtable events 1 and 2

- A lack of capacity
- Other regional conservation issues from big concern: Use of pesticides in agriculture and wind park planning
- Existing power line has not been in focus yet
- Reservations from Brandenburg locals towards the TSO because of the complained adjoining 50Hertz project “Uckermarkleitung” (EnLAG project 3)
- Reservations looking back on single other projects in traffic and renewable energy facilities regarding the misuse of knowledge on specific breeding sites of protected birds (removal of nests for instance)

There is quite often controversy within the NGOs itself on the topic of renewable energy facing the fundamental necessity of climate protection and the devaluation of local nature on the other hand. Power lines are not always very high on the agenda of local NGO chapters, even though there are many chances to influence decisions early through the new grid planning legislation. It seems difficult to involve local stakeholders at an early stage of the planning process. Still there were valuable suggestions from the few attending local NGO representatives on the scope and the routing (5.7.). There also have not been negative reactions on the BESTGRID attempt and NABU’s involvement.

The project unfortunately did not enable to focus enough on more effective and pleasing ways of involving local experts. This attempt should be from high importance in future projects on participation. Existing reservations of environmentalists also show

that there needs to be more trust building and honest efforts of project planners to take conservation issues adequately into account. The misuse or ignorance of local knowledge (often resembling from voluntary work) destroys trust and the willingness for constructive participation.

### 5.3 Application conference

With the application conference the Bundesnetzagentur on 24 September 2014 the official launch of the formal planning phase was ushered in. The pre-released agenda has been followed strictly and there was a constructive atmosphere during the whole event. The claim by the Federal Network Agency to obtain important information for planning and defining the investigation frame was credible.

It was mainly discussed in detail about the compatibility of the regional planning objectives of the federal states with the plans of 50Hertz. According to the spatial resistance analysis of the study area for designated wind areas were assigned the highest spatial resistance class. It was a proposal from the auditorium to look at the existing regional planning, also when present in preparation of regional plans. It has been called for making a separate consideration of whether it is an already existent wind park or planned wind farms or for designated wind energy areas. New wind energy areas should allow the downgrading of one spatial resistance class. The NABU supports this demand. A crossing of wind suitable areas must be possible and it should not be an additional obstacle space. This states from the reasons that the new line will be built for the transportation of wind power generated at site – currently and in the future - and because an increased expansion is sighted.

Notes that the NABU delivered to Bundesnetzagentur and 50Hertz on and directly after the application conference for necessary test content were

- The listing of the Common Crane (*Grus grus*) as a for the planning relevant breeding and migratory bird species was missing in the application
- The use of bird mapping data from the ADEBAR program, coordinated by DDA (Dachverband Deutscher Avifaunisten)
- The western corridor variant (proposed segment 2) should not be pursued because of their proximity to the SPAs “Uckerniederung” and “Mittleres Uckertal” with a sensitive set of protected species.

### 5.4 First Roundtable event Pasewalk

This event took place one week prior to the application conference for the Bertikow-Pasewalk line and therefore could also serve as a kind of kick-off event for the formal procedure. For this purpose the timing was certainly appropriate: the participating stakeholders from municipalities and local nature conservation authorities had the chance to get an overview about all aspects of the planning procedure for the line and prepare for the application conference.

The atmosphere at the round table event on 18 September in Pasewalk was open and issue-related. The mixture of stakeholders present at the event from municipalities, public authorities, NGOs, the TSO and the Bundesnetzagentur ensured a balanced discussion. None of the attending stakeholders questioned the need for the Bertikow-Pasewalk line in general.

Before the introduction on the project partners involvement 50Hertz gave an overview on the project Bertikow-Pasewalk as such. In her presentation, Ms. Jánosy has introduced the TSO 50Hertz and the concrete grid projects at a glance. The 220 kV network in East Germany is going to be expanded to 380 kV on the long term for the evacuation to the wind power. The region is energy exporter.

NABU's input contained two different conservation aspects presented in two separate parts (see 4.6; full presentation enclosed). After each NABU presentation part there was time for questions and discussion.

