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Wednesday, 31 May 2017

cc:

Bundesamt für Seeschifffahrt und Hydrografie BSH
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Nord Stream 2 - Natural gas pipeline through the Baltic Sea from Narva Bay (Russia)
to Lubmin (Germany)

Planning approval procedure in accordance with Section 43(2) of the German Energy Industry
Law for installation and operation in German coastal waters, including landfall

Approval procedure in accordance with Section 133(1)(2) of the German Federal Mining Law
for installation and operation on the German continental shelf region

Espoo procedure for the transboundary environmental impact study

Letter from the BSH dated 7.4.2017 to WWF Germany, Baltic Sea project office, Official
announcement and display of the application documents by the Bergamt Stralsund (display
period 18.4.2017 to 17.5.2017 inclusive)

Our ref: 17-027 Nord Stream II – PK

Dear Sir/Madam,

I should like to notify you of the representations of the following institutions and associations in respect of the procedure cited as reference above:

1. WWF Germany, represented by the executive board member, Mr Eberhard Brandes, Reinhardtstrasse 18, 10117 Berlin
2. WWF–Baltic Sea Office, represented by Mr Jochen Lamp, Knieperwall 1, 18439 Stralsund
3. Bund für Umwelt und Naturschutz Deutschland (Friends of the Earth Germany), Landesverband Mecklenburg–Vorpommern e.V., represented by its chair, Prof. Dr. Mathias Grünwald, Wismarsche Strasse 152, 19053 Schwerin

Proper authorisation has been confirmed in my capacity as an attorney, if necessary, I can supply powers of attorney.

My clients hereby adopt the comments already submitted, or yet to be submitted after today, of each other as their own. The representations are simultaneously objection and statements as defined by the German Environmental Appeals act (UmwRG) (hereinafter: comments).

My clients argue that the planning approval applied for contravenes statutory regulations which are intended to provide environmental protection and which are of significance for the decision, and further that the planning approval applied for also contravenes statutory regulations that are not intended to provide environmental protection and are of significance for the decision. Both the WWF as a foundation and Friends of the Earth Germany, being a recognised nature conservation association, claim to be affected by the decision requested in respect of their statutory remit of promoting the objectives of environmental protection.

My clients also reserve the right to make further or supplementary arguments after the expiry of the time limit for public participation.

I should like to expand on the comments made by my clients as follows:

1. Absence of specification and assurance of compensation measures

The landscape management plan for the route section in the coastal waters of Mecklenburg–Western Pomerania and in the area of the landfall at Lubmin from March 2017 contains on page 286 the following passage with respect to the compensation measures:

All sets of measures have been assessed together with the nature conservancy authorities responsible in each case with regard to their suitability for the implementation of compensating substitution measures in accordance with Section 15, paragraph 2 of the German Federal Nature Protection Law. Further specification of the sets of measures in respect of their availability under civil law will show which sets of measures or partial sets of measures can be specifically established as compensation measure in the planning approval.

It is clear from this passage that it has not been determined at the current time which sets of measures are to be implemented and then specifically to be laid down in the planning approval as compensation measures.

An approach of this kind is not permissible.

Both the necessary compensation in accordance with Section 15 of the German Federal Nature Protection Law and the required coherence of compensatory measures according to Section 34(5) of the German Federal Nature Protection Law in the area of the habitat protection and any necessary definition of equalising measures brought forward as a consequence of nature protection legislation as determined in the third sentence of Section 44(5) of the German Federal Nature Protection Law and, where necessary, measures in measures programmes in accordance with Section 82 of the German Water Resources Law must be components of the planning application (hereinafter known consistently in the context described as: compensation measures). The planning application decision must conclusively determine which compensation measures have been defined and what these compensation measures are intended to compensate for.

The selection and attribution of the compensation measures must be made clear in the application documents.

Subsequent definition of the compensation measures is not permissible for a number of reasons.

On the one hand, keeping the definition of compensation measures from a selection listed in the application document open is in breach of the public consultation requirements. As part of the consultation of the public and stakeholders, the public and the stakeholders must have the opportunity to express their views on the intended measures. Although this does not mean that further amendments are not permissible after the public consultation. It is, however, impermissible during the course of the public consultation to present only a sort of offer for selection that can then be firmed up after the public consultation by the authority without the public having the opportunity to have any influence on this during the course of the consultation.

Since, in addition, the presentation of a selection list of this kind does not contain any information as to which measure is intended to compensate for what intervention or what effects, a qualified statement in this regard would also not even be possible, because the

congruence between intervention or impact on the one hand and compensation measure on the other hand, must be established and investigated specifically for the intervention or impact concerned. The application documents as presented do not permit this.

The presentation of a selection list of compensation measures yet to be concretely defined further breaches the requirements of Section 15(2) of the German Federal Nature Protection Law and against the requirements of the further compensation requirements of the specialist laws that have already been listed above. According to Section 15(4) of the German Federal Nature Protection Law compensation and substitution measures must be maintained and secured in law in the period required. In particular, legal assurance of the compensation measures must be in place at the time of the planning approval decision. To this extent it is not possible to make any statement at all regarding the legal backing of the compensation measures for the areas the availability of which has not yet been resolved (see landscape management plan, page 286). Thus the selection of the compensation measures does not only depend on the later decision by the authority, but also from external factors which have not yet been clarified at the time of the public consultation. The compensation concept presented thus is in breach of the legal requirements as a whole.

If the development proposal is maintained, it is necessary first to specify which interventions or impacts are to be compensated for by which measure. Then it is necessary to specify whether the compensation measures to be stipulated accordingly are actually available. Further, it must be stated precisely what impact and which intervention is to be compensated for by which measure and which safeguards and supporting measures are provided for this. A compensation concept of this kind shall then be re-presented for public consultation. Should the planning approval order result in the absence of corresponding consultation of the public, it would be unlawful because of the breach of public consultation and would fall victim to revocation or at the least non-enforceability in court proceedings.

2. Impermissible reference to the renaturing of the Ossenniederung

My clients' representations point out that an already planned and partially completed renaturing measure (reflooding of the Ossenniederung) has been impermissibly recognised as a compensation measure. This is not permissible. The approved measure is not a compensation measure for the project presented here. Were it to be permissible to define any measure that enhances nature retrospectively as a compensation measure for a future intervention, this would mean that it would be sufficient in order to balance out the impact of an intervention, and also in respect of the assessment of compatibility with regard to habitat conservation legislation, to go searching for a measure that has a positive impact on nature, and then to declare this the compensation measure.

Apart from this, a procedure of this nature would contradict the basic concept of compensation. Compensation is about balancing out an intervention in nature and the landscape proposed for the future by correspondingly enhancing measures at the same or a different place. Compensation of this kind necessarily requires that corresponding measures enhancing nature

are bound to the development proposal itself. Reference back to approved measures that have already been carried out or were approved in a different context is impermissible under the law.

3. Deficiencies in the FFH impact assessment studies

The FFH impact assessment studies, particularly the Bay of Greifswald margins and parts of the Pomeranian Bight FFH impact assessment study, are based on a scheme for the assessment of the significance of the adverse effects, which attempts to arrive at insignificance by means of a kind of gradual loss of function and an equivalence calculation in respect of the area possibly affected. The representations by my clients make reference to the impermissibility of this approach.

I should like to complement this as follows:

The finding of a merely gradual loss of function, or one limited in time, in respect of the adverse effect on the conservation objectives of FFH areas fundamentally fails to allow the conclusion that adverse effects of this kind are insignificant.

Any adverse effect on a conservation objective is significant on principle. Only those adverse effects that have no negative effect on any conservation objective are deemed to be insignificant.

(BVerwG, judgement of 17 January 2007 – 9 A 20/05 –, BVerwGE 128, 1-76, Rn. 41)

Fundamentally, thus, any adverse effect on conservation objectives is significant and must be assessed as being an adverse effect on the area as such. Only adverse effects which have no adverse effect on any conservation objective may be considered insignificant within the meaning of Article 6, paragraph 3 of the FFH Directive (cf. concluding applications by Generalanwältin Kokott to judgement C-127/02, Slg. 2004, I-7405, no. 85). The deviating suggestion of the EU Commission that the significance threshold should be positioned only at the “circumvention of conservation objectives” or the “destruction of essential parts of the area” (op. cit. no. 82) was not accepted in the judgements of the court.

The adverse effects on the conservation objectives offset with the result of the insignificance asserted therefore are deemed to be significant adverse effects for the purposes of the law so that the result of the study under habitat conservation law is not legally sustainable.

See also European Court of Justice, 11.4.2013, C-258/11.

The European Court of Justice, in the ruling cited, additionally notes that the finding of insignificance of adverse effects must be achieved on the basis of the best scientific knowledge and that there must be certainty, at the time of the regulatory decision, that there will be no adverse impact on the conservation objectives.

See also European Court of Justice, 26.4.2017, C-142/16

42 To this extent, it should be noted that there must be no reasonable doubt that it has no negative impact on the area concerned as such at the time of the grant of the decision with which the project is approved (judgement dated 26 October 2006, Commission/Portugal, C-239/04, EU:C:2006:665, Rn. 24 and the case law listed there).

A finding of this nature presupposes, inter alia, that there is an adequate basis for the forecast assessment of the impact of the consequences associated with the development proposal on the conservation objectives. A finding of insignificance would, according to the scheme applied here, thus only then be possible if, on the basis of a scientifically founded forecast (and not only on the basis of empirical values) it were to be possible to say with certainty that possible adverse effects both in respect of the space and also in respect of the species and in respect of the duration do not exceed a degree that corresponds to the natural fluctuations in a natural ecosystem. Statements of this kind are, however, not possible on the basis of the assessment scheme applied in the studies under habitat conservation legislation. This is true not only because the scheme itself is unsuitable, but also because corresponding experience of the adverse effects, their duration and their impact is not available and thus can also not be scientifically forecast with the certainty required by the habitat conservation legislation.

For this reason, the planning approval decision for the project can only be granted positively if a variance study is performed during the course of the process and this ends with a positive variance finding.

The precondition for the variance study and the variance decision is that the programme of Section 34(3) and 34(4) of the German Federal Nature Protection Law is worked through.

The incorrectness of the scale applied here for the significance test (for example, page 42 of the FFH impact assessment study on the Greifswald Bay margin) may be seen in the following example:

In order to quantify the loss of function, first an assumption is made as to how long it will take until that what is suffering the adverse effect has regenerated. There is no scientific basis even for the assumption that complete regeneration will occur within a period that can be forecast with certainty. A statement of this kind can only ever be an estimate, as many parameters of the impact on natural habitats or species are not known or are dependent on influences that cannot be forecast in advance.

Furthermore, it is also not clear what is meant by the function loss. Considering the indicators in Table 4-1 on page 41, it is not the conservation objectives but individual functions which have

been picked out because it is possible to quantify them, but which are not equally suitable as indicators for all conservation objectives.

An example: The parameters of salinity, oxygen content, nutrients, pollutants and plankton and pelagic fish included in the Hydrography and Pelagial indicator are not identified in respect of their significance for the conservation objectives of a FFH area. Thus it would be necessary to explain, for example, to what extent changes in the salinity, the oxygen content, the nutrients, the contaminants or the plankton have an impact on the conservation objectives for the FFH area. Colonisation by benthic flora and fauna typical for the habitat and interstitial species are named in the FFH IAS as the conservation objective for the LRT 1170 reefs. The parameters in the assessment method, however, have completely different impacts on this conservation objective. The significance of a change in salinity, oxygen content, nutrients or contaminants or of the plankton would have different impacts depending on the flora and fauna species, so that a standardised percentage evaluation of these parameters is incompatible with reality.

Then, as described on page 42 of the FFH impact assessment study, the percentage loss of function is converted into a value that is comparable for enduring adverse effects. The duration of a permanent adverse effect is set uniformly at 30 years for this purpose. If, therefore, an adverse effect lasts for three years, the function loss amounts to 10% of this permanent adverse effect.

The assumption that an enduring adverse effect must last for 30 years is not scientifically founded and also has not yet been established. For this to be so, it would be necessary to define the concept of the enduring nature of the effect on the basis of legal standards for significant adverse effects. The law makes the distinction between adverse effects that are merely temporary and those that are permanent. Jurisprudence has, thus far, not established a more precise identification of a merely temporary adverse effect (in the sense that the adverse effect is deemed to be insignificant by reason of its short duration). It can, however, be assumed with certainty that even adverse effects of less than 30 years are not assessed as being temporary. Temporary adverse effects should be at most adverse effects over the period of one or two vegetation or breeding cycles, but not adverse effects over 30 such cycles. This means that the assessment model cannot be reconciled with the requirements of the Habitat Protection Directive with respect to a critical indicator.

Furthermore, the assumption that a uniform standard can be assumed for a permanent adverse effect for each part of a conservation objective that is relevant for the assessment (that is to say for animal species, plant species, abiotic matter etc.) is incorrect.

This means that the FFH impact assessment studies and, in particular, those for the Greifswald bay margin and parts of the Pomeranian Bight region FFH area are deficient in respect of the FFH impact assessment study. The project would, thus, as has been shown above, only be permissible in the event of the grant of a positive variance decision. However, the corresponding basis for this is missing from the documents presented for the public consultation, especially the presentation of the compelling reasons of the overwhelming public interest and the necessity of the project for these reasons, the absence of viable alternatives and the coherence measures, which must not only be defined, but also be assured legally and in fact at the time of the planning approval decision as a precondition for a positive variance decision.

4. Lack of an alternative presentation and study of the routing on Russian side as part of the transboundary environmental impact assessment

The alternative study for routing required is missing on the Russian side. Routing along the existing transmission route for the Nord Stream I natural gas pipeline was not examined.

According to the requirements of article 5 of the Espoo convention possible alternatives must be examined as part of the transboundary environmental impact assessment. As evidenced by the Guidance on the Practical Application of the Espoo Convention (decision of the contracting parties of the UN–ECE convention, Work plan 2001 to 2003, paragraph 4) the transboundary shall be applied as follows with respect to the transmission of information in accordance with article 3 of the convention with regard to alternatives:

2.6.1 Selection of material

The documentation has to include all relevant items mentioned in Appendix II of the Convention. The identification of alternatives is usually felt to be the most difficult part in preparing the documentation but also among the most important ones. The alternatives set the scene for the entire assessment and thus they should be identified at an early stage.

According to Appendix II to the Espoo Convention, the environmental impacts must be described both for the project and also with respect of the alternatives examined. If an alternative of this kind is not examined, there is thereby simultaneously a defect in respect of the documentation required for the transboundary Environmental Impact Assessment.

5. Requested immediate enforcement

The application documents contain an application for a direction for the immediate enforcement of the approvals in accordance with Section 133(1)(1) and 133(1)(2) of the German Federal Mining Law.

The statement of grounds in this application is not sufficient for immediate execution to be ordered.

The document is dated April 2017. The statement of grounds states that the offshore construction works within the Bay of Greifswald FFH should be restricted to the period from the middle of May to the End of December. This would be a precise schedule, which would demand that "seamlessly thereafter" work could begin in the EEZ, so that it could then be restarted in the coastal waters.

The applicant is obviously assuming that, given filing of the application in April, a corresponding, immediately executable decision by the authority would be available as soon as the middle of May. This must be considered as divorced from reality.

Anyway, the project has not just come to light. The applicant should have been able to submit the documents earlier and hence in good time, so that an immediate execution would not be necessary.

If it is, however, the case, as the applicant writes, that the construction works have to be commenced in the middle of May, so that the schedule can be adhered to, it must be said that this schedule can, anyway, no longer be kept to the current year, in any event. This means that any necessity for execution of the planning approval decision exists no earlier than the middle of May in 2018. Thus there is already, at present, for reasons of fact no public interest in an immediate execution.

The statement of grounds for the immediate execution order is also untenable. It is said that pausing construction work would lead to considerable additional costs. All the time no approval has been given, the construction works may not yet be commenced at all, meaning that the works can also not be paused.

It is further stated that the majority of the contracts with subcontractors have already been concluded, and any delay would have to be subject to compensation.