With regard to the spatial planning issues, it is fundamentally important to consider especially existing infrastructures for possible bundling options. This point is not disputed by the participants, but it is also pointed out that too much concentration on one route can have greater negative effects on different subjects of protection. A representative of the Energy Ministry from Mecklenburg-Western Pomerania asked how NABU addresses conservation conflicts with wind energy planning. It must be assessed in fact the high space requirements of wind turbines. It requires a sustained political decision on how much wind turbines yet to be implemented, taking account of landscape and nature conservation requirements. For the grid expansion planning, it is important, as the cumulative effects of wind turbines and the power line also enhance a negative impact on people, animals and landscape.

About the representations of the risks of overhead power lines for birds there were no explicit questions. NABU has shown that the risk of collision for resting-, migratory and breeding birds is different and that there are differences between specific species groups. Exchange movements between the populations of the surrounding SPAs. It was explained the collision risk and the habitat devaluation for birds based on four species of the planning area. The theming of prevention and mitigation measures, however, revealed a need for clarification. One question was whether the NABU calls for one level pylons in general. With one level pylon a decreased risk of collision is attributed as the conductor cables run on the same level and are therefore recognized by birds earlier. The danger zone is vertically limited than with conductor cables, which extend one above the other. Since one level pylons are also lower, but also wider, the NABU recommends their use in open areas. Bird protection markers as mitigation measures for bird collisions were broached briefly. There are a few kinds of markers that can be attached to the ground wire above the conductor cable. It makes the power line more visible for birds. 50Hertz shows a model of the kind they want to install in the future. Concerning the lack of data on bird populations mentioned in the presentation of the first roundtable event, it was suggested from the audience to use pylons to apply monitoring/data collecting machines. There are also possibilities to use pylons for radar control to estimate the collision risk of birds. This might be useful to be taken up again at a later planning state.

It was asked which proposal of corridors NABU would recommend. The evaluation of all criteria for choosing a corridor is not possible for NABU to make. From an environmental point of view a general assumption was made by NABU that the western corridor seems to be the most critical because it would partly run as close as 1 km apart from the SPA Uckerniederung which inhabits several protected bird species with over average collision risk and limited tolerance towards vertical infrastructures.

Corresponding with the second part of the NABU presentation on landscape and habitat impairment four different aspects were raised in the discussion:

The impact on bats was one issue. Bats are primarily affected when new power line routes are planned through forests or woody areas with trees that bats use for hibernation or reproduction. So bats are at risk during construction the power line itself states no danger because bats mostly orientate by ultrasound.

To save forests from clearings for power lines it was asked if forest surge is an option. 50Hertz confirms this proposal but gives concern on the fact that the pylons will be much higher and more visible in the landscape. NABU adds that the collision risk with soaring birds over the trees (raptors, black stork) increases and depends on the site.

50Hertz holds out the prospect that the future management of the areas below the power lines that have to be kept free of tall trees are not going to be clear cut and mulched anymore. Regarding to the presented alternative ecological management scheme for power line routes there were projects with grazing by sheep mentioned. Another proposal was the dismantling of unused power lines as a compensatory measure. It was not further discussed.

The evaluation of surveys that were handed out at the round table event showed a high share of satisfied participants. 80 percent voted the round table to be interesting with important provided information/ suggestions, that the lecturer was chosen properly and provided valuable inputs as discussion background 75 percent showed definite interest at the follow-up event. The survey brought up additional questions that were valuable to discuss at the second round table:

- Cumulative effects to other projects
- Effective compensatory measures regarding economic feasibility and landscape management
- Effective bird protection markers on power lines
- Current state of planning, environmental assessment, impact regulation

Since compensatory measures and impact regulation are not yet subject to the current state of planning, they were not addressed at the second round table, despite the other topics.

A photo documentation and survey evaluation is enclosed to this report.