Capital expenditure made or contractual obligations gone into before an approval decision is issued, do not have the protection of confidentiality and thus may not be taken into account in the consideration of interests for the instructing immediate execution.

OVG Mecklenburg–Vorpommern, ruling dated 17.3.2014, ref. 1 M 213/13, page 15.

Yours sincerely

Peter Kremer
Attorney at law



Stralsund Mining Authority

31 MAY 2017

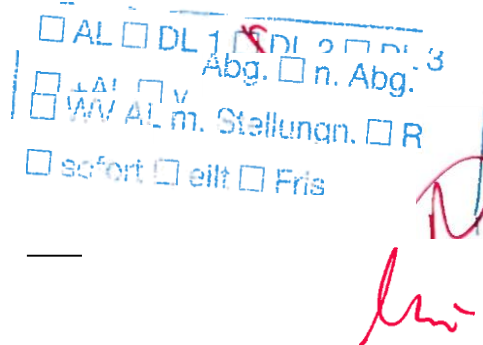
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Enclosures: _____

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Comment in compliance with the Espoo Convention on the Project for Construction and Operation of the Nord Stream 2 Natural Gas High Pressure Pipeline

31.05.2017

Dear Sir/Madam,

The WWF would like to give its opinion at the hearing of the entire group of Baltic Sea countries on the transboundary impacts of the Nord Stream 2 Project within the framework of the Espoo Convention. The WWF has been active with partner organisations in all countries of the Baltic Sea region and, as an observer at the Helsinki Convention, has been recognised as an environmental protection organisation for more than 25 years.

We appreciate that the Nord Stream 2 procedure is in compliance with the Espoo Convention in all countries - even Russia. Nonetheless, it must be noted that, despite improved knowledge of environmental impacts and more practical experience with the Espoo Convention by Nord Stream 2, the same gaps regarding the investigation of alternatives remain open as in case of Nord Stream 1, and that, despite the increased knowledge about nutrient load, contamination with munitions and their clearance and the endangerment of particularly protected species and habitats, the depth and scope of the investigation compared with Nord Stream 1 has been reduced during the additional Nord Stream 2 planning. Despite increased knowledge about the poor status of the Baltic region with respect to the criteria of the Water Framework Directive and the Marine Strategy Directive of the EU, the loads attributable to the pipeline project are trivialised on the basis that "If the Baltic Sea is already so heavily loaded, a few 100 tonnes more do not matter".

Processing of the full document package was not possible within the short time available, so we will provide further explanations in the runup to the discussions and will possibly present them at the hearing.

The application as a whole is neither suitable for implementation nor especially urgent or ready for decision and should not be approved.

The objections relating to the specific application documents are enclosed.

Yours sincerely,

Jochen Lamp
(Head of the Baltic Sea Office Stralsund)

Enclosure: Comment of the WWF on the application documents
The WWF Germany is part of the international environmental protection organisation World Wide Fund For Nature (WWF).

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Jochen Lamp
(Head of the Baltic Sea Office Stralsund)



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Enclosure: Comment of the WWF on the application documents

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Comment in compliance with the Espoo Convention on the Project for Construction and Operation of the Nord Stream 2 Natural Gas High Pressure Pipeline

1 General Aspects

After the Nord Stream 1 pipeline, the Nord Stream 2 pipeline project is the largest engineering facility to be installed in the Baltic Sea. In contrast to Nord Stream 1, where the operators were able to communicate to the permitting authorities that the pipeline is necessary to ensure the security of Europe's gas supply, Nord Stream 2 is a supply infrastructure which would transport natural gas to Europe even long after the end of the fossil energy supply as stipulated in the Paris Climate Agreement. While in the case of Nord Stream 1 the negative consequences for the Baltic Sea environment were accepted because the project was considered to be of overriding public interest for the Baltic Sea countries, Nord Stream 2 is a project which, according to the planning documents, is of "overriding private interest" (compare Chapter 5.4.4.4.2 of the application for the permission under mining law).

The project is subject to the Espoo Convention as the environmental impacts caused by the project directly affect the entire Baltic Sea (namely by induced nutrient inputs or emissions) or relate to species, populations or habitats (such as harbour porpoises, ringed seals, spawning areas for herring, dune habitats) that are important for the entire Baltic Sea system.

1.1 Suitability for application

Despite several years of project development, the planning documents indeed comprise a vast number of pages, but when it comes to important issues the documents remain diffuse and general. Technical planning for example seems to have matured, but the assessment of important environmental issues (updated munitions screening and clearance, assessment in compliance with international environmental directives (MSFD, WFD, Helcom BSAP, Ramsar) is rather incomplete, planning of environmental

measures, e.g. for the potential compensation of environmental damages e.g. in Germany, are in a sketchy preliminary phase (no surface availability, no reliable planning including measures, no reference to environmental impacts).

The WWF demands that without an assessable programme of compensation measures based on real availability of land, the technical planning for the pipeline must not be passed by the permitting authorities either.

1.2 Planning Justification/Demand

The planned construction of Nord Stream 2 is contrary to the climate protection and energy policy objectives of the Federal Government and the European Union. The “EU Reference Scenario 2016” (Prognos 2017: “Current Status and Perspectives of the European Gas Balance - Analysis of EU 28 and Switzerland”) underlying the demand planning for Nord Stream 2 and mentioned in the consulted application documents relating to Nord Stream 2 assumes a mostly stable European natural gas demand until 2050. The underlying EU reference scenario not only misses the energy efficiency objective of the EU of 20% energy savings by 2020, but also completely ignores the EU targets already agreed of > 7% cuts in consumption and of 30% cuts in greenhouse gas emissions by 2030. The EU and Germany have committed themselves to become climate-neutral by the middle of the century. Neither the Climate Agreement signed in Paris in 2015 nor Germany’s Climate Action Plan 2050 adopted in autumn 2016 are taken into account in the demand analysis for Nord Stream 2.

The WWF demands that planning of long-term infrastructure projects must be in compliance with Germany’s and Europe’s climate protection and energy policy objectives.

Natural gas rightly acts as a bridging technology whose end is already clearly foreseeable today. Thus, the current Projection Report 2017 of the Federal Government assumes a 10% cut in fossil gas demand for Germany by 2035.

Moreover, the WWF argues that the construction of Nord Stream 2 is also not justifiable for supply security reasons. In their study “Energy Union Choices - A Perspective on Infrastructure and Energy Security In the Transition” the WWF in cooperation with well-known partners showed that in a supply crisis in an important transit country, such as that prevailing in the Ukraine since 2015, a secure natural gas supply via alternative, already existing import infrastructures is possible.

Based on a Prognos study, Nord Stream asserts that the project is necessary and advantageous for the European Union both from an ecological and an economical point of view and that it contributes to the “diversification” of the natural gas supply and covers a future demand of the EU for natural gas. Here, there is a failure to recognize that with the Paris Climate Agreement the EU has committed itself to an exit strategy for fossil fuels until 2050 and is also willing to adhere to these obligations. One cannot speak of diversification if an existing pipeline is simply expanded by a parallel pipeline, but at the same time closure of an existing pipeline - through the Ukraine - is not excluded. It is not diversification but a concentration/monopolization of the infrastructure - and above all cost saving for the companies - if a second transport channel is established free from transit fees.

The forecast of the gas demand in the underlying study assumes that the EU does not meet its energy objectives - consequently there will be a high future natural gas demand, also after 2050. In the study “More security, lower cost - a smarter approach to gas infrastructure in Europe” the Think Tank Energy Union Choices (March 2016) paints a completely different picture: Assuming compliance with the EU energy targets, the demand for gas imports will reduce by 63% (120 bcm) until 2050 (demand for electricity + 29%). The study also calculates that none of the gas megaprojects (neither Nord Stream 2 nor the Southern Gas Corridor) are needed for Europe’s supply security - not even in situations of supply crises (compare: “More security, lower cost - a smarter approach to gas infrastructure in Europe” p. 24 et seqq.). The same study points out that the previous five demand forecasts (2003 to 2013) of the EU commission consistently overestimated the actual demand so that there is also reason for doubt with respect to the official estimate.

Should there be any doubts as to the need for the pipeline through the Baltic Sea resulting from calculations including the energy supply strategy of the EU adopted by the German Government, the WWF expects that the environmental concerns also identified by the government will be classified higher than the private monetary interest of an energy transport company to save transit fees.

The WWF calls for a suspension of the application process and for a review of the demand calculation on the assumption that the EU targets will be met.

1.3 Special Urgency

Apart from the schedule set by the applicant itself and the very costly commitments undertaken at its own risk, there are no reasons justifying the decision to proceed with infrastructure planning on a national and international scale such as the Nord Stream 2 pipeline and corresponding accompanying measures within a short timeframe (less than 3 years). The investment risk entered into by the applicant is entirely the responsibility of the company: the delivery of the pipes well before submission of the application, the ordering of pipe-lay equipment and further implementation measures well before the applications are submitted or even approved can only be called gambling on reliance on subsequent political sanction. It is neither common practice nor does time permit to expect that, upon application in March of one year, execution of e.g. munitions surveys in summer and filling of serious data gaps in the expert opinions, a project can be approved in the same year. The compensation measures in Germany are not only technically questionable - it is also not possible to professionally implement them without unpredictable legal risks if significant aspects are not checked in advance. Thus, the “Ossen lowland renaturation Rügen” identified as a priority measure since 29.05.2017 (Nord Stream 2 press release dated 29.05.2017) has not only already been largely implemented in another process and is therefore unavailable for compensation of the pipeline, but taking the legal aspects regarding species and the FFH assessments into consideration requires at least one full vegetation period for investigations in order to determine the current condition of species and habitats in the region and to derive a population or impact prognosis as well as associated mitigation measures. The same applies to other nature conservation measures which require a lead time of at least 1 - 2 years in order to make reliable statements on the future development.

The measures of the Nord Stream 1 pipeline have painstakingly demonstrated how hasty permissions on an unsustainable basis can counteract the implementation of nature conservation issues: The main region of the marine compensation measures in Germany off the coast of Peenemünde had been improperly planned although it was completely munitions-contaminated. The search for a replacement project then took several years - the natural area had to cope with the stress while the pipeline project was carried out without any delay. An order to properly assess the munitions-related contamination would have made the simultaneous approvability of the pipeline and compensation possible at an early stage.

The WWF considers the project to be unacceptable and not suitable for implementation and expects the permitting authorities to suspend processing of the applications until acceptable documents have been provided for all affected parts of the system (pipeline and compensation measures) in a correct time frame. A fast approval on an inadequate basis would be a formal defect which could result in protracted litigation (see Elbe judgements).

1.4 Assessment of Alternatives

Already during the planning of Nord Stream 1, the WWF and environmental associations had cited a lack of assessment of all possible alternatives with respect to the environmental impact, as also required by the Espoo Convention. An assessment of the environmental impact of the onshore alternative as well as the offshore alternatives is called for by Espoo. The onshore alternative or the previous land route through the Ukraine respectively is as little assessed as the zero option. The zero option is said to have no negative and no positive effect and is therefore not relevant (p. 8 Espoo Document). This, however, presumes the need for such a pipeline, which we denied above.

Alternative in Russia: The applicant argues that, although a connection of the pipeline in the Russian area at the northern shore of the Gulf of Finland parallel to Nord Stream 1 would possibly be more environmentally compatible, this alternative route had not been considered further for structural policy considerations (supply of a fertiliser factory and parts of St. Petersburg) and because of technical standards in Russia. It is not a question of political solutions favoured by the client, but of the route alternative most suitable for the environment. The analysis has been made for the offshore routes, but not for the onshore alternative.

The WWF does not consider this reasoning to be in line with the requirements of the Espoo Convention and asks the applicant to submit a detailed assessment of the onshore route from the pipeline hinterland connection to the landfall of Nord Stream 1 for verification.

1.5 Dismantling

For the additional loads on the Baltic Sea system caused by the pipeline, the WWF expects a delineation of the compensation for damages which is then to be submitted to the permitting authorities.

The potential pipeline dismantling measures have also been presented in the Espoo report (p. 555 et seq.). Different concepts are presented which consider everything from

complete dismantling up to complete preservation of the installation on the seabed. The WWF considers it difficult to predict the appropriate dismantling method 50 to 100 years in advance. Nevertheless, the decision to build such an installation must be accompanied by the guarantee that the installation will be dismantled after the end of operation. Even though the method is not specified, from today's perspective the most extensive dismantling must be assumed as a basis for planning. In order to ensure this in the future, the permitting authorities, when granting permission, should urgently require the applicants to lodge a financial security in a legally binding way to enable dismantling of the pipeline in 100 years. The current construction costs for pipe-laying plus the inflation-related interest of this sum over 100 years can be used as an approach to this.

The WWF urges the authorities not to grant any permission without such guarantee.

2 Environmental Aspects with an Impact on the Entire Baltic Region

2.1 Global, EU and Helcom Obligations (Ramsar, WFD, MSFD, BSAP)

Planning of a pipeline across the Baltic Sea is subject to a number of international environmental regulations. As the pipeline affects several sub-regions of the Baltic Sea and both national as well as EU nature conservation law are concerned and the water bodies are addressed by the EU Water Framework Directive and also the Marine Strategy Directive, stringent requirements apply here. Simultaneously, the stipulations of the Helcom action plan (water quality and Baltic Sea protected areas) and the Ramsar Convention (wetlands for waterbirds) are immediately concerned and impacted. Individual protected species such as the harbour porpoise population in the Baltic Proper with 450 animals or the ringed seal populations in the Gulf of Finland are directly affected by the measures. Both the EU and the Helcom states have committed themselves to form a network of well-managed protected areas in the Baltic Sea. The pipeline project crosses several such protected areas in Germany, Sweden and Russia (Ramsar area). Through the network - and of course as migration stepping stones - these areas are interconnected and interdependent. The initial assessment of the MSFD confirms that the German Baltic Sea waters have a poor ecological status. All essential features and components of the ecological system are heavily loaded or impaired and do currently not have the desired good environmental status.

<http://www.meeresschutz.info/index.php/berichte.html>

The current management plan in compliance with the Water Framework Directive (WFD) comes to a similarly worrying evaluation. The ecological status of the water bodies traversed by NSP2 is classified as “unsatisfactory” and the “good” chemical status is not achieved either. In spring 2014, the German Federal Agency for Nature Conservation (BfN) published the new Red List of marine species in the North and Baltic Sea. Thus, one in three species is endangered, while another 30% lack the scientific basis to evaluate their endangerment. In addition to bottom trawling, scientists hold the gravel and sand extraction and excessively high nutrient inputs responsible for the alarming development.

http://www.bfn.de/0322_veroe.html)

In various recommendations and action plans, the member states of the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM) have obligated themselves to reduce the pressure on the Baltic Sea caused by nutrients and pollutants, shipping, fishing, etc. The HELCOM Report “Ecosystem Health of the Baltic Sea” published in 2007 revealed that except for small areas in the Bothnian Bay none of the investigated sea areas was in a good state. Consequently, the “Baltic Sea Action Plan” was adopted in order to solve the most urgent problems by the year 2021. The HELCOM Red Lists indicate 42 species and 16 habitats endangered by human activities.

<http://helcom.fi/Lists/Publications/BSEP122.pdf>)

This high background load and the poor status of the Baltic Sea is used as an argument by the applicant to demonstrate that further deterioration caused by NSP2 will be insignificant or too low to be considered. We disagree with this view. Instead, the poor status of the Baltic Sea, i.e. failure to meet the targets of the relevant environmental and nature conservation directives, forbids any further deterioration. In the following, it is shown in detail that the Nord Stream 2 project can result in such a further deterioration or is likely to further delay the achievement of the targets set by WFD, MSFD, FFH-D and BD. The existing infringement proceedings are only mentioned in passing here. Against this background, the Nord Stream 2 project does not seem to be approvable.

2.2 Nutrients

Eutrophication caused by excessive nutrient loads is rightly identified as the central problem for the health status of the Baltic Sea. Helcom and the Baltic Sea countries have been working on the amelioration of this status for decades. In the meantime, the pressure which was initially confined to certain water sections/subareas now affects the entire water body - in some areas the bottom zones are oxygen-free thus being excluded as habitats. The Espoo documents indeed admit an increase of the nutrient load of the water body by the pipeline project, however, with reference to the “natural” background load it is assessed as not significant.

For the identically constructed Nord Stream 1, the company reported 4000 tonnes of additional mobilisation of phosphorus and 1% of the annual inputs into the Baltic Sea for nitrates. In the present documentation on Nord Stream 2, there are no figures for the expected overall load scenarios for N and P. Since the intervention works are almost identical to NSP1 - except for reduced burial depths - we assume that nutrient releases of comparable proportion also apply to Nord Stream 2.

The WWF considers the applicant’s assessment of the nutrient load caused by the pipeline to be misleading and manipulative: Instead of presenting the high load status as an initial status of a disturbed water body, like a patient already suffering from a serious illness where every additional load can initiate system collapse, Nord Stream describes the nutrient mobilisation by the pipeline as “not significant” supported by the statement: given 5000 tonnes of phosphorus background load in the Pomeranian Bay, 239 t of phosphorus by the pipeline would have an insignificant impact. The nutrient inputs into the Baltic Sea are not natural as is suggested, but caused by numerous anthropogenic sources, among others also the construction of Nord Stream 1.

2.3 Suspended Sediment Load

While “Seabed intervention works” played a major role during NSP1, this aspect is largely de-emphasized in the current planning. In fact, the documents show that up to 700 km² (equivalent to a good 70% of the surface of Rügen) will be impacted by suspended sediments. As a comparison, the natural spreading caused by storms and currents is mentioned here. The same applies here: the turbidity induced by NSP2 is an additional factor to the preload of the Baltic Sea (no storm will be prevented just because a new pipeline is being built).

In addition, more than 100 areas will have to be supported by rock placement in the case of NSP2, so that the pipeline lies safely on the seabed.

2.4 Munitions

Given that according to the plan the pipeline extends through the entire Baltic proper and the Gulf of Finland, the entire area must also be considered with respect to munitions. It is presumed that about 300,000 tonnes of conventional and up to 65,000 tonnes of chemical munitions are located in the German Baltic Sea. Core areas for chemical munitions are located near Denmark; mine belts and further dumping sites are located in the Swedish, Finnish and Russian part of the route. Therefore, there is a latent high risk of encountering munitions when implementing infrastructure projects.

In 2011, after several years of work by a German Federal Government/Länder working group on behalf of the ARGE BLMP, an evaluation report was presented (http://www.schleswig-holstein.de/DE/UXO/Kurzfassung/kurzfassung_node.html) describing the current situation of all types of munition in German marine waters and expressing recommendations regarding handling of the remnants of war. Since then, progress reports (http://www.schleswig-holstein.de/DE/UXO/Themen/Fachinhalte/textekarten_Berichte.html) are published at regular intervals and are discussed in an international context with the Baltic Sea countries and international initiatives such as the “International Dialogue on Underwater Munitions” (<http://underwatermunitions.org/>). Simultaneously, different research projects were launched which are in particular meant to develop and assess alternative clearance methods.

It is incomprehensible that Nord Stream 2 seems to consider the munitions topic to be so uncontroversial that they have dispensed with new thorough surveys. (Compare Espoo Specific Topic Areas p. 309 - 314). Thus, they state under 9.13.1.5. Munitions in Germany:

“As part of the planning for the construction of the pipeline, Nord Stream 2 AG initially collected and analyzed all available information on areas suspected to be contaminated with explosive ordnance, in particular on minefields and areas for the disposal of conventional and chemical munitions in the Baltic Sea.” The results of this collection can only be called entirely insufficient and incomprehensible in terms of its seriousness. No reference is made as to the sources and information accessed and it is not clear if a current and complete assessment of the situation along the route is available.

Although the detection methods and the assessment regarding the extent and handling of old munitions have made considerable progress over the last seven years since the last planning phase, the project investor partly relies upon the old data, the necessary investigations had not been completed at the time of the assessment or new data sources and research projects remained unconsidered.

Thus, investigations on **conventional munitions** in Russia were carried out in April 2017; however, no results are as yet available. The data collection in Finland will also be delivered later. In 2016, a visual inspection of two corridors was undertaken in Sweden. Apparently, no new additional investigations were carried out in Denmark and Germany after construction of the first pipeline.

Even despite the further development of modern detection technology enabling the location of old munitions even in the sediment, no new screening was performed.

NABU calls for the detailed disclosure of the analysis of all available information on minefields and munition dump sites alluded to in the Espoo Report.

It may be doubted that all of the possible sources also mentioned in the following were covered exhaustively. At the same time, we would point out that the position of munitions in the sediment changes dynamically over the years and that anthropogenic activities such as bottom trawling or gravel and sand extraction cause active displacements. The progress report by the Federal Government/Länder working group Munition in German Marine Waters published in 2016 (http://www.schleswig-holstein.de/DE/UXO/Berichte/PDF/Berichte/ad_blano_fortschritt2015.pdf?__blob=publicationFile&v=8) states that two grenades were displaced and detonated near the Nord Stream pipeline. This is further proof of the dynamic displacement of munitions in the Baltic Sea area in comparison to the NSP1 investigations.

As a consequence, a new and up-to-date survey of the planned route of NSP2 in a coordinated process using state-of-the-art technology is indispensable. The results must be attached to the revised planning documents.

The construction of NSP1 has already shown that old munitions along the route must be anticipated. As a result of the environmental impact assessments, 100 old munitions (http://www.nord-stream.com/.../file/.../nord-stream-by-the-numbers_177_20131128.pdf) were removed from the seabed to ensure safe routing.

As circumvention of potential munitions finds by diverting the route cannot be ensured in every case, a detailed concept for munitions clearance must be prepared and presented. Given that, according to the current state of scientific research and considering the stipulations of the EU Marine Strategy Framework Directive as well as the FFH Directive, the underwater detonation of munitions is not an option, the concept must include the use of state-of-the-art clearance technology. The condition of the munition determines the hazard potential and the technique to be used. The MIREMAR international conference (<https://schleswig-holstein.nabu.de/natur-und-landschaft/aktionen-und-projekte/munition-im-meer/miremar/13081.html>) held by NABU in 2010 has provided an overview of clearance technology already existing today. Among others, this includes the use of underwater robotics, mobile detonation chambers, water cutting and photolytic destruction methods.

An additional chapter is to be compiled in which environmentally compatible clearance methods according to today's state of scientific research and technology are discussed and an alternative clearance concept and accompanying mitigation measures for the protection of endangered and protected species such as the harbour porpoise, seals and

fish as well as protected habitats are presented and proposed. Without this concept, it is inconceivable to carry out any preparatory construction work.

In the meantime, there are several joint projects in Germany or at a European level with German participation addressing the potential impacts of munitions on the marine environment (DAIMON project)

(<https://www.thuenen.de/en/fi/projects/daimon-how-to-manage-dumped-munition/>), and also the detection and environmentally friendly salvage and disposal of old munitions (project UDEMM (<http://www.munitionsraeumung-meer.de/en/national-research/udemmm/>) and the RoBEMM project (<http://www.munitionsraeumung-meer.de/en/national-research/robemmm/>)).

The WWF calls for evidence that recent results of the projects mentioned are incorporated into the Nord Stream 2 planning and that an environmentally compatible salvage and disposal concept for potential munitions finds and different types of munitions are prepared and attached to the planning documents.

In the framework of the preliminary investigations regarding **chemical munitions**, only the Danish area was considered as it is assumed that no old chemical munitions can be found in the other areas. The Espoo Report itself states that the analysis methods have advanced and been refined over the last few years. It may be that additional deposits of chemical munitions are therefore identifiable. **Correspondingly, further chemical analyses of the sediment along the planned routing are to be carried out.** After all, there is no doubt that chemical as well as conventional munitions have already been dumped “en route” on the way from the port of embarkation to the dumping sites. However, the research of old documents in German archives and in archives of the Allies has not yet been completed so that no such general clearance (free of chemical or conventional munitions) can be granted for any marine area.

The statement under 9.14.2.1 Chemical warfare agents that “[...] *shell casings of many chemical munitions have corroded over the time and CWAs have been released into the surrounding marine environment, where they have been accumulating in the seabed sediments.*” remains unclear. It is generally known that chemical munitions were often installed in the grenade in glass cartridges which do not corrode, but rather are not chemically detectable until displacement or mechanical destruction.

This confirms the urgent necessity for a complete preliminary investigation of the total planned route using state-of-the-art chemical and physical detection technology and additional video techniques.

As some countries will only be carrying out their environmental impact assessments in the coming weeks, an evaluation of the total project and its impacts is not possible at this point in time - a term of six months for follow-up investigations and re-participation is requested as, in compliance with the precautionary principle, an evaluation on the basis of today’s data is impossible.

2.5 Protected Species

2.5.1 Harbour Porpoise

The harbour porpoise population in the Baltic proper, comprising up to 450 animals, is directly impacted by the pipeline. They are present both in the German area of the Pomeranian Bay at certain times of the year and also in the area south of Gotland where a main breeding site is assumed. The area south of Gotland was only identified after the construction of Nord Stream 1 and is of great importance for the entire Baltic region. The pipeline would cut through the centre of the Natura 2000 site recently designated by the Swedish government for the area. The applicant's view that the project would have no impact on the harbour porpoise cannot be shared. The sole statement to have sent a corresponding report to the Swedish government does not allow any verification of content and methods. Given that animals from the entire Baltic area may also potentially be concerned, the WWF expects that the reports are made available to all other Baltic Sea countries too. The WWF asks the permitting authorities not to carry out any further processing of the application documents in this respect if no transparent public participation is possible across the entire Baltic region.

2.5.2 Ringed Seals

(Refer to 3.5.4 Ringed Seals)

3 Area-related aspects with an environmental impact

3.1 Germany

3.1.1 Nutrients

The project initiator sets out the calculation in terms of “natural background pollution” of the German area, whereby the additional mobilisation of phosphorus pollution is depicted as being marginal. In the Bay of Pomerania alone, the phosphate input is increased by 239 tonnes, while the figure for the Bay of Greifswald is 15 tonnes. The fact that existing levels of pollution for the Bay of Pomerania are said to be at 5,000 t/a is a reason for the applicant to claim that this is not significant or substantial. However, the opposite is the case: this would mean additional pollution of a severely affected system which is currently far from being in a well-maintained state according to the Water Framework Directive and the Marine Strategy Framework Directive. The measures proposed by the company for Germany relate only to the Bay of Greifswald – and here only indirectly through a reduction in nutrients in a drainage area of the Kleiner Jasmunder Bodden. Measures are urgently required to compensate for the 239 tonnes of phosphorus input caused by Nord Stream 2 in the Bay of Pomerania.

3.1.2 Suspended sediment

One positive aspect is that in Germany the organic sediments caused by the construction of the pipeline are to be consistently placed on/transported to land. It is imperative that the approving authority requires the project initiator to implement this on a compulsory basis. Nonetheless there will be a sufficient quantity of suspended sediment in addition to the existing natural material for key functions of the Bay of Greifswald to be

impacted. A study carried out by the Thünen Institute dated 29 May 2017 showed that reproduction has decreased considerably in the Baltic Sea's most important body of herring spawn for climatic reasons. For this reason, additional impairment caused by clouding of the water in the sensitive initial youth phase of the fish is definitely to be assessed as significant – even though the cause of the main pollution is a different source.

3.1.3 Munitions

In the German Baltic there are assumed to be some 300,000 tonnes of conventional munitions and up to 65,000 tonnes of chemical munitions.

Even though new insights and methods have been developed in recent years for the detection of munitions (see above), Nord Stream has once again failed to carry out detection for the Nord Stream 2 pipeline section in the German area. The munitions recovery service has also acquired new insights and the polluted areas in German waters have been significantly expanded in Mecklenburg-Western Pomerania (verbal notification). The WWF expects a survey to be carried out again for the pipeline section in the German area.

3.1.4 Habitats

A number of Natura 2000 areas are crossed within the German region. Laying the pipeline through such areas is essentially to be regarded as an intervention and is treated as such in the documents.

One specific habitat here is the bay threshold between the Bay of Greifswald and the Bay of Pomerania. This is a marl cliff which is also protected as a geotope under German nature conservation law. The habitat cannot be restored since it was formed in this way during a glacial period. The surface structure can be recreated but it is not possible to restore the cliff's ecological value.

Breaking through the cliff can only be classified as FFH incompatible. This means that at most it would be possible to obtain conditional approval based on a detailed, exceptional FFH examination.

The pipeline is to be embedded into the bay threshold as well as in most of the German areas. For this purpose, the trench is to be filled in with gravel material in part. Very little evidence of the origins and environmental compatibility of gravel extraction is provided, and the same is true of any material that might be necessary for potential underpinning of free spans to stabilise the pipeline in the EEZ area. The project can only be objectively assessed if the relevant documentation is submitted. Here again, the planning cannot be described as ready for the application stage.

3.1.5 Compensation measures

In the German area, the project initiator has calculated compensation measures of considerable scope: apart from the fact that these have been arrived at by questionable means using a kind of “hybrid costing”, the planned measures are to be assessed as anything but transparent. No plans for concrete measures have been submitted: Nord Stream II talks of “proposals” and these are consequently lacking in any concrete detail. Instead they resemble rough project sketches rather than plans or even preparatory plans. The central Ossen/Rügen measure proposed by the project initiator's press office is already covered by other plans already approved, much of which has in fact already been implemented. It seems highly questionable to pursue

this measure further and count it as compensation for intervention in the marine area. The drainage area of the Ossen is located in the Kleiner Jasmunder Bodden and not in the affected marine area of the Bay of Greifswald. While the measures outlined are welcomed by the WWF in terms of their character, in the present form – and since it is not foreseeable that Nord Stream will ever have these areas at its disposal – the project as it stands is currently without compensation measures. In view of the run-up period required for FFH examinations, assessments under species protection law etc., it will be necessary to allow at least one year to prepare an application and one year for approval planning.

The WWF calls on the approval authorities not to accept the compensation proposals put forward: the applicant should be required to develop new measures and instructed not to submit these until they have been fully elaborated and are ready for application. The WWF insists that no approval should be issued for the construction of the pipeline until planning for any compensation measures is sufficiently advanced for the purposes of approval.

3.2 Denmark

For the Danish area, the same aspects largely apply as for the area as a whole in terms of nutrient pollution, the impact on porpoises and general environmental pollution. Since no specific information is provided regarding pollutants in the Danish area and modelling for this purpose has not been planned or implemented as for Russia and Finland, more information has yet to be provided as to how pollution is to be assessed for the intervention area in Denmark and the appropriate modelling is to be carried out.

3.2.1 Munitions

Although the Danish area contains the biggest munitions contamination area and it is to be assumed that conventional weapons were dumped here too, the basic investigation for Nord Stream 1 was regarded as sufficient and no new detection has been carried out. In line with the procedure in the Swedish area, the WWF calls for a repeat investigation of the Danish marine area for conventional munitions, also using the latest insights and methods relating to chemical warfare agents. (Cf. the section above entitled Munitions).

3.3 Sweden

The overall situation as described above applies in terms of nutrients and the impact of suspended sediment. In contrast to Russia and Finland, there is no modelling for pollutant contamination. This must be carried out.

3.3.1 Munitions

With several mine belts and munitions dumps as well as the munitions findings and detonations in connection with Nord Stream 1, Sweden is one of the main areas affected by munitions. It is true that, unlike other countries, an investigation has been carried out for conventional munitions in Sweden. However, Swedish waters also include dump areas for chemical warfare agents. Another more detailed investigation is called for here, as is also necessary for Denmark.

3.3.2 Natura 2000 / species protection

The documents for the project mention the existing conservation areas in the Swedish

marine region and state that the species in the area will not be significantly affected. The new Swedish protection area for porpoises is mentioned, though it is depicted as not being significant with reference to a report submitted to the Swedish government. Since the new protection area would be completely cut through by the pipeline and this area is the main reproduction area of the Central Baltic population according to the latest porpoise research, the submission of a report to the government is not sufficient. Here it is necessary to establish complete transparency and also indicate alternative route proposals. As such, planning for the Swedish area is not capable of approval.