## 5.5 Second Roundtable event Prenzlau

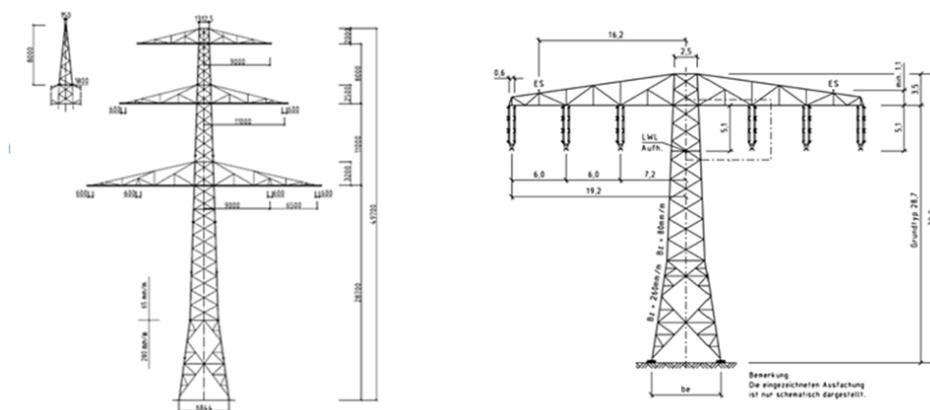
Since the Northeast of Germany is nationwide concentration point for rare birds in Germany, bird protection is the most relevant conservational issue with regard to the Bertikow-Pasewalk project at the state of finding the best corridor. Because the questions were raised at the first roundtable event, the topics of pole design and bird protection markers against bird collisions were broached more detailed at the second event.

In terms of an update on the planning status at the round tables beginning, Ms. Jánossy mentions that the spacial impact study and Strategic Environmental Assessment (SEA) run at the moment, the SEA includes species protection law assessment and Natura 2000 impact assessment. She also explains regarding the question on consideration of wind energy plans that existing structures (including wind turbines) take precedence over "only designated" areas. Within 1km corridors a development freeze is possible during the planning phase.

Mr. Heumüller (50Hertz) has introduced in his presentation the “Donau pylon” (two layer method of construction) and the collinear pylon with both systems on one level and compared both models in terms of their technical and economic properties. The Donau pylon is accordingly about 10 m higher (> 50 m) but 7,4 m narrower than the one layer pylon (31 m). The statics are advantageous, electromagnetic fields are reduced by 8 meters horizontally and only one ground wire was necessary instead of two. The span between the pylons is 50 meters wider than between collinear pylons regarding weight and wind pressure. On request from the Auditorium 50Hertz also points out, that the costs are 3-5 % less for the Donau pylon and also the monetary compensation because of the less over spanned area. By the minimum of 12m height above ground the value of maximum 5 kV is at 1m height always respected, which is considered as the limit for electromagnetic fields at specially protected places. There is 7 m room below the transmission lines for driving through vehicles. During construction, it is possible to establish a provisional route so the transmission must not be interrupted for longer. This is (in one system) of approximately 30m width as single leveled route with 2x2 m sizing foundations plus bracing. In current planning it applies that 3 phases are to remain in operation throughout the construction time.

Donaumast D76 T1 + 0

Einebenenmast D72 T1 + 0



Comparing figure of a 380 kV Donau pylon (left) and collinear pylon (right), source: M. Heumüller, 50Hertz presentation at round table event 13. April 2015

The concern of bird collision gets addressed by NABU: Because of the much higher single ground wire on top, the Donau pylon causes a collision threat on three stories at bad sight conditions. 50Hertz points out, that a closer connection of the ground wire to the transmission lines is technically not possible because it serves as protection against lightning. Alternatively there would have to be one ground cable on each side.

To 50Hertz the Donau pylon is the best compromise regarding width, height and construction costs. It regards the collinear pylon for operation where the width of the power line is from subordinate meaning. 50Hertz did not present any alternative pylon designs although they will start pilot projects with compact types that are lower and narrower at another project. These pilots will not be available for operation on time to be considered for Bertikow-Pasewalk at the current schedule.

Afterwards Mr. Bernshausen talked about the different risks for collision of birds with overhead lines also mentioning wind turbines. On the basis of a catalog, in which the

collision threat on overhead lines is described, it shows that not all bird species are endangered. As so, most raptor species such as red kites and buzzards, often dying on wind turbines, hardly show collision losses on transmission lines. They have good sight and also bats are not in danger because of their ultrasound orientation. In a featured guideline the bird species are divided by class, along with the general hazards of nature. It represents what factors can lead to collisions and which species groups are in which areas particularly vulnerable. The allocation of areas with different meanings for collision-endangered birds allows the assessment of whether the areas require a minimization of conflicts by bird protection markings. The most effected bird groups are bustards, storks, cranes, herons, waders and snipes, grouses, all groups of waterfowl, gulls and terns. Also a few large raptor and owl species and swarms of passerines as thrushes or starlings collide. With regard to the question of how the risk of collision in the relationship between earth wire and transmission line is, he confirms that it is assumed that the collision risk with the earth wire is much higher, as it can be seen worse. Another problem is that the earth wire hangs over the lines and especially birds with poor maneuverability as geese approaching the lines dodge up. Probably the col-linear pylon is from a bird protection view better because the vertical obstacle is small and by the accumulation of several lines on one level the visibility is increased. Though, so far there are no figures which prove this assumption. Particularly effective, with efficiencies of up to 90 % moving black and white markings have been found

Mrs. Kalz presented a study in which bird collisions have been counted at an overhead transmission line leading over the Oder river, a hotspot for breeding, migrating and resting birds, before (2012) and after (2013) the installation of black and white spiral markings. The ground wire is at an approximate height of 50 m. The site was different in accessibility. Before counting the removal rate of victims by predators was evaluated by tests. The finds of collision victims as such were evenly distributed over the 2,4 km transect with many passerines found. The marking of the lines has particular performed a significant drop in collisions of thrushes and the effectiveness was calculated with minus 80 percent all together. Mr. Bernshausen gives concerns that the number of some smaller bird groups can be underestimated because they are less likely to be found. Depending on the weather, the effectiveness of different markers is very different. Eric Neuling wondered if it is of interest to reduce collisions even more in the future maybe by the use of moving and contrasting markers that Mr. Bernshausen spoke of from the presented guidelines. Mrs. Kalz responded there was no 100 percent avoidance possible.

For the closing discussion Mr. Neuling has presented proposals and demands of NABU. One important point for the scope in choosing the final route is the use of current figures on nature elements in the planning area. In the case of this route planning bird protection is of particularly high interest because it is surrounded by important bird sanctuaries with valuable stocks. Therefore, the preliminary studies should already be carried out for a corridor facing the legally binding decision for only one corridor. For example, the examination of the Pasewalker Kirchenforst could allow the decision for or against a circumvention based on these data. Some participants from regional authorities see current inventory data for this planning stage for an excessive demand. The regional planning process is the Länder concern and it is up to the project developer which corridor he brings to the testing procedures. According to 50Hertz only stock data are provided for the Federal planning process at the moment. Current data is not foreseen to be collected and consulted until the planning approval process. Opposing arguments about the right time for considering the different interests were shared. But reliable data must be available as early as possible. It was also brought up to prioritize which protected natural issue should come first and why (see above). Due to the course

of the line near important bird sanctuaries and the high interchange rates between these sites NABU calls for bird marks on the entire route Bertikow-Pasewalk. Some participants question the need for marking everywhere but also see the lack of data to bring prove that markers are only necessary at certain spots. NABU calls generally for collinear lining. Until now, the different bird protection effects of different pylon types are not numerically proven, but several levels raise the probability of collision. A reply was that one level lining brings a greater negative impact on soil and private property. In addition, the costs are higher.

Due to a shortage of time the discussion could not been brought to an end as it was also criticized in the evaluation forms by two persons. But still the discussion brought an indispensable impression on opposing opinions from different participants.

The evaluation of surveys that were handed out at the round table event showed a high share of satisfied participants. 60 percent voted the round table to be interesting with important provided information/ suggestions, 73 percent thought that the lecturer was chosen properly and provided valuable inputs as discussion background and 80 percent showed definite interest on participating in the further planning procedure. The survey brought up additional topics that were not sufficiently addressed within the workshop:

- Bypassing of settlements (1)
- bird protection markers were addressed unsatisfactory (1)

There were 11 positive and 2 negative unspecific votes concerning organization, venue and agenda rather than specific topics. A photo documentation and survey evaluation is enclosed to this report.

## 5.6 Site visits to key locations

The site visits were proven to be an adequate option to introduce environmental concerns resulting from power lines.