3.4 Finland

3.4.2 Nutrients

The Gulf of Finland is one of the worst nutrient-contaminated areas in the Baltic Sea. Suspended sediment will rise in the Finnish area too, not just due to impact from the Russian border area. The planned munitions detonations will also release nutrients and suspended sediment that will additionally impact on the ecosystem. The documents do not provide any specific details of how much suspended sediment will be released in the Finnish area.

3.4.2 Pollutants

The measures will release toxic pollutants into the water column in the Finnish marine area, even though the levels of pollution will not be as high and as continuous as in the Russian area. The levels for PAH (polycyclic aromatic hydrocarbons) are exceeded over an area of 118 km² in the Finnish marine area for 19 hours, the levels for dioxins and furans for a period of more than seven hours. Nord Stream regards this as insignificant. WWF deems a remobilisation of these dangerous pollutants from the sediment to be fundamentally unacceptable.

3.4.3 Munitions

In the Finnish area, considerable pollution can be anticipated due to munitions clearance. In Section 9.13.1.2, the project initiator states that no detailed studies have yet been carried out in terms of concrete suspected munitions sites in the Finnish area. This means that there are no meaningful documents for assessment purposes relating to this important area.

WWF calls on the Finnish approval authorities not to issue any further approvals until the relevant detailed investigations into munitions have been carried out and to require the relevant documents to this effect to be submitted. The WWF is unable to carry out an assessment based on the documents available – we will provide further comment as soon as we have been provided with the relevant basis. The data relating to the impact on marine mammals already suggests that in the Finnish area there will potentially be a direct impact on porpoises and ringed seals from detonations.

3.4.4 Marine mammals

In addition to the very sporadic evidence of porpoises, grey seals are affected in the Finnish area and in particular the subpopulation of ringed seals. (See 3.5.4 Ringed seals)

3.5 Russia

3.5.1 Nutrients/suspended sediment

For decades now, the Gulf of Finland has mainly been affected by nutrient pollution from the St. Petersburg region, with large quantities of nutrients having been deposited in the sediment. The construction measures would suspend large quantities of the sediment and be deposited on the seabed as suspended sediment with a thickness of 0.5 cm. In Russia there will be increased suspended sediment pollution over a surface area of at least 265 km².

The levels to be assumed in Russia are 5.4 P/kg of sediment and 10 N/kg. In terms of the 40,000 tonnes of released suspended sediment, a release of 400 t N and 226 t P has to be assumed in the Russian area alone (plus nutrients from munition detonations). Even though they only partly dissolve, such releases are to be avoided. Since no details are provided here that nutrient-polluted soil is to be placed on land or at waste disposal sites as in Germany, this pollution is in itself an indication that the application is not ready for approval. Nord Stream assumes a mean value for the entire pipeline route, thereby failing to take into account the specific details of the Gulf of Finland as a subsystem of the Baltic Sea.

3.5.2 Pollutants

As in the case of the nutrients, the pollutants in the Russian area are the most severe contaminations over the entire pipeline route. The pollutant limits are exceeded for PAH (polycyclic aromatic hydrocarbons) over a surface area of 172 km² for more than 35 days, for dioxins and furans for up to 32 days over a surface area of 108 km² and for zinc for over 30 days over a surface area of 53 km². Nord Stream 2 describes the significance of these levels as high but classifies sensitivity as low. The company fails to draw any consequences in terms of dealing with these polluted sediments. WWF regards this exceedance as severe and calls on the approving authorities to require the same standard as in the German landfall area in terms of the treatment of dredged material, where polluted sediment has to be taken to waste disposal sites and compact material has to be brought onto land. WWF regards these pollution levels as a reason to deny approval capability.

3.5.3 Munitions

In the Russian area there are not only high levels of pollution due to munitions: the existing mine belts also mean that there is a high probability of large numbers of mines having to be blown up. This will result in significant endangerment of marine mammals as well as the suspension of sediment along with the pollutants and nutrients contained in it. The state of the ringed seal population is described above in connection with the Finnish area, and this applies likewise to the Finnish-Russian border area. In the case of an estimated population of 40 animals, it is unacceptable even for individual animals to be put at risk by mine blasts. Here, further consideration and assessments are required in order to protect these animals or the Kurgalsky pipeline section is to be avoided.

3.5.4 Ringed seals

At the beginning of the 20th century, ringed seals constituted the largest seal population in the Baltic Sea, comprising a total of approx. 200,000. As a result of selective hunting, climate change and environmental pollution leading to sterility, the number of ringed seals was reduced in the 1980s to 5,000 and has since recovered to 15,000 - 20,000. The current situation of the ringed seal population in the Baltic Sea is summarised in the following WWF study: WWF Finland Report – The Baltic Ringed Seal, Ahola et al.

2017 (Download: <https://wwf.fi/mediabank/9825.pdf>).

The ringed seal population in the Baltic Sea is subdivided into four populations. The smallest of these comprises 100 individual animals and is located in the **Gulf of Finland**. The following section looks at the occurrence of ringed seals in this area according to adjacent countries.

The main resting sites of the ringed seal in **Russia** are the coastal area of the Kurgalsky peninsula at the Narva Bay and the Moshchny and Malvy Island reefs to the north-west of it. Here there has also been a sharp decrease in the population in recent decades. More than 100 ringed seals were counted here in the 1990s, while in the years 2009 - 2012 no more than 40 animals were observed resting. At nearby Malvy Island, sighting figures dropped from 10-15 to 2-3 individuals.

Helcom published the results of a ringed seal radio marking investigation as part of the BALSAM project in 2015: <http://www.helcom.fi/baltic-sea-trends/data-maps/biodiversity/seals>. This also shows that the waters of the Narva Bay and the islands to north of it constitute a key ringed seal habitat. In **Estonia** the last ringed seal populations have been observed around the islands of Vaindloo and Uhiju. The entire Estonian coast was once inhabited by ringed seals.

In **Finland**, most ringed seals in the Gulf of Finland have been registered on ice floes in the easternmost area near the Russian border, with a maximum of 16 individuals. At the Hamina archipelago there have been individual sightings of young animals. This report shows clearly that the main area of distribution of the highly endangered ringed seal in the Gulf of Finland overlaps directly with the sections shown in the project area where the level for a permanent and temporary hearing threshold shift is exceeded for seals in connection with the detonation of munitions. It must therefore be assumed that the noise of underwater explosions (M1-M3 in Russia and M1 in Finland) would reach the ringed seal habitats situated in this area and that individuals of the protected species would be killed by the blast wave. Even though some colony sites are not located in the direct environment of the detonation, it is impossible to prevent ringed seals from being in the sea water in the immediate surroundings of the blasts. The probability of this occurring is in fact very high since the colonies (see above) are situated around the planned detonation centres (M1-M3 in Russia and M1 in Finland) and the animals pass back and forth between the colonies, so ringed seals could be directly impacted by the blast.

3.5.5 Landfall in Kurgalsky Peninsula/Bay

The pipeline section in Russia runs through the Ramsar conservation area of Kurgalsky Peninsula and Bay. This area is not only registered as a protected area under the Ramsar Convention, it is also listed as Baltic marine protected area under the Helcom protected area concept. The measures involved in laying the pipeline are described in the report, but the appropriate conclusion is not drawn: WWF regards the only option here to be complete avoidance of the area, as is the case with the southern alternative route. WWF unmistakably calls for the pipeline section on the Russian land side to be shifted to the north, parallel to the Nord Stream I pipeline.

The protected dune landscape is made up of non-reclaimable material and cannot be restored.

All in all, planning for the entire landfall area in Russia is subject to significantly less rigorous environmental requirements than in Germany. If Kurgalsky was to be considered as a landing point at all, the same standards would have to be applied as in Germany: i.e. tunnelling through the dune areas and moors using microtunnel

technology subject to the same conditions as in Germany, moving all contaminated or nutrient-polluted excavation material onto land and to tipping areas, layered sediment shift and avoiding disruption of the ringed seals in the area in question between Kurgalsky and Finland. It must be technically impossible for contaminants to find their way back into the water column.

3.6 Pressurised water pipe

NSTII proposes two conceivable methods for testing the pressure of the pipeline prior to commissioning: dry operation and wet operation. The dry operation method uses compressed air and would have little impact on the surrounding water. This is not yet part of regular approval procedures, however. The wet operation option uses NaHSO₃ as an antioxidant. This was used for Nord Stream 1. This method involves the use of 85 ppm of sodium hydrogen sulphite which is mixed with Baltic Sea water and is discharged into the Baltic again in the Russian marine area. The contaminated volume of water is 2.6 million m³, the amount of NaHSO₃ used is approximately 210 m³. NaHSO₃ is approved as a foodstuff additive but it is also used for leather tanning. According to the GisChem data sheet, even small amounts may not be disposed of via the sewage system or domestic waste. The Russian section of the Baltic Sea certainly cannot be used to dispose of 210 m³ of pure substance or 2.6 million m³ of waste water. It can in any case be anticipated that there will be a sharp increase in oxygen consumption in the discharge area (the substance is used to bind oxygen). The same method was already used for NSTI.

In order to be able to assess the impact of wet preparatory operation, expert modelling must be submitted of the existing pollution from NST1 as well as a detailed estimate of the area affected including the relevant species and habitats.

It is not possible to assess the project as a whole without such a reliable prognosis. Wet preparatory operation is to be rejected in principle for precautionary reasons.

4 Summary

The WWF believes that the Nord Stream 2 project is neither necessary to ensure security of supply to Europe nor compatible with the resolutions of the Paris climate treaty. What is more, in spite of the fact that descriptions and plans for the construction of gas pipeline itself are well advanced, the documents regarding assessment of the environmental impact are still incomplete and fragmentary. In particular, a distorted assessment of the existing pollution of the ecosystem as a result of prior use and the judgement that additional pollution caused by the pipeline cannot be much more severe anyway suggests that the absorption capacity of the Baltic Sea for further pollution has either been mistaken or deliberately ignored. The additional load is the “straw that breaks the camel’s back” – not the amount that can be withstood because there is too much anyway.

While original surveys were carried out on a diverse range of aspects for Nord Stream 1, the documentation for Nord Stream 2 does little more than draw on monitoring results for the first pipeline, often simply extrapolating or ignoring the results of the original investigations. In doing this, the project initiator fails to take account of the fact that seven years after the planning for Nord Stream 1, advances in technology and expertise have also created new possibilities in terms of detection and reduction, as in the case of munitions detection and recovery.

In this case, as in the case of alternative pipeline sections to avoid the Kurgalsky protected area in Russia and the porpoise protected area in Sweden, a new route alternative is to be submitted and the relevant surveys are to be carried out. Munitions recovery prognoses are also to be raised to a uniform forecast standard for all the areas affected.

In Finland and Russia the pipeline could potentially bring about the collapse of the endangered ringed seal populations in the Gulf of Finland – Nord Stream offers no avoidance measures here.

Pollution in Finland and Russia involving significant nutrient levels from the sediment as well as the release of carbon compounds, furans and dioxins cannot be accepted and is rated by the WWF as significant. Cutting through the Ramsar area of Kurgalsky in Russia is a breach which can only be avoided by creating a new link section and a implementing a shift back to the Nord Stream 1 route.

A two-tier assessment within the Baltic Sea region is not acceptable: open laying methods in Russia, closed landfall in Germany, removal of contaminated sediments to tipping areas in Germany, open dumping in Russia, and discharge of 2.6 million m³ of oxygen-free Baltic Sea water into Russian waters where EU standards do not apply.

In the German area, interventions are noted but the necessary compensation measures are proposed in such vague and unreliable terms that this can only be interpreted as a non-binding proposal and under no circumstances as a plan to be taken seriously.

Since the project is neither sensible nor necessary in terms of energy policy and has not been sufficiently elaborated in terms of environmental pollution, avoidance and compensation measures to a degree that would enable a decision to be made, the WWF expects the approving authorities to deny permission.

If the company still insists on pursuing the project it can submit another application with additional documents and surveys, fulfilling the requirements and suggestions put forward in this statement.

The WWF reserves the right to make further additions to this statement. We would also refer to the WWF statements presented in the individual neighbouring countries and those

submitted by partner organisations. The arguments put forward for Germany in the national statement in response to the parallel application according to German law are incorporated fully here as additional arguments.

Contact person:

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To:
Federal Maritime and Hydrographic Agency of
Germany, Postfach 301220
20305 Hamburg

Re your letter dated:
07.04.2017, ref. 522/Nord Stream 2/12 M5

Date
30/05/2017

Planning approval process for the construction and operation of the Nord Stream 2 Pipeline in the German territorial waters including landfall and permission process for construction and operation in the area of the German continental shelf as well as Espoo procedure for the cross-border environmental impact study

Author: Dr.es Daniel Oesterwind, Christian von Dorrien, Christopher Zimmermann

Comments

Summary: The Thünen Institute of Baltic Sea Fisheries urgently recommends, in addition to other measures, that no work is permitted in the area of the Bay of Greifswald over the time period February to May (during the herring spawning season or the time period of larvae growth) which will stir up sediment to any significant extent. Further recommendations concern the release of rinse water, potential disruption to scientific work in the area and covering the pipeline in the Bay of Pomerania.

Documentation

The following documentation was available:

1. Nord Stream 2 Pipeline file: Projects and permissions, volume A
2. A digital data medium: VuZ, alternatives, TER, UVS, FFH-VU, biotope and species conservation, LBP, WRRM MSRL, material volumes (I1A, I2, I3A, I3B), other applications, Espoo

The documentation contained many documents, maps, technical reports, including the environmental impact study (UVS) for the Nord Stream 2 Pipeline. These documents contain a detailed presentation of the project, including alternative partial projects, as well as their environmental impact.

The scientific expertise of the Thünen Institute of Baltic Sea Fisheries is focused on the commercially significant fish stocks in the sea covered by the EU Common Fisheries Policy (e.g. cod, herring, flounder) and the fishing of these stocks. Fish stocks which may be affected by the impact of the construction work include, above all, the Rügen spring herring, as part of the spring-spawning herring in the western Baltic Sea. Furthermore, depending on the design, it is possible that the finished pipeline will have a detrimental effect on fishing.

The Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries, or the Thünen Institute, consists of 14 specialist institutes which research and advise on economic, ecological and technical matters.
President of the Institute of Baltic Sea Fisheries Prof. Dr. Folkhard Isermeyer

Director of the Institute of Baltic Sea Fisheries Dr. Christopher Zimmermann · Office: 0381 8116-102

Assessment

1. The construction restrictions in the Bay of Greifswald for the period 15th May to 31st December described on page 153 of the VuZ (Section 7.4.3.1) and in the south-west of the Bay of Pomerania (measure M6 (AFB VM1)), prevent immediate significant impacts on the herring spawning grounds but can lead to an increase in larvae mortality and therefore to a poorer restocking of herring due to the sediments stirred up by the construction work in the herring nursery area.

The only way to ensure there is no direct impact on spawning activity and herring growth is to restrict pipe-laying work in the Bay of Greifswald to a period outside the vital time period for herring restocking of between February and approximately June.

Reasons:

- As can be seen in the fisheries advice, Volume I – Material volume, Par. 18 of the NSP2 Project documentation and the UVS, the Bay of Greifswald is a spawning area of pan-regional significance for the western spring-spawning herring; it is one of the main spawning areas for this stock. In terms of fishing yield and biomass, this stock is the third most important herring stock in the Baltic Sea. The Rügen spring herring is both nationally and, above all, internationally of enormous commercial significance. In 2016, a total of 37,500 tonnes of this stock was landed. Catches around Rügen (including the Bay of Greifswald) are predominantly made by vessels from Mecklenburg-Western Pomerania.
- The herring spawn in the flat outlying areas of the bay and the growth of macrophytes is a hugely significant part of the spawning substrate. Preferred spawning substrates are large algae and seaweed. These substrates may not be populated by green or blue algae and must be clean and free of suspended sedimentary particles. In order to ensure the latter, there is one aspect which absolutely must be taken into consideration, and that is the material which is stirred up by sedimentation by dredging and rinsing work can have an extremely negative effect on the marine vegetation and thus directly on the herring spawning; this in turn has an effect on the net success of this important herring stock.
- The studies cited in the UVS indicate that there are significant herring spawning areas in the immediate vicinity of the Lubmin 2 landing point. Our own long-term investigations indicate that March and April are the main spawning months for herring in the Bay of Greifswald. The rate the herring's spawning activity abates is dependent on environmental conditions and the intensity of spawning in June.
- Any additional impairment to the reproductive success of this herring stock in the Bay of Greifswald could have significant negative consequences for the total herring stock and fishing of this stock as the successful production of new stock of the Rügen spring herring has declined significantly in recent years for reasons which have not as yet been finally established. This is confirmed by not only our own investigations of herring larvae in the Bay of Greifswald (Herring larvae survey, see below) but also other regular evaluations of the stock of juvenile herring in the western Baltic Sea.