Photo: 50Hertz/Pauls

At Baumgartener See the problem of collision risks for resting and breeding birds of wet habitats, when a power line passes by directly, was addressed and didn't raise opposing questions or arguments. At the site it was explained by 50Hertz that they were planning on widening the distance between the new power line and the biotope by planning further east.

At Pasewalker Kirchenforst the main concern was the best possibility of bundling, for example if it was possible to take up one or both of the 110 kV systems. The discussions with the 110 kV network operators ended on a possible entrainment of the existing 110 kV line stagnated. 50Hertz wants to keep up this as one option but explains that the pylons will be much higher then. The replacement of the existing 220 kV line will mean that the trail has to be widened first, meaning taking down trees on one side of the forest. 50Hertz pointed out that provisional routing is considered while construction to reduce the loss of wood. Mr. Neuling states that the open trail under the power lines inhabitants specialized species of protected dry heath habitats which will be necessary to consider in an environmental assessment.



Photo: NABU/S. Diesner

## 5.7 Input on scope and methodology

An essential component of the project is the provision of information and proper requirements for the planning process and the pertinent investigation framework. The Federal sectoral planning process is a nationwide uniform process, in which it comes to the definition of a 1 km wide corridor route in the result. The necessary strategic environmental assessment has to name potential environmental impacts in accordance with the contemplation level, describe and assess. For that reason, specific criteria of environmental consideration are directed to the following procedure. Because only in the subsequent planning approval process the actual lining route with the specific pylon sites is set within the determined corridor. The Federal Network Agency has estimated a comprehensive treatment of the environmental criteria in determining the scope. Given the legal binding of the selected corridor an early account of all possible impairments is welcomed. Nevertheless, the principle of partly directing down criteria is reasonable and to be maintained. This means that an assessment of environmental

risks, which are localized and can be avoided in the planning approval process procedure, does not have to be done for all 15 corridor variants. On the other hand there are environmental concerns that act widely or favor any concentration effects (e.g. resting grounds of migratory birds). The comprehensive early-term inquiry can help to speed up the planning approval process. Drawing on lessons learned from the BESTGRID project the following advice for the methodology of the environmental studies can be given.

#### **Bird species protection at an early state**

Seven SPAs are in a narrow radius of the corridor variation setting. None of the tested corridor variants crosses the protected areas, which is very beneficial. The upcoming examination is though not limited to projects planned in a Natura 2000 site. It must also apply to projects which, although they lie outside of the protected area, can lead to significant impairments in it. The current jurisprudence of the ECJ and the Federal Administrative Court justifies that standard of review always are the stocks in each SPA whose stock degradation must be excluded with certainty. The assessment of its implications according to § 34 (1 and 2) BNatSchG is not only required for the approval procedures, but in particular already at the level of the Federal Sectoral Planning in accordance with §§ 4 ff. NABEG or in the regional planning process. Whether a significantly increased risk exists, must be clarified in each individual case in relation to the position of the overhead line, the respective species occurrence, the biology of these species and their special use of space at the specific site (assessment of a land use analysis). Although the special species protection is covered in the planning approval process, an early viewing of breeding and migratory species listed in the neighboring EU bird protection areas is therefore adequate for the required Natura 2000 preliminary and the initial coverage on species protection. So there are exchange movements between populations and between resting areas outside protected spaces that are used by birds on their migratory routes. However, since not all bird species are significantly affected by overhead power lines, it is from a NABU point of view sufficient on this planning level to consider only those species of breeding birds (5.1) and resting birds, which have a very high or high risk of collision on overhead power lines as well as the species that were assigned in the Red Lists of the states and the federation including the Red Data Book of migratory bird species in the categories 1, 2, 3, G, R and D. For these species it may occur to fulfill prohibition offenses. Among these are with the meadow breeders (waders) also those types of open land ground breeders that avoid lines for nesting. The corresponding passerine bird species living in open areas are distributed over the entire study area or unsteady at one spot and should be viewed in the planning approval procedure.