- Furthermore, it should be noted that the larvae and the juvenile herring remain in the Bay of Greifswald up to the end of July depending on the change in temperature and spawning intensity. This is confirmed by both our own investigations and the investigations of the UVS into the first Nord Stream Pipeline which verified the maximum level of herring larvae at the end of May. In addition to this, investigations by the current UVS indicate that during fishing activities in the area of the Lubmin 2 landing point, there was "strong evidence" of the presence of herring larvae and it is therefore to be assumed that this area is also used as a nursery area by the herring. It is therefore highly probably that an increase in sedimentary loading in the water of the Bay of Greifswald during this period will have a very negative effect on the growth and survival of the less mobile herring larvae.
 - The sum of influences in the Bay of Greifswald and at the mouth of the bay, for example, stirring up large quantities of sediment, must be kept to a minimum in order, as far as is possible, to avoid negative impacts on the macrophytes which the herring need to spawn. The measures described by the applicant for the reduction of sedimentary loading must therefore be implemented.
 - Therefore, no work should be carried out during the period of main herring spawning activity from February to the end of May which impacts the spawning areas and nursery areas, above all in the shallow areas, and which stirs up sediment. All construction and laying work in the Bay of Greifswald, most importantly, that which stirs up sediment, may therefore only take place between June, at the earliest, or even better July and December.
 - The Thünen Institute of Baltic Sea Fisheries carries out regular investigations into the occurrence and frequency of herring larvae (as part of the Rügen Herring Larvae Survey); this was started in 1977 and takes weekly samples over the whole spawning season (14 weeks from the middle of March to the end of June) at 35 stations using a bongo plankton net (375/780 µm mesh). Seven of these 35 stations are in the Lubmin area. Since 2008, this survey has been used by the International Council for the Exploration of the Sea (ICES) as the sole restocking index for calculating the condition of the overall stock of spring-spawning herring in the western Baltic Sea as well as the predicted catches for the coming years.
 - This survey of herring larvae may not be obstructed by pipe-laying work in order to maintain this long-term, continuous monitoring.
2. The water used to check density and for cleaning must, under no circumstances, be disposed of in the Bay of Greifswald. It is assumed that this contaminated water can have significant consequences for the local fauna and flora in the flat, relatively self-contained Bay of Greifswald.
 3. The deep water area between Oderbank and Aldergrund is a focal point for regional trawling of flatfish and cod. It is therefore extremely important that the pipeline is covered due to the bottom-trawling carried out in this area in order to ensure enclosed areas created by the pipeline or the danger of nets becoming entangled do not have a negative impact on this fishing activity.

Yours sincerely,



Dr. Christopher Zimmermann
Director of the Institute

SAMMLERUSINGER



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In advance by fax 040-3190-5000
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NATALIA VOST

Nord Stream 2

Dear Sir/Madam,

We hereby confirm that we provide legal advice to and represent Zarząd Morskich Portów Szczecin i Świnoujście S.A., ul. Bytomska 7, 70-603 Szczecin. The power of attorney granted to us is attached.

We raise the following objections on behalf of our client with respect to the "*Construction and operation of the Nord Stream 2 high pressure natural gas pipeline from the Narva Bay (Russian Federation) to Lubmin (Federal Republic of Germany) as described in the documents provided dated 18.04.2017 to 17.05.2017.*

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I. Item

1. Zarząd Morskich Portów Szczecin i Świnoujście S.A.

The Polish public limited company Zarząd Morskich Portów Szczecin i Świnoujście S.A. ("the Company" in the following) owns

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and operates the Polish sea ports of Świnoujście (German: Swinemünde) and Szczecin (German: Stettin). 51% of the shares are owned by the Republic of Poland and 24.5% by Świnoujście and Szczecin respectively.

An average of 20 million tonnes of sea freight is handled in the two ports annually. On average, 7,500 to 14,000 sea-going vessels call at the ports.

2. Development of the Świnoujście and Szczecin ports

The sea port of Świnoujście is currently accessible by vessels with a draught of up to 13.2 m and the port of Szczecin by vessels with a draught of up to 9.15 m. For many years, the Company has been running a comprehensive investment program to develop the ports of Świnoujście and Szczecin.

With decision No. 9 dated 20.05.2014, the Company's executive board gave notice of the "Development strategy for the ports of Szczecin and Świnoujście to 2027" ("**Strategy 2027**" in the following). Following a positive statement by the Supervisory Board, Strategy 2027 was confirmed with the decision no. 25/2014 dated 26.06.2014 at the annual general meeting of shareholders of the Company. Strategy 2027 proposes an extension to the outer harbour at Świnoujście and the creation of a new container terminal.

By order of the Company, the management consultancy Ernst & Young presented the "*Preliminary feasibility study for the construction of the container terminal in Świnoujście*" on 21.09.2015. The analysis of the container market completed by the management consultancy came to the conclusion that a container terminal with a maximum transshipment capacity of approximately 1,500 TEU (Twenty Foot Equivalent Unit) is required for the port to be competitive. Specifically, the port would have to be able to be accessed by all container vessels currently in common use. This means that the port must be designed for vessels with a length of 400 m, a width of 50 m and a draught of up to 15.4 m.

The location for the construction of the container terminal must be approximately 1,000 m away from the existing breakwaters of the outer harbour in Świnoujście. The terminal is to be provided with an access with a technical depth of 17.0 m.

With the decision No. 5 dated 13.06.2016, the supervisory board of the Company gave its consent to continue with the measures

undertaken for the project to create a container terminal in Świnoujście.

On 24.01.2017, the Company reached an agreement with the project office "WUPROHYD" for the realization of the technical - program design under the reference "*Construction of the container terminal in the Świnoujście outer harbour*". As part of the design under development and in accordance with this agreement, WUPROHYD is obligated to design all hydrotechnical construction work for a long-term technical depth of 17.0 m.

3. Political significance of the Świnoujście port

The Świnoujście port is of fundamental significance to the national economy of Poland. It is therefore the declared aim of the government to adapt this to changing competitive conditions. In accordance with the will of the Polish government and the Company, the port should therefore be able to accommodate container ships for the foreseeable future which have a given - maximum draught for the Baltic Sea of 15.4 m as specified by the Danish straits.

In the current updates to the "Programme for the development of Polish sea ports to 2020 (with proposals to 2030)" and the updated "Transport development strategy to 2020 (with proposals to 2030)" prepared by the Polish government, it was assumed that, as far as investment measures were concerned, this includes improvement to the access to and development of the port at Świnoujście.

4. Intersection of the natural gas pipeline and Shipping Lane 20

The seaports at Świnoujście and Szczecin are accessed by two shipping lanes: Shipping Lane No. 5 "Oder estuary" and Shipping Lane No. 20 "Świnoujście-Ystad".

According to the planning documents put forward, the high pressure natural gas line planned by Nord Stream 2 AG intersects Shipping Lane No. 20 for a distance of 2.2 km between KP 27.645 and KP 29.892 (see planning document C.01, p. 20). As can be seen from the technical explanatory report, the pipeline is to be laid on the seabed in this area. The natural gas line is to be buried in a trench only from KP 31.643 (see planning document C.01, p. 55).

The planning documents do not show whether the depth of Shipping Lane No. 20 has been precisely measured in the areas where they intersect. Only a general statement is made that the

pipelines would be laid for sections of the route at a water depth of -17.5 m on the seabed (see planning document A.01, p. 19). Furthermore, the producers of the plan obviously assume that Świnoujście only has to be navigable to a reference depth of 13.5 m (see planning document C.01, p. 53). However, there is no accurate information in the planning documents on the exact depth of the 2.2 km long intersection. Without accurate information on the sea depth in this area, it is not possible to assess the scope of impairment to the Company.

For example, if a depth of 17.5 m is taken as a baseline, laying a pipe with a diameter of approximately 1.5 m would reduce the water depth to approximately 16 m. According to German specifications, the minimum distance required between the bottom of the ship and the natural gas line is currently 2.5 m. This means that once the pipe has been laid, only vessels with a maximum draught of 13.5 m would be able to traverse this point.

5. Summary

The port of Świnoujście can only meet today's trading demands if it is accessible for use by large container ships with a maximum draught of 15.4 m. The development of the port of Świnoujście has been in planning for years and is now in its implementation phase. Considerable sums of money have already been invested in the upgrade.

Container ships reach the port of Świnoujście via Shipping Lane No. 20 "Świnoujście-Ystad" amongst other routes. There is a 2.2 km intersection between the planned natural gas pipeline and Shipping Lane No. 20. According to the planning documents put forward, the pipeline is to be laid on the seabed in this area.

The planner has not accurately calculated the actual depth of the Shipping Lane in the relevant area. The plans only show that the depth is probably approximately 17.5 m. A depth of 17.5 m would lead to container ships with a draught of more than 13.5 m no longer being able to use Shipping Lane No. 20. Laying a pipe with a diameter of approximately 1.5 m would reduce the water depth to approximately 16 m. An additional 2.5 m must be maintained between the bottom of the ship and the natural gas pipeline [$17,5 \text{ m} - 1,5 \text{ m} - 2,5 \text{ m} = 13,5 \text{ m}$].

II. Objections

The design of the pipeline in the form presented in the documents put forward would have a significantly detrimental effect on the

interests of the Company. In the area of Shipping Lane No. 20, between KP 27.645 and KP 29.892, the pipeline must be buried in a trench in the bottom of the Baltic Sea in order to ensure there is not a disproportionate restriction on the availability of the port of Świnoujście.

Should this not occur, the Company would claim unlawful interference in accordance with the following laws:

1. Infringement of the right to unhindered access to Polish ports

If the planned pipeline is not buried in a trench in the seabed in the area of Shipping Lane 20, this infringes the Company's right to unhindered access to the ports which belong to them.

The Company can derive the right to maintain unimpaired access to the Polish ports from both the United Nations Convention on the Law of the Sea and the general principle of international law. Unimpaired maritime navigation with respect to underwater pipelines on recognised Shipping Lanes in general is guaranteed in the Economic Exclusive Zone.

**2. Unjustifiable interference in freedom of occupation,
Art. 12 I GG**

The pipe-laying infringes the Company's freedom of occupation in accordance with Art. 12, § I GG. Operation of the port is protected under basic constitutional law for freedom of practising an occupation. The pipeline has significant negative impacts on the potential use and development of both the Company's ports and thus interferes with this right. This interference is disproportionate, as a milder measure - burying the natural gas pipeline in a trench - is available.

**3. Unjustifiable interference in the right of ownership,
Art. 14 I GG**

The construction of the pipeline has a negative impact on the Company's right of ownership in accordance with Art. 14 I GG. The basic right of ownership also encompasses established commercial enterprise. The development of the port of Świnoujście has been planned for years and is now in its implementation phase. Considerable sums of money have already been invested in the upgrade. Economic use of the extension would be nullified by the interference with Shipping Lane No. 20. This interference is disproportionate, as a milder measure - burying the natural gas pipeline in a trench - is available.

4. Unjustifiable restriction of the European freedom to provide services

The European freedom to provide services prohibits Member States from being restricted in the free movement of services within the Union. Laying the pipeline will have the effect of preventing ships with a draught of more than 13.5 m from entering ports operated by the Company. The Company is not able to provide its typical services to these ships.

5. Environmental law

As a direct neighbour of the Baltic Sea, the Company also has significant environmental reservations concerning the construction of the planned pipeline. The pipeline represents a significant interference in the existing ecosystem of the Baltic Sea. This is particularly true if the pipes are laid on the seabed and are not buried in a trench; this fact is not currently considered sufficiently in the documents put forward. Surveys should be carried to assess the degree to which the specific negative impact on protected flora and fauna as well as the water would be reduced if the pipeline were to be buried in a trench at those locations where it is currently planned for it to run on the seabed

Furthermore, there is no justification for the necessity of this significant interference in the ecosystem, particularly with respect to the existing natural gas supply pipeline across the Baltic Sea ("Nord Stream 1") and the available land-based alternatives.

Also, the threat of the considerable danger to the environment and to shipping which would occur in the event of damage to the pipeline during operation has not been sufficiently investigated in the documents put forward. Without considering and evaluating the "worst case scenario", it is not, however, possible to reach a comprehensive assessment of the environmental impact and the interests of the Baltic Sea neighbours.

Yours sincerely,



Jakob Hans Hien
Rechtsanwalt

Jakob Hans Hien
Attorney at Law

POWER OF ATTORNEY

SAMMLERUSINGER

Rechtsanwälte Partnerschaft mbB

with offices in Berlin and registered in PR 772 with the Charlottenburg local court

power of attorney is hereby granted in the matter of

**Zarząd Morskich Portów Szczecin i Świnoujście S.A.,
ul. Bytomska 7, 70-603 Szczecin**

with respect to

Nord Stream 2 Pipeline.

This power of attorney confers on **SammlerUsinger** the power to act in all legal or arbitration proceedings specifically in raising counterclaims, in issuing and receiving notices, in appointing a representative, in settling legal disputes by settlement, waiver or acknowledgement, in appeals and withdrawals before the court and waiving of the same, as well as receipt of monies and goods as well as expenses from the opposing party, the court accounts office or other bodies.

This power of attorney also covers ancillary proceedings such as arrest and temporary injunctions and provisional measures, court and legal fees including special procedures arising from them, forced sale and sequestration, filing procedures, composition and insolvency proceedings. This power of attorney also specifically covers participation in administrative procedures.

This power of attorney covers all types of extra-judicial matters and procedures and reaching settlements to avoid legal disputes.

This power of attorney also confers on **SAMMLERUSINGER** the power to establish and to cancel contractual relationships and to submit unilateral declarations with respect to departments and any other governmental bodies such as notification and/or registration of reimbursement or compensation claims and their enforcement as well as applications of any sort.

This power of attorney also authorises **SAMMLERUSINGER** to undertake inspections of land registers and to apply for and prepare copies from any public registers and articles.

SAMMLERUSINGER is authorised to delegate authority.

Świnoujście, 29.05.2017

WICEPREZES
ds. Infrastruktury
Krzysztof Drzazga

PREZES ZARZĄDU
Dariusz Staboszewski



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Our Ref.: II4.2-

6.5.3/1/4/2_Nordstream2

Information provided by: Mr Bernotat

Leipzig, 16.06.2017

Application from the firm Nord Stream 2 AG for the construction and operation of the Nord Stream 2 gas pipeline pursuant to § 133, para. 1, subsection 2, BBergG [*Federal Mining Act*] in the area of the German continental shelf

Statement from the BfN [*Federal Agency for Nature Conservation*]

Nord Stream 2 correspondence

- (1) Email from the BfN dated 22.05.2017 - Offset of Nordstream2 - Questions for the Project Sponsor
- (2) Letter from the BSH [*Federal Maritime and Hydrographic Agency*] dated 07.04.2017 - Application
- (3) Statement from the BfN dated 04.06.2013 - Nord Stream 2 scoping
- (4) Nord Stream 1 monitoring reports 2011 to 2014
- (5) Letter from the BSH dated 19.10.2011 - Nord Stream 1 2010 monitoring during construction

Current position

Nord Stream 2 AG is planning to construct a natural gas pipeline from Narva Bay (RUS) to Lubmin (D) through the Baltic Sea. For this, the pipeline will cross the TW of Russia and Germany and the EEZs of Russia, Finland, Sweden, Denmark and Germany. For this reason, in addition to the national licensing procedure, a transboundary EIA conducted in accordance with the ESPOO Convention will also be carried out. In addition to the countries cited above, the countries of Poland, Lithuania, Latvia and Estonia are also involved in the procedure.

The national licensing procedure was launched on 09.04.2013. As part of the scoping process, on 04.06.2013 the BfN issued a statement on the scope of the investigations required for the EIS, FFH impact assessment and assessment based on the law on the conservation of species.

The Nord Stream 2 pipeline consists of two pipeline sections and runs in the German EEZ parallel to and approximately 1.1 km away from both the pipeline sections of Nord Stream 1, in operation since 2011 and 2012. The pipeline is designed to operate for 50 years. The BfN commented in detail on Nord Stream 1 in our letters of 25.02.2010 and 14.05.2009. The BfN has the monitoring reports for the years 2010 to 2014.

Following receipt of the letter of 07.04.2017, we now have full application documentation for Nord Stream 2. The Nord Stream pipeline will cross the German EEZ between Km point 0 and 31,065 (A 1, S. 16, 17) over a distance of about 31 km inside the "Pomeranian Bay" nature conservation area and bird sanctuary (DE 1552-401). The Adlergrund traffic separation scheme will be crossed at the edge of the Danish EEZ, no cables will be crossed in the EEZ.

Various different documents were submitted for the purposes of the licensing procedure in the EEZ. The statement from the BfN is based on the following documents:

- Explanatory report (Annex A1),
- Environmental impact study (EIS) (Annex D1),
- EEZ landscape conservation and management plan (LBP) (Annex G4),
- FFH impact studies for the FFH and bird sanctuary areas of the EEZ (Annex E7, E8, E9),
- Technical paper on species protection (AfB) (Annex F3),
- Assessment based on the law on the conservation of biotopes (Annex F1).

The BfN would comment as follows on the issues relevant to the EEZ, EIS, FFH impact assessment and the assessment based on the law on the conservation of species. In view of the jurisdiction of the BfN, this applies solely to the area of the German Exclusive Economic Zone (EEZ), respectively the German continental shelf.

1. Technical data

The 1.225 km long pipeline shall consist of two parallel pipelines sections, each with an internal diameter of 1.15 m. The wall thickness is between 2.6 and 4.1 cm. To this is added a 6 to 10 cm thick concrete coating. The pipeline will cross the German EEZ over a distance of about 31 km. The distance between both pipelines in the Pomeranian Bay is about 55 to 65 m.

Pipe laying equipment

A third-generation pipe laying barge, or a fourth-generation pipe laying vessel, will be used to lay the pipeline directly on the seabed, using the so-called S-lay method, in the area of the German EEZ. Around 1.5 to 3 km of pipeline can be laid each day using the method selected. The pipe laying barge will be positioned dynamically or with the aid of anchors. The anchors will be up to 1,000 m away from the pipe laying barge. The anchor wire rests on the seafloor over a distance of 100 m to 150 m and is pulled over the seafloor as the

barge moves forward. Offshore anchor handling tugs are used to position and relocate the anchors.

The areas in which the anchors will be positioned will be decided on in advance and will circumvent wrecks, rock and other obstacles. 3 to 4 pipe carriers will supply the pipe laying barge with pipes and other materials. A survey vessel will be used for the survey operations required during the installation.

Free span correction

Pipeline free spanning can be corrected where necessary by pre-lay or post-lay levelling of the seafloor locally through trenching or rock placement. Depending on the method selected, additional vessels and equipment may be used for this. However, according to current knowledge, it is not necessary to level the seabed in the area of the German EEZ (A1, p. 26). Should this nevertheless prove to be necessary, any intervention required as the result of this will have to be identified as part of the subsequent assessment process.

As far as the BfN is aware and according to the documents submitted, no such operations were carried out for Nord Stream 1.

AWTI - Above-Water-Tie-In

The pipeline will be laid - depending inter alia on the water depth - using different pipe laying vessels. At the points where the sections interconnect, the pipeline ends will be connected to one another above the water. The connector will be laid horizontally on the seabed in the form of an arch and due to the reduced thickness, for technical reasons, of the concrete coating at such points, will be secured by rock placements to ensure that it stays firmly in position. Provision is made for the following, as a maximum, for the route through the German section:

- 9 rock placements 25 x 55 m, at 1,375 m², totalling 24,750 m² for both pipeline sections (G4, p. 47).

Alternatively, concrete mattresses can be used (G4, p. 18 and 19). According to conventional basic planning, there is no provision for AWTI in the German EEZ. Only when pipe laying vessels with less capacity are used, delaying the completion of the pipeline sections, would an AWTI have to be inserted for each section at a point somewhere between KP 10 and 17 (A1, p. 13 and G4, p. 20).

The Project Sponsor has assessed this on a precautionary basis in the context of the intervention regulations. Should the AWTIs not be necessary in the EEZ, this can be rectified as part of the subsequent assessment process.

Plant and operation

Prior to commissioning, the pipeline will be purged, a pressure test conducted and the pipeline dried. To prevent bacterial corrosion, the pressure test water (Baltic Sea water) will be mixed with the oxygen binder sodium bisulphite (NaHSO₃). The pressure test water will drain out into the Baltic Sea not in German waters, but at the Russian landfall station.

In-operation monitoring and maintenance will be done primarily with the aid of so-called pigs inside the pipes whereas, externally, sonar, multibeam echosounder technology, acoustic leak testing and video inspections will be used.

Individual sections of the pipeline must where necessary be raised for repair purposes. This will have similar effects to the pipe laying process itself, but these will be localised and of short duration.

Contaminated military sites and munitions

The entire pipeline route, including the anchor area for the pipe laying vessels, will be comprehensively geotechnically scanned for metal bodies before commencement of the building works. Explosive ordnances which are not safe to handle and objects which are not clearly identifiable will be circumvented. Clearance will be done in close consultation

with the competent authorities and the explosive ordnance disposal unit.

1.1. Construction timeframe

The construction of the pipeline is expected to take place in 2018 and 2019, with commissioning by the end of 2019.

For the EEZ, a construction timeframe of 2.5 months is proposed, from around the beginning of October, respectively mid-May, to December 2018 (in the first year of construction) (A 1, p. 29; G4, p. 29 and 30). According to the EIS, this will enable the resting periods of seabirds - in particular, the resting and moulting needs of the common scoter - to be taken into consideration (D1, p. 69 and 749; G4, p. 76 and 85):

- EIS measure **EIS PT 2** / LBP measure **LBP M 1/ AfB measure VM 2** Restriction of the offshore pipe-lay in the area of the Pomeranian Bay
 - o between KP 31.06 (12-nm-border) and KP 17 (EEZ) in the period from 01.09. to 31.12.
 - o between KP 17 (EEZ) and KP 0 (external border EEZ) in the period from 15.05. to 31.12.
 - o any operations to be done from a fixed location (AWTI) between KP 10 and KP 17 (EEZ) in the period from 15.05. to 31.10.

Based on the speed of the pipe-lay process, i.e. 1.5 to 3 km per day, we can probably assume that the time taken to lay the pipeline in the EEZ will actually be less.

1.2. Ecological construction supervision and monitoring

The BfN welcomes the fact that, as was previously the case for Nord Stream 1, provision has been made for ecological construction supervision (EIS D1, p. 772).

The BfN believes that, in addition to the monitoring to be done for construction and operation supervision purposes, it is necessary to supplement the proposed regeneration monitoring activities (EIS D1, p. 773) in the Pomeranian Bay bird sanctuary with the following measures:

Survey of the infauna and epifauna along the Nord Stream 2 pipeline, during which there will be continued monitoring at Nord Stream 1 in order to document further long-term developments on and along the pipeline sections.

These measures concern for the most part the German coastal waters, since the level of intervention is much more intense here than in the EEZ. Many of the findings made as the result of monitoring in coastal waters are however also of interest to future project assessments. For this reason, the BfN would ask for the prompt submission, as was done previously for Nord Stream 1, of the corresponding results of such monitoring.

2. Transboundary impacts within the meaning of the ESPOO Convention

Based on current findings, we do not anticipate any transboundary impacts on

- Natura 2000 sites or
- targets requiring protection in accordance with the UVPG [*Law on Environmental Impact Assessments*], including but not limited to animals, plants, biodiversity, soil, water, climate, air, landscape and the interaction between these subjects of protection

in the German EEZ.

3. Statutory conservation of biotopes (§ 30 BNatSchG [*Federal Nature Conservation Act*])

There was no evidence of the incidence of statutorily protected biotopes pursuant to § 30

4. FFH impact assessment for the "Pomeranian Bay" nature conservation area

Projects and measures providing for submarine cables to be laid and operated within the nature conservation area must pursuant to § 5, para. 1, clause 3, NatSGPomm-BuchtV [Regulation on the Pomeranian Bay Nature Conservation Area] be checked prior to their approval or completion for their admissibility pursuant to § 34 BNatSchG, taking as the criterion the conservation objective. Nord Stream 2 crosses the site over a distance of around 31 km, and so an FFH impact assessment must be made. The legal consequences of § 34, para. 2, BNatSchG are triggered whenever based on an impact prediction, the significant impairment of the elements relevant for the purposes of achieving the site-related conservation objective cannot be ruled out with the required certainty.

Placing the sea area under protection ensures its long-term conservation and restoration, pursuant to § 3, para. 1, NatSGPomm-BuchtV, in its capacity as a feeding, wintering, moulting, transit and resting area for the species to be found there according to Annex I of the Directive 79/409/EEC (now Directive 2009/147/EC), notably for red-throated diver (*Gavia stellata*), black-throated diver (*Gavia arctica*), Slavonian grebe (*Podiceps auritus*), little gull (*Larus minutus*), common tern (*Sterna hirundo*) and Arctic tern (*Sterna paradisaea*), and for regularly observed migratory bird species, notably for red-necked grebe (*Podiceps grisegna*), long-tailed duck (*Clangula hyemalis*), common scoter (*Melanitta nigra*), velvet scoter (*Melanitta fusca*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), common guillemot (*Uria aalge*), razorbill (*Alca torda*), black guillemot (*Cephus grylle*). Because of its high levels of habitat and structural diversity, together with a highly abundant food supply, this is the most important site in the North Sea for red-throated and black-throated divers and offers these species the security of having key areas for wintering in the German EEZ of the Baltic Sea.

The description of the incidence of relevant seabird species in the area of the EEZ shows (EIS p. 309 et seq.) that the resting areas for sea ducks and Slavonian grebes lie predominantly to the south of the proposed route and the effects will be felt only at the edges of such areas. Only the auk species, and in particular, common guillemots, had their main area of distribution in the area covered by the route. Depending on the species, larger volumes of resting seabirds appear in the survey area from September onwards; generally, the main resting activities were concentrated into the months of October to April/May.

Red-throated divers appeared above all in the 1st quarter of 2016, whereas for black-throated divers and Slavonian grebes and the auk species, the seasonal incidence was concentrated in the 4th quarter of 2015. Against this background, the proposed scheduling of the construction timeframe, intended to represent damage mitigation and containment measures, is inexplicable. The construction timeframe must where possible be adapted accordingly (cf. in this regard Section 7.1)

The pipe-lay operations are associated with noise and deterrent effects typical of ships, together with turbidity plumes, albeit highly contained locally. The effects on the (feeding) habitats of the relevant resting and migratory bird species are small-scale and of short duration. The results of the monitoring done for Nord Stream 1 showed that no reduction in the total volumes of the local population could be identified as having resulted from the pipe-lay operations for any of the species surveyed, namely the long-tailed duck, velvet scoter, common scoter, Slavonian grebe or loon. BfN agrees with the Project Sponsor that the observed displacement of the northern border of the main area of incidence of common scoters and velvet scoters is not necessarily causally related to the construction and operation of Nord Stream 1. And so, for example, for the common scoter, the border could shift southwards, extending beyond the area of impact of the pipeline by up to 16 km. Even taking these earlier experiences into consideration, we do not currently anticipate the significant impairment of the site.

5. FFH impact assessment for the "Adlergrund" and "Pomeranian Bay with Oderbank" FFH areas

The "Adlergrund" FFH area located to the north of the proposed pipeline sections (DE

1251-301) and the "Pomeranian Bay with Oderbank" FFH area located to the south (DE 1652-301) are located only a short distance away, namely about 2 km, respectively 6 km, from the route. Even if we take the monitoring results for Nord Stream 1 into consideration, we can nevertheless rule out, based on current findings, significant impairments of the areas with a view to the elements relevant to their conservation objective, even where there is interaction with other proposals or projects.

6. Assessment based on the law on the conservation of species

The prohibitions on access based on the law on the conservation of species provided for in § 44, para. 1, BNatSchG prohibit inter alia injury to or the killing of specially protected species of wild animals (clause 1) and the significant disturbance of strictly protected species of wild animals and European bird species (clause 2).

6.1. Seabirds and migratory birds

The birds appearing in the project area include the red-throated diver (*Gavia stellata*), black-throated diver (*Gavia arctica*), Slavonian grebe (*Podiceps auritus*), little gull (*Larus minutus*), common tern (*Sterna hirundo*) and Arctic tern (*Sterna paradisaea*), as well as regularly observed migratory bird species such as the red-necked grebe (*Podiceps grisegna*), long-tailed duck (*Clangula hyemalis*), common scoter (*Melanitta nigra*), velvet scoter (*Melanitta fusca*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), common guillemot (*Uria aalge*), razorbill (*Alca torda*) and black guillemot (*Cephus grylle*).

The Project Sponsor has provided for the following as measures for prevention and mitigation:

- **AFB VM 2 / LBP M 1:** Restriction of the offshore pipe-lay in the area of the Pomeranian Bay
 - o Basic planning: between KP 31.06 (12-nm-border) and KP 17 (EEZ) in the period from 01.09. to 31.12.
 - o between KP 17 (EEZ) and KP 0 (border EEZ) in the period from 15.05. to 31.12.;
 - o operations to be done from a fixed location (AWTI) between KP 10 and KP 17 from 15.05.-31.10.
- **AFB VM 3 and LBP M 2:** Light emissions for the offshore construction activities must be minimised outside the traffic separation scheme in such a way that the only lighting to be operated will be the lighting required for the construction activities directly and for occupational safety (AFB F3, p. 37 and LBP G4, p. 86).

6.1.1 Prohibition on killing and injuring (§ 44, para. 1, clause 1, BNatSchG)

§ 44, para. 1, clause 1, BNatSchG prohibits the killing or injuring of specially protected animal species, which also includes all European bird species. The statutorily defined prohibition is applied individually.

We do not anticipate seabirds being killed or injured by the actual pipe-lay process. However, based on current findings, we cannot completely rule out collision-related bird losses caused by the vessel traffic associated with the construction and operation of submarine cables. Nevertheless, according to jurisprudence, unavoidable losses caused by collisions with animals shall only be covered by the prohibition on killing if there is a significant increase in the collision risk for specimens of the species concerned.¹ In this case, the BfN is of the opinion that the project does not represent, specifically in terms of its location, any significant increase in the collision risk, provided the vessel traffic is of short

¹ Federal Administrative Court, judgement of 12.3.2008 - 9 A 3.06, NuR 2008, 633 (653 rec. 21g); judgement of 9.7.2008 - 9 A 14.07, NuR 2009, 112 (119, rec. 91); judgement of 13.5.2009 - 9 A 73.07, NuR 2009, 711 (718 rec. 86); Weimar Higher Administrative Court, judgement of 14.10.2009 - 1 KO 372/06, NuR 2010, 368 (369 f.).

duration. As a result, we do not anticipate that the statutorily defined offence of injury and killing as provided for in § 44, para. 1, clause 1, BNatSchG will materialise.

By selecting appropriate light intensities and spectra for the lighting required for the vessels, the lure of such lighting, and its effects on the birds, has to be reduced as much as possible, thereby minimising the probability of the incidence of birds colliding with the vessels. Allowance has been made for this, in the view of the BfN, through the measures **AFB VM 3** and **LBP M 2**.