#### **Data availability**

According to the project developer it is sufficient on this planning stage, to only rely on existing data of the two German states to estimate the conservation conflicts. However, the results of the mapping of bird populations are on the one hand in the two countries very inconsistent and in Brandenburg without actuality represented. In the application documents, these data will be presented to the corridor analysis but not be considered separately. NABU considers it necessary to induce updating data, at least with the above presented corresponding restrictions for bird protection. At the latest on the approval procedure level current data secures a legally secure planning. The Federal Network Agency does also not exclude an update of necessary data for the planning: "Where there are no recent data for certain species, but data may be required on this planning level surveys are to be carried out for a FFH preliminary assessment in consultation with the Agency." (definition of the scope determination in accordance with § 7 (4) NABEG from 14 Nov. 2014, pg.13). Animal related ecological data may not be older

than 5 years in accordance with the authority (16). Facing the profound landscape change by the multiple extension of wind power in recent years, this restriction is appropriate.

Two sources for accounting of the relevant bird species are to be mentioned at this point additionally to suggestions given in the scope by the authority:

- Technical guideline (FNN/VDE 2014) „Vogelschutzmarkierungen an Hoch- und Höchstspannungsleitungen“
- Data request from the umbrella organization of German ornithologists (Dachverband Deutscher Avifaunisten, DDA) on current observations (from 2013), that were reported over the platform [www.ornitho.de](http://www.ornitho.de) for the affected regions

Although the mapping data are older than 5 years, it should still be allowed to also use the following source because of its good comparability of the published presence of birds as a reliable data base:

- Ryslavy et al. (2012): Die Brutvögel in Brandenburg und Berlin – Ergebnisse der ADEBAR-Kartierung 2005-2009, Hrsg. ABBO

Current data on resting migratory birds within the rough corridor are mainly missing in the application documents, for both Brandenburg and comprehensible for Mecklenburg-Western Pomerania. Here NABU assesses that mapping to secure predictions would be needed to estimate where a significant deterioration cannot be excluded. For the presentation of the most environmental goods, the existing data are sufficient.

#### **Consideration of protected sites**

Receivables of NABU were the consideration of legally protected habitats at the current process of spatial planning. Wherever the examined corridor includes ponds or lakes it should be expanded (about 500 m). Although the preferred type of 50Hertz variant of the surge avoids direct construction in the habitat, a spacious bypass, however, would reduce the potential negative impact (collision and avoidance) there on species composition. Since especially waterfowl potentially collide, the greater distance for all major water bodies in the planning area (all in Brandenburg) should be respected: Lake in Tornow, Baumgartener See, Grünower See, Großer Prähnssee. In the area of the Pasewalker Kirchenforst the existing route already runs along with two 110 kV overhead lines in parallel through the forest, so the new line should be performed in existing route. Then no new spaces are cut. The knowledge to be obtained on occurring habitat types must however secure this from a conservation point of view (see also 5.8).

#### **Corridor alternatives**

NABU also wants to give a general assessment to the corridor alternatives. Preferable to be taken closer into consideration would be basically the variation of the replacement within the existing route of the 220 kV line or the east variant bundled with the highway. However, the small bodies of water and water-dominated biotopes according to § 30 BNatSchG must allow a spacious bypass. An already recognized ornithological bottleneck is the Baumgartener See with its adjacent extensive grassland and reed beds.

## **5.8 Outlook on the scope for the planning approval procedure**

#### **Adapted pole design to environmental needs**

Based on the presentations of 50Hertz for pylon construction NABU takes note that the Donau pylon is technically and economically meaningful variation. However, it is assumed that a lower construction of pylons helps that the line is not as widely recog-

nized, thus protecting the landscape from a distant view and the avoidance space for breeding birds of open landscapes is reduced. The routing of the conductors on one level is expected to increase the visibility of the line for birds that usually approach flying horizontally. If it cannot be dispensed with entirely the particularly dangerous ground wire should be placed above the conductors as close as possible, so that the dangerous vertical space for flying birds is minimized. It is then less significant if only one or two ground wires are attached. The greater width of the one-level routing and their only slightly wider appearing electromagnetic fields can be tolerated at sites like open fields far from residential spaces as for operation no reduction of vegetation is necessary and hardly any people linger there. Clearly negative to assess is the fact that collinear pylons mean a larger land and material use, as the pylons must be closer together from load-related reasons. This has an impact on the landscape at close range, the soil and animals and plants. The choice of one-level pylons is always an item to be weighed up. In areas where no increased deterioration of landscape is proven and no particular interference with protected, ground breeding and power lines avoiding or collision endangered bird species is assessed, Donau pylons can be used. In areas where for the establishment and the protective strip trees need to be removed, Donau pylons should in principle be used also, as they are narrower. The use of alternative types of pylon in a compact design need to be quickly tested and examined under aspects of the acceptance of local residents, the landscape and the impact on birds.

#### **Bird protection by marking**

In the planning approval process, which is limited to the specified corridor, special species protection has to be taken into account. In areas where proven collision endangered species of birds breed or rest, bird protection markings must be attached to the ground wires of the line. The provisions of the recommendation stated in the guideline of FNN in VDE should be considered. NABU recommends movable, black and white markers, since their effectiveness is proven greater in tests than it could be detected on the Oder River (2012/2013) with the alternative spirals previously. However, bird protection markers minimize the collision risk of birds but not avoid this.

#### **Implementation of the power line replacement in the forest**

The construction of the new 380 kV power line means disturbance and change for animals within the route. To avoid disturbance, attention should be paid to breeding seasons of birds. When constructing in existing route, the construction activities in the forest of Pasewalker Kirchenforst should be done as environmentally friendly, gentle and space-saving as possible, so it does not have to imply a widening of the route by the removal of trees. Thus the construction can be made possible during operation of the line it would be to consider whether a temporary can be placed around the Kirchenforst during construction, as it was presented at the second round table event. The dialogue with the high voltage grid operator e.dis on possibly taking up one or both of their 110 kV systems should be continued. So the land use by power lines could be reduced in the forest. Since valuable open dry habitats partly developed in the existing route, it is a very worthwhile endeavor that 50Hertz plans an ecological route management for the forest area. Regular and sensitive care of the route section should focus the preservation of dry habitats and the structuring of forest edges.

#### **Outlook on compensation**

For necessary compensation benefits in connection to the replacement and new building of the transmission line NABU proposes an examination of the following compensation measures contemplating the areas characteristics:

→ Dismantling of additional power lines in the planning area as the old 220 kV line

- Retrofitting with bird protection markers on remaining unsecured 220 or 110 kV lines
- Restoration of potholes
- Create field copses
- Promotion of unused or extensively used vegetation of arable fields around pylon feet
- Nesting boxes on pylon stuts

## 5.9 Collaboration with the grid operator

The collaboration with 50Hertz went smoothly in terms of organization and dialogue. There were no limitations in terms of which stakeholders were allowed to participate and all input was allowed and treated without prejudice by the TSO. However, invited stakeholders did not necessarily recognize the importance of participation at this early planning stage and some occasionally showed distrust towards cooperation with a TSO. Never the less, the stakeholder events itself triggered productive discussions and were comprehensively evaluated. In terms of planning, it was positively received that 50Hertz consulted detailed cartographical material, integrated an alternative corridor option upon request of NABU and will take a variation of pole designs and ecological lining management into consideration on all future projects. Less well received were a lack of data on bird populations and differences of opinion between NABU and 50Hertz when it came to data acquisition, upper lashing of biotopes and the preference of bird protection markers. It remains unclear which and how the provided input on birds in the area will be implemented in the planning schemes and the completion of application documents, though. The discussion on the different subjects was open and led to more understanding of opposing argumentations. Overall, BESTGRID so far created a constructive work basis in which both sides felt comfortable and were able to give direct feedback. A critical but constructive dialogue can and shall be continued.

## Necessity and adequacy of the work done

Until the date of the first Network Development Plan the application, planning and approval was subject exclusively to the respective state authorities and the TSO, even with those projects for whose accelerated expansion the urgent needs have been identified and that were listed in the Power Grid Expansion Act (EnLAG). The lack of transparency and planning deviations between participating states led to repeated delays and a lack of acceptance by the public for projects at present in the process, which sometimes still persists and nourishes the skepticism about the projects now specified in the federal requirement plan (“Bundesbedarfsplan”).