6.1.2 Prohibition on disturbance (§ 44, para. 1, clause 2, BNatSchG)

A disturbance is significant pursuant to § 44, para. 1, clause 2, BNatSchG if the state of preservation of the local population deteriorates as the result of such disturbance.

The pipe-lay operations are associated with noise and deterrent effects typical of ships, together with locally highly contained turbidity plumes. The effects on the (feeding) habitats of the relevant resting and migratory bird species are small-scale and of short duration. The results of the monitoring done for Nord Stream 1 showed that no reduction in the total volumes of the local population could be identified as having resulted from the pipe-lay operations for any of the species surveyed, namely the long-tailed duck, velvet scoter, common scoter, Slavonian grebe or loon.

BfN agrees with the AS that the observed displacement of the northern border of the main area of incidence of common scoters and velvet scoters is not necessarily causally related to the construction and operation of Nord Stream 1 (cf. above).

Given the seasonal incidence of the seabird species wintering in the area, as outlined in Section 4, the VT's construction time schedule for the EEZ is inexplicable (cf. in this regard Section 7.1 also). We do not currently anticipate any significant disturbance.

6.2. Assessment based on the law on the conservation of species in all other respects

Based on the BfN's current findings, we do not anticipate other specially protected species being killed or injured (§ 44, para. 1, clause 1, BNatSchG).

Furthermore, nor do we expect, based on current findings, the statutorily defined prohibition, based on the law on the conservation of species, on the significant disturbance (§ 44, para. 1, clause 2, BNatSchG) of other strictly protected species to materialise.

This equally applies to harbour porpoises (*Phocoena phocoena*): Both the pipe sections are merely being laid in the area of the EEZ; to this extent, there are no plans for dredging operations. The noise emissions emanating from the pipe-lay operations should be commensurate with the underwater noise of vessels and should not have any large-scale disturbing effects. Since the pipe-lay operations will moreover be limited in all to around 10 to 20 days, we do not expect the construction of the pipeline to have any significant adverse effects on harbour porpoises. Accordingly, the monitoring results for Nord Stream 1 do not point to any evidence of the fact that specimens have been killed or injured or that the state of preservation of the local population has deteriorated (cf. AFB F3, p. 46 to 48).

7. Intervention regulations (§§ 14 et seq. BNatSchG)

The project represents an intervention in nature and landscape within the meaning of § 14 BNatSchG, since the laying of the pipeline will change the shape and use of the footprint areas concerned. The legal consequences of the intervention are assessed in accordance with § 15 BNatSchG.

In this particular case, all marine interventions - both in coastal waters and in the EEZ - will take place in the D 73 "Eastern Baltic Sea" natural environment.

7.1. Avoidance

Pursuant to § 15, para. 1, p.1, BNatSchG, the party responsible for an intervention is

obliged to refrain from avoidable impairments of nature and landscape.

The following measures, as proposed by the Project Sponsor, must be implemented:

- The pipeline routing must be as set out in the application.
- The pipe laying equipment (free lay-up) must be as applied for.
- Damage mitigation and containment measures (Annex E7)

For the EEZ, a construction timeframe of 2.5 months is proposed, from around the beginning of October to December 2018 (in the first year of construction) (A 1, p. 29; G4, p. 29 and 30). According to the EIS, this will enable the resting periods of seabirds - in particular, the resting and moulting needs of the common scoter - to be taken into consideration (D1, p. 69 and 749; G4, p. 76 and 85 and E7, p. 67):

- **EIS PT 2 / AFB VM 2 /LBP M 1** Restriction of the offshore pipe-lay in the area of the Pomeranian Bay
 - o Basic planning: between KP 31.06 (12-nm-border) and KP 17 (EEZ) in the period from 01.09. to 31.12.;
 - o AWTI in EEZ: between KP 17 (EEZ) and KP 0 (border EEZ) in the period from 15.05. to 31.12.;
 - o operations to be done from a fixed location (AWTI) between KP 10 and KP 17 from 15.05.-31.10.

Given the seasonal incidence of the seabird species wintering in the area, as outlined above (Section 4), the Project Sponsor's construction time schedule for the EEZ is inexplicable. To protect the resting birds from construction-related disturbances, and to comply with the avoidance obligation provided for under intervention legislation, the pipe-lay operations must be commenced much earlier in the year (**as of the end of May**) and must then be completed considerably earlier (**30.09.**). BfN feels reassured in this regard not least by the Project Sponsor themselves, who plan to complete any operations to be done from a fixed location (AWTI) as early as 31.10., to avoid disturbances.

We must clarify to what extent an error has been made with regard to the proposed or intended construction timeframe.

- **AFB VM 3 and LBP M 2:** Light emissions for the offshore construction activities must be minimised outside the traffic separation schemes in such a way that the only lighting to be operated will be the lighting required for the construction activities directly and for occupational safety (AFB F3, p. 37 and LBP G4, p. 86).

In addition to this, we would ask for the following measures to be provided for:

Restoration of the seabed

- Following, where applicable, necessary repair and safeguarding measures, the abiotic conditions and biotope structures must be promptly restored to a state unchanged from their original conditions.
- Following decommissioning, the gas pipe in the EEZ will have to be dismantled. Since the pipeline is merely laid on the seabed in the EEZ, any dismantling is associated only with negligible effects, of limited duration, on the marine environment and must be favoured, from a specialist nature conservation point of view, over the possibility of the equipment remaining in place.
 - o No decision shall yet be made on a specific procedure as of today's date since future developments in science and technology might, where applicable, permit a more environmentally friendly salvage. The final arrangements for decommissioning must be made at the designated time with the licensing authority and in consultation with the relevant nature conservation authority. This notwithstanding other legal provisions.

Use of materials (adjustment of free spans, AWTIs)

- The inclusion of AWTIs in the EEZ should - as provided for in the basic planning -

where possible be wholly avoided.

- Rock placements should be avoided. If they cannot be avoided, they must be reduced to the technically acceptable minimum, and only natural materials, free of pollutants or contaminants and biologically inert, must be used.
- The BfN rejects in principle the introduction of systems which use plastic (e.g. geotextiles or concrete mats).
- If additional rock placements are introduced, the intervention must be subject to a subsequent assessment process.
- Should the AWTIs not be necessary in the EEZ, this can be rectified as part of the subsequent assessment process.

Material contaminants

- Determination of measures for the avoidance of material contaminants and emissions (oil, lubricants, waste, leakages etc.) and adherence to the zero introduction principle.
- Optimisation of the work flows in order to limit vessel traffic, on the occasion of cable maintenance and servicing in the operational phase, to what is necessary.

Monitoring

Please refer to Section 1.2

Compliance with the avoidance and mitigation measures must be documented. The ecological construction supervision should oversee and document compliance with the terms of reference.

7.2. Offsetting of unavoidable impairments

The party responsible for unavoidable impairments is obliged to offset these or to provide compensation (§15 para. 2, p. 1, BNatSchG). There is an overriding obligation to ensure a real offset. Only if an offset or compensation for unavoidable impairments is not viable or not achievable within an appropriate timeframe can the intervention be approved in accordance with § 15, para. 5, para. 6, BNatSchG, subject to the payment of a compensatory allowance.

It is stated on p. 80 of the landscape conservation and management plan for the Nordstream 2 project for the EEZ (Annex G4 to the application documentation) that in the marine area, inside the respective natural environment, there are no areas available for suitable offset measures. However, this is not reasoned or explained further. Before the intervention can be approved against payment of a compensatory allowance, there must nevertheless, from the point of view of the BfN, be sufficient debate on the possibilities for a real offset.

In our email of 22.05.2017, the BfN asked the Project Sponsor to comment in this regard on the introduction, respectively possibility of offset measures. We have not yet received a reply.

The BfN is currently for their part discussing possible offset measures. Due to time constraints, it was not however possible to clarify this exhaustively at the current time.

The BfN will comment separately, once there has been clarification of the unanswered questions, on possible offset and compensation measures within the meaning of § 15, para. 2, clause 2 and 3, BNatSchG or on the payment of a compensatory allowance.

7.3. Determination of the scope of the offset

The valuation of the intervention will be done - in contrast to interventions in coastal waters and inshore waters - in reliance on the methods agreed between BSH and BfN for grid connection projects in the EEZ.

The impact distances and factors assumed in the valuation will - even in consideration of the

monitoring of results for Nord Stream 1 - be approved of.

If the actual implementation of the project results in a more extensive or reduced intervention pursuant to § 14 BNatSchG (due for example to the fact that there is no longer any need for the AWTI or for the seafloor adjustment), the licence must provide for a subsequent assessment process and must include a clause reserving the right to order reduced/additional offset measures and/or compensation payments.

8. Summary

Conservation of biotopes § 30 BNatSchG

There was no evidence of the incidence of statutorily protected biotopes pursuant to § 30 BNatSchG.

Pomeranian Bay bird sanctuary

We do not currently anticipate any significant impairment.

Species conservation - Seabirds

By selecting appropriate light intensities and spectra for the lighting required for the vessels, the lure of such lighting, and its effects on the birds, must be reduced as much as possible, thereby minimising the probability of the incidence of birds colliding with the vessels. Allowance has been made for this through the measures **AFB VM 3 and LBP M 2**.

Species conservation for other species

Based on the BfN's current findings, we do not anticipate other specially protected species being killed or injured (§ 44, para. 1, clause 1, BNatSchG) nor do we expect the statutorily defined prohibition, based on the law on the conservation of species, on the significant disturbance (§ 44, para. 1, clause 2, BNatSchG) of other strictly protected species to materialise.

This equally applies, in consideration of the monitoring results for Nord Stream 1, to harbour porpoises (*Phocoena phocoena*).

Monitoring

The BfN welcomes the fact that, as was previously the case for Nord Stream 1, provision has been made for ecological construction supervision (EIS D1, p. 772). The BfN believes that it is necessary to supplement the regeneration monitoring activities (EIS D1, p. 773) in the "Pomeranian Bay" bird sanctuary with the survey of the infauna and epifauna along the Nord Stream 2 pipeline.

The BfN would ask for the prompt submission, as was done previously for Nord Stream 1, of the monitoring results from the coastal waters also.

Intervention regulations

We would point to the avoidance and mitigation measures indicated in Section 7.1. There must be mandatory and verifiable compliance with these. Given the seasonal incidence of the seabird species wintering in the area, as outlined in Section 4, the Project Sponsor's construction time schedule for the EEZ is inexplicable, especially with a view to the avoidance of impairments. To protect the resting birds from construction-related disturbances, the pipe-lay operations must be commenced much earlier in the year (as of the end of May) and must then be completed considerably earlier (30.09).

If the actual implementation of the project results in a more extensive or reduced intervention pursuant to § 14 BNatSchG (due for example to the fact that there is no longer any need for the AWTI or for the additional seafloor adjustment), the licence must provide

for a subsequent assessment process and must include a clause reserving the right to order reduced/additional offset measures and/or compensation payments.

In our email of 22.05.2017, the BfN asked the Project Sponsor to comment on the introduction of offset measures and/or the admissibility of a compensation payment. We have not yet received a reply. The BfN is currently for their part discussing possible offset measures. Due to time constraints, it was not however possible to clarify this exhaustively at the current time. The BfN will comment separately, once there has been clarification of the unanswered questions, on possible offset and compensation measures within the meaning of § 15, para. 2, clause 2 and 3, BNatSchG or on the payment of a compensatory allowance.

pp

[*Signature*]

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Approval procedure for the installation and operation of the 'Nord Stream' natural gas high pressure pipeline through the Baltic Sea

Your letter of 7 April 2017 (ref: 2/NordStream 2/17 M5)

In the letter detailed above, you provided the Federal Environment Agency (Umweltbundesamt, UBA) with documents about the

- planning approval procedure in accordance with Section 43 (2) of the German Energy Industry Law for installation and operation in German coastal waters, including landfall
- approvals procedure in accordance with section 133, paragraph 1, sentence 1 no. 2 of the German Federal Mining Law for installation and operation on the German continental shelf area
- Espoo procedure for the transboundary environmental impact assessment

and provided an opportunity for the submission of comments.

Below are our comments regarding the application documents:

I) Decommissioning/renaturation

In the technical explanatory report for the German territorial waters, the question of the renaturation of the pipeline is left unanswered. Nord Stream 2 AG requests that the future of the Nord Stream 2 pipeline following its decommissioning is decided at the point of its decommissioning, on the basis of the actualities of the situation at that time and the requirements that are applicable at the time.

The view of the UBA remains unchanged (see also the statement made by the UBA on 12 January 2007). Its view is that a stipulation for granting permission should be that following decommissioning, the pipeline and ancillary project components are to be removed and brought onto land in an appropriate way, unless provision for this is already made in the existing regulations (IMO Resolution A.672 (16) and FlsBergV [German continental shelf mining directive]).

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23 June 2017

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II) Leak testing for pre-commissioning

The technical explanatory report states that leak testing for pre-commissioning may either be performed using water (with sodium bisulphate) or compressed air. The leak testing for the Nord Stream 2 pipeline system must be performed using compressed air.

The UBA requests that the approval documents stipulate the use of compressed air for leak testing as a binding specification.

III) Corrosion protection

The technical explanatory report states that cathodic protection of the subsea Nord Stream 2 gas pipeline is to be provided by galvanic anodes. The anodes are to be rated as aluminium anodes according to DNV-RP-FP103. On both pipelines together, a total of approximately 1,800 anodes with a total mass of approximately 780 tonnes (approximately 733 tonnes of aluminium and 44.9 tonnes of zinc) are to be installed in German territorial waters during the Nord Stream 2 project.

The sacrificial anodes are designed to have a service life of 50 years. During this period, up to 50% of the active material may be used up (approximately 390 tonnes).

It follows that along the entire pipeline (a length of 1224 kilometres), approximately 10,000 tonnes of aluminium, approximately 630 tonnes of zinc and approximately 2.8 tonnes of indium will be installed (rough estimates). As stated above, half of this material may be used up and thus may enter the marine environment.

It is postulated that the anoxic conditions will cause the released Zn^{2+} ions to react with sulphur on the seabed to form zinc sulphide. The release of zinc from the sacrificial anodes would not be relevant for the Greifswalder Bodden and Pommersche Bucht sea areas because in these areas, the zinc would remain inert on the seabed. In terms of aluminium, the technical explanatory report expects that aluminium hydroxide, which is not water-soluble, will form in the areas surrounding the sacrificial anodes. This is because the sediments where the route is planned have pH values between 7 and 8.5. The impact of the substances released from the sacrificial anode materials is permanent and is classed as being large-scale due to the effects of dispersion and dilution. Nevertheless, the report rates it as a low-intensity impact and therefore classes the changes to structure and function as being low-level changes.

The view of the UBA is that the conclusions made in the environmental impact assessment about the environmental impact of the substances released are not presented with sufficient accuracy. As such, there are now significant doubts concerning the safety of the release of large quantities of sacrificial anode material. A PhD about this problem is currently being undertaken at the Federal Institute for Hydrology. In addition, it should be noted that extracting and smelting aluminium are both extremely energy-intensive processes.

For this reason, UBA requests that Nord Stream 2 AG are urged to

demonstrate the safety of the released anode materials with more precision, which should include the submission of relevant studies.

Furthermore, indications should be made as to whether it is possible to use impressed current anodes to protect the pipeline from corrosion, as an alternative to aluminium/zinc anodes. If it is not possible to do so, we request that a comprehensive explanation is given.

Nord Stream 2 AG should also ensure that no plastic from the coating at the welds between the pipe sections enters into the marine environment.

pp



Beglaubigt:

.....
(Angestellte)

Lilian Busse



Comments on Nord Stream 2

Comments on the application for the planning approval by Nord Stream 2 AG, Zug, Switzerland as applicant



Dear Sir/Madam,

Thank you very much for your invitation to submit comments. The Naturschutzbund Deutschland (German Nature Association) (NABU) and NABU MV hereby take this opportunity to participate under Section 59 Bundesnaturschutzgesetz (German Federal Nature Conservation Act) and § 64 Landesnaturschutzgesetz Mecklenburg-Vorpommern (State Nature Conservation Act) and submit the following comments. As it was not possible to peruse and process all the documents in the short period allowed for comments, NABU reserves the right to add further aspects before the discussion and to present them at the consultation.

NABU rejects both the construction and operation of two further gas pipelines by Nord Stream 2 AG.

NABU's energy policy grounds for rejecting the Nord Stream 2 pipeline (hereinafter NSP2) are set out below. These are followed by the section "Starting situation: Poor condition of the Baltic Sea". The subsequent discussion deals with the individual points of criticism of the structure of the application documents. The interlocking of the individual disciplines can result in overlaps and cross-references in the discussion.

Grounds for the project

Introduction to the energy and climate policy perspectives

NABU rejects the construction of the "Nord Stream 2" natural gas pipeline from both a climate and an energy policy perspective. With reference to Section 5.3.2 (and sub-sections), individual areas that militate against the "Nord Stream 2" project are discussed in greater detail below.

- achievability of climate protection objectives at various levels (international, EU, national)
- assessment of existing capacities and the real development of gas consumption
- assessment of natural gas as an energy source in terms of its greenhouse effect

Contact

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Climate protection targets

As correctly described in the application documents, binding climate protection targets exist at various levels and have to be implemented politically.

Paris Climate Agreement

At the end of 2015 the international community of nations negotiated a binding international treaty on climate protection, which entered into force in November 2016. One of the main objectives was to limit global warming to significantly less than two degrees Celsius, or better still, 1.5°C (hereinafter referred to as the 1.5°C target). The Paris agreement also set out the objective of achieving a balance of between anthropogenic greenhouse emissions and carbon sinks in the second half of the current century. This time frame might give the impression that there is still plenty of time before the community of nations is forced to abandon the burning of fossil fuels. However, analyses based on the carbon budget concept have shown that in fact very little time remains to achieve the 1.5°C goal. According to the carbon budget approach, in a "carry-on-as-before" scenario a mere four years remain for a two-thirds chance of limiting global warming to 1.5°C. Similarly, only 19 years remain for a two-thirds chance of limiting the warming of the Earth's atmosphere to two degrees Celsius if our economies continue to be run in the same way¹. Um die Ziele tatsächlich in Reichweite zu halten, ist ein schnelles und energisches Umsteuern unserer derzeitigen Nutzung fossiler Kohlenwasserstoffe notwendig.

A principle for taking action has become established in international climate diplomacy "common but differentiated responsibilities" (CBDR). This expresses the idea that developing countries must reduce their greenhouse gas emissions at a different speed to industrial nations.

In other words, due to its historic responsibility and its available resources, greenhouse gas emissions in Germany must be in balance with carbon sinks well before 2050. One interpretation of what carbon sinks in Germany mean was given by the Federal Minister for the Environment, Barbara Hendricks, in Paris at the final press conference, where she stated that greenhouse gas sinks could only be represented by reforestation measures in woods and renaturation of moorland.

The relatively minor effect of carbon sinks means that greenhouse gas neutrality can only be achieved by renouncing fossil energy sources completely. Achieving this objective by the middle of the current century requires a rapid and thorough transformation of the energy sector. The decisive factor influencing the success of this will be the future-proof investing of available resources in a post-fossil era, because otherwise this common project of the community of nations will not be achieved. In the spirit of climate diplomacy, any investment in fossil energy sources and their infrastructure should be avoided as a matter of urgency. Apart from the fact that capital wrongly invested is no longer available for restructuring the energy system, investments in fossil infrastructure also lead to lock-in effects, which further impede the transformation and not least result in "sunken assets" for the investors - in other words, investments that do not yield a return. This should be avoided at all costs simply in terms of economics.

¹ Carbon brief analysis: <https://www.carbonbrief.org/analysis-four-years-left-one-point-five-carbon-budget>

EU targets and the 2050 climate protection plan of the Federal Government

The negotiation partners in international climate diplomacy within the EU are not just the national states, but also the EU. This means the EU itself must lay down a framework for implementing the Paris objectives in Europe. Current EU climate protection targets until 2030 are insufficient to meet the internationally legally-binding objectives of the Paris Agreement. NABU pointed out as early as October 2014 that the targets did not go far enough and continues to advocate that more ambitious climate protection targets should be set as soon as possible — this is the only way the ramping-up mechanism, which is built into the Paris agreement, can actually limit global warming to significantly less than two degrees Celsius, or better still, to 1.5°C.²

In 2007, the German Federal Government decided to reduce greenhouse gas emissions compared to 1990 by 40 percent in 2020 and by 80 to 95 percent by 2050. This means that national targets are considerably more ambitious than the EU targets, even if still insufficient to comply with the Paris agreement (greenhouse gas emissions would have to be reduced by at least 95% in 2050 to achieve this). The governing frame of reference for the future energy system in Germany is therefore the decision by the Federal Government dating from 2007, which is now 10 years old.

In the "Climate Action Programme 2020" from 2014 and the "Climate Action Plan 2050", the Federal Government laid down concepts for achieving the targets. The targets can only be achieved if the energy sector is completely decarbonised, the transport sector very greatly transformed, and the proportion of buildings renovated and the use of renewable energy significantly increased.³ Decarbonisation of the energy sector means nothing less than a total renunciation of fossil energy sources for generating electricity. Even by 2016, just under 32% of electricity was provided by renewable energy sources.⁴ The expansion of renewable energy to generate electricity has therefore progressed significantly faster than planned. In the areas of heating buildings and of transport, however, the proportion of renewable energy is still lagging well behind the targets. To achieve the targets, short-term measures are necessary and must be expected in order to reduce greenhouse gas emissions by a significant extent. The transformation in the energy sector, which is already in full swing (energy transition) must take place urgently in the building and transport sectors as well. To achieve this, attention must first be directed on saving energy wherever possible. Processes of all kinds must be designed to be as efficient as possible, and ultimately nature-compatible renewable energy must be used. The examples of "electrical drives" and "heat pumps" show that technologies for using electricity from renewable energy are available now and ready for the market. Moreover, these technologies are substantially more efficient than their counterparts "internal combustion engines" and "oil heating".

The basis for energy infrastructure planning like the "Nord Stream 2" pipeline project must be the target scenario described above, because only in this way can the climate protection goals remain achievable, innovation be stimulated and investment assured.

Existing capacity

In the last ten years (2006-2016), natural gas consumption in Germany has decreased by 10.5%, while the period 2005-2015 even shows a reduction of over 16 percent.⁵ The

² <https://www.nabu.de/news/2014/10/17264.html>

³ A concrete plan as to how the targets could be achieved was set out in the Climate Action Plan 2050 of the German civil society: "<https://www.nabu.de/umwelt-und-ressourcen/klima-und-luft/klimaschutz-weltweit/paris2015/20596.html>"

⁴ According to figures from the UBA/AGEE//: <https://www.umweltbundesamt.de/themen/klima-energie/erneuerbare-energien/erneuerbare-energien-in-zahlen#textpart-1>

⁵ Eurostat, AGEB & BVEG Zahlen (http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_trends & <http://www.agenergiebilanzen.de/> & <https://www.bveg.de/content/download/9546/109947/file/BVEG-Statistischer-Bericht-2016.pdf>

proportion of gas in primary energy consumption was some 21% in 2015 and 23% in 2016. Domestic production - for a total consumption of 79 billion m³ in 2015 and 86 billion m³ in 2016 - is currently running at 7.9 billion m³. The largest consumer is industry (42%), followed by domestic use (30%), trade and commerce (15%), power generation (10%), and district heating (3%).⁶ Germany is not just the largest gas consumer in Europe, but also its main gas trading hub. Gas import capacities (54 billion m³ from Norway, 208 billion m³ from Russia and some 25 m³ from the Netherlands) and gas storage capacity amounting to 24.6 billion m³ exceed Germany's consumption by a factor of 3. According to the Federal Ministry for Economic Affairs, Germany has the largest natural gas storage capacity in Europe and the fourth largest worldwide. The connection of Nord Stream 2 will expand the import capacity by a further 55 billion m³ per year.⁷

A subjective requirement on the part of the project sponsor or owner, in an effort to provide establish grounds for this using outdated forecasts, misinterpretations of existing studies and self-commissioned studies without sufficient evidence, is in view of the major interventions in nature and the environment insufficient to overcome the statutory prohibition provided in Section 13 et seq. of the German Federal Nature Protection Law (BNatSchG). This is all the more true because the diversion of the natural gas arriving at the Lubmin landfall would necessitate the construction of the additional EUGAL line over approx. 500 km towards the Czech republic. This corresponds in total to a built-up area of several square kilometres.

Contrary to the assertions of the project developer, the project does not comply with Section 1 of the German Energy Industry Law (EnWD), under which the project must contribute towards a safe, secure, cost-effective, environmentally-friendly, efficient and consumer-friendly energy supply. Nord Stream 2 does not contribute to a safe or secure energy supply, because due to both the massive bundling of import capacity at the Lubmin landfall point and the route bundling with OPAL and JAGAL on the planned branch via EUGAL in Brandenburg and Radeland, the (n-1) security of supply is no longer assured. Technical safety is also endangered because the construction of additional lines represents a major hazard source for existing lines and the hazard radius is greatly expanded by the additional lines. In Lubmin the safety of the Nord nuclear waste interim storage facility would no longer be guaranteed.

The 50-km long route corridor already referred to between Kienbaum and Radeland, where another two crude oil pipelines run, represents an attractive target that cannot be effectively protected against an attack, with potentially disastrous human ecological and economic damage. Nor does the project contribute in any way to a cost-effective energy supply, because European loans have already had to be provided for the maintenance of the Ukrainian transit pipelines necessary for the security of supply of natural gas for the EU. The expansion of the market power of the already-largest natural gas suppliers and their ability to affect market prices in Europe at any time, further reinforced by this capacity increase, could deter other suppliers from offering additional natural gas on the European market. The parent company of the project developer simply has no economic interest in substantially reducing a high market price by providing additional quantities.

Nor does the construction of additional capacity contribute towards an efficient use of the existing infrastructure. Nord Stream 2 with a branch via EUGAL towards the Czech Republic and further to Baumgarten and Italy/south-east Europe is not a substantial reduction in the transport route either. For the reasons stated, the project will not improve

⁶<https://www.bmwi.de/Redaktion/DE/Dossier/konventionelle-energietraeger.html> & <http://www.ag-energiebilanzen.de/> & <http://bit.ly/2p9f16V> & <https://de.statista.com/statistik/daten/studie/37985/umfrage/verbrauch-von-erdgas-in-deutschland-nach-abnehmergruppen2009/> (consumption of natural gas in Germany by consumer groups)

⁷ https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Germany.pdf & http://www.entsog.eu/public/uploads/files/maps/transmissioncapacity/2016/ENTSOG_CAP_MAY2016_A0FORMAT.pdf & <http://bit.ly/2p9f16V> & <https://www.bmwi.de/Redaktion/DE/Dossier/konventionelle-energietraeger.html>

the consumer-friendliness of the energy supply and will even make it worse.

Mining law also prohibits permission because there is no fundamental requirement and the project endangers the internal and external security of the Federal Republic of Germany and is predominantly against the public interest. The danger to internal and external security arises because the landfall point Lubmin with its proximity to the nuclear waste interim storage facility represents a very attractive target that can only be protected to a very limited extent against terrorist attack, or in the case of international conflict a military attack, with very high public expenditure. The same applies to the planned bundling of EUGAL with OPAL, JAGAL and two crude oil lines over 50 km between Kienbaum and Radeland, which crosses two federal motorways and two well-used railway lines from Berlin towards Poland and Dresden, and which runs for considerable distances under the approach path to the future sole Berlin airport. The project endangers compliance with the climate protection obligations of the EU.

Assessment of natural gas as an energy source in terms of its greenhouse effect

Natural gas is incorrectly regarded as a so-called bridging fuel to a post-fossil future. The use of natural gas compared to oil and coal for the generation of electricity is widely held to reduce greenhouse gas emissions. However, the expansion of the existing gas infrastructure, which is under-utilised or already well in excess of demand, diverts urgently-needed investment from renewable energies and also impedes investment in increased energy efficiency. Ultimately, the coat of green paint on a gas which is harmful to the climate ensures a fatal continuation of the fossil era. Fossil natural gas is neither climate-friendly nor green, but rather is a major contributor to global warming. Gas is a fossil energy source, which we will have to do without due to its harmful effect on the climate. It is true that less carbon dioxide is emitted when natural gas is burnt instead of coal or oil. However, natural gas consists mainly of methane. And this is where the huge problem is, which has so far received scant attention: even minor methane emissions give natural gas an enormous greenhouse gas footprint. If we also consider the methane leakages resulting from exploration and transportation in addition to the CO₂ emissions resulting from combustion, the carbon footprint of natural gas, according to recent measurements in the US, looks significantly worse than initially anticipated. Even with the so-called conventional exploitation (i.e. without fracking) of natural gas, more than 3 per cent of the entire production volume escape into the atmosphere. This is due to leakages and pressure relief blow-offs occurring at the production site, during storage and transportation to the customer.⁸ According to current figures provided by the Intergovernmental Panel on Climate Change (IPCC), the greenhouse effect caused by methane emissions during the first 20 years is 84-87 times greater and in the first 100 years 34-36 times greater than that caused by CO₂.⁹ In view of tipping points in the climate system which may already in the short term over the next 10 to 20 years result in sudden and irreversible climate changes, it is vital to take the extremely harmful effects of methane on the climate in the first 20 years into account. Measures to reduce methane emissions can enable the achievement of short-term successes in climate policy.¹⁰

For the further debate, it is vital to consider that methane emissions resulting from the exploration and production of hydrocarbons in Germany are not currently measured by regulatory bodies or independent institutions but simply estimated by the oil and gas industry.¹¹ The IASS Potsdam takes an unequivocal stand with regard to this matter and

⁸ http://www.eeb.cornell.edu/howarth/publications/Howarth_2014_ESE_methane_emissions.pdf

⁹ https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf

¹⁰ <http://www.eeb.cornell.edu/howarth/images/summary/2030b>

¹¹ http://www.iass-potsdam.de/sites/default/files/files/wp_dec_2016_en_uncertain_climate_cost_of_natural_gas.pdf

states that - as long as knowledge gaps relating to real methane emissions are not being plugged and fast measures to a reduction are not being taken - natural gas, for reasons of global warming, cannot be recommended as bridging fuel towards a post-fossil fuel future.

Starting situation: Poor condition of the Baltic Sea

In German territorial waters, the Nord Stream 2 project is to be implemented in particularly sensitive areas of the Baltic Sea, which is already heavily polluted as it is. The planned NSP2 project exponentiates the future environmental degradation of the Baltic Sea and gives rise to the concern that the goal of achieving a good environmental condition of the marine environment as, inter alia, defined by the guidelines of the EU Marine Strategy Framework Directive, will be delayed further or jeopardised in the long-term.

In general, NABU questions the willingness and the ability of the applicant to recognise and understand the extremely critical situation affecting the Baltic Sea. Germany's obligations under EU law and international law to protect the Baltic Sea and the alarmingly poor overall condition of the Baltic Sea are being ignored. Statements such as: *"The introduction of contaminants into the Baltic Sea occurs through various sources (the atmosphere, rivers, point sources); the situation has, however, improved and a high proportion of this pollution has been caused by historical industrial discharges."* p. 168, J 01 / Espoo Report urgently requires a further direct reference to the fact that these improvements are nullified again by the (cumulative) effects of a variety of marine uses.

The Baltic Sea is an intensively utilised and heavily polluted marine region. Conflicts of interest between obligations to protect the marine environment on the one hand, and the various claims to utilisation on the other, remain largely unresolved to the present day. Even the Natura 2000 conservation areas are subject to intensive fishing, gravel and sand extraction or shipping, tolerated or authorised by the authorities. An excess of nutrients and contaminants, as well as increasing amounts of plastic waste, pose a threat to the Baltic Sea's marine biodiversity.

The initial assessment by MSFD confirms that the German territorial waters of the Baltic Sea are in a poor ecological condition. All the primary features and components of the ecosystem are heavily polluted or compromised and at present lack the desired good environmental condition.¹²

The current management plan based on the Water Framework Directive (WFD) for the river basin district (RBD) Warnow/Peene comes