With the significantly improved opportunities for participation by the NABEG the responsibility for the regional conservation actors to competently engage in the planning approval process inevitably grows, to accompany the Energiewende constructively while at the same time ensuring that conservation concerns in route planning and technology choices are given due consideration. This is what full-time and volunteer conservation and environmental organizations need to prepare for but also planning and conservation agencies of the state and federal levels, in order to avoid on the one hand damage to birds, soil, water, habitats and landscape as well as the fragmentation of natural habitats, but to prevent unnecessary delays in the energy transition.

Public acceptance of the grid expansion projects will depend on controversial issue of the demand, the usable technology options and the assessment of alternatives on the

one hand. Secondly, the location and the course of route corridors and the precise lining and pylon construction schemes at site are relevant triggers.

NABU is dedicated to find the best solutions for the Bertikow-Pasewalk project in terms of nature protection as early as possible instead of engaging in damage control afterwards. We are convinced that there are clear chances for nature protection through foresighted line planning, -management and compensation.

Measures to reduce adverse effects on certain species and habitats can cause strain on the local people that are higher or are perceived so and vice versa. So there are conflicts of interest the environmental organizations must provide and include in their strategy, communication and their receivables. It is necessary to oppose the allegation that environmental and conservation organizations prevent projects and purely ideological vote and to present itself as an active designer of a nature-friendly energy policy. Still underrepresented concerns for preservation of nature and landscape and the demand for their integration need to find consistent interest groups in the planning process.

The phrasing of concrete recommendations on the essential areas of conflict is essential for NABU to get involved in the complex debates. It is also important to know and to understand the restrictions or opportunities for other areas of interest. Only in this way a target and consensus-oriented network expansion can succeed.

## Expected benefits from the project

NABU managed to establish itself with its expertise as a recognized multiplier for a nature-friendly network expansion in the course of the project. The continuous contacts especially with the Federal Network Agency, other federal and state agencies and transmission system operators favor a profitable quality for NABU itself, 50Hertz and other TSOs and the NABU's umbrella body and BESTGRID partner BirdLife Europe. It turned out that there are opportunities for improvement or solutions for nature conservation conflicts that are technically and economically feasible and scientifically useful.

On some issues a constructive approach was shown, in which the network operators wanted to defuse conflicts with innovative standards and an open attitude. Using the example of foresighted proposals for route corridor alternatives makes this clear. Active participation in the development of standards to bird protection markings, pilot projects on an ecological route management and alternative compact designs of transmission pylons, even if they would change existing operating models, marks 50Hertz as a progressive business. At the same time it is necessary to designate the planning and implementation-related differences between TSO and NABU. This was done under the BESTGRID project and has led to a better understanding of the respective positions. A constructive discourse should build upon it and empower an environmentally friendly power grid development goal everywhere.

The TSOs have recognized also by collaborating with environmental organizations, the potential to achieve greater acceptance for their projects through a serious, prudent and transparent planning and communication of expansion projects. A pragmatic contemplation of NABU for a reduced to the essentials but for a quick energy transition necessary grid expansion is a necessary prerequisite.

The project falls into a phase in which particularly DC corridors from north to south have fallen into the public consciousness and enter the specific planning processes. The from network expansion affected citizens and conservation organizations must now perceive participation opportunities regulated in NABEG to put through their concerns and alternative recommendations. We must succeed in a further discourse on the need and the design of the network expansion to better engage especially local conservation actors. The project and its results represent a solid prerequisite for the necessary participation.

## Enclosures

### A. Event documentation

1. 50Hertz presentation of the kick-off-meeting
2. NABU minutes on the information events of 50Hertz in Prenzlau and Pasewalk in March 2014
3. Agenda of the Proposal conference of Bundesnetzagentur
4. Photo documentation of Round Table 1
5. Photo documentation of Round Table 2

### B. Stakeholders

1. List of Additional stakeholders from the conservationist or NGO sector
2. List of stakeholder institutions
3. Participant evaluation of Round Table 1 in Pasewalk
4. Participant evaluation of Round Table 2 in Prenzlau

### C. Input

1. Presentation of Round Table 1
2. Presentation of Round Table 2
3. Photo documentation of conflicting areas within the corridor setting
4. Mapping of conflicting areas within the corridor setting
5. Classification of the bird collision risk on power lines of protected bird species in the planning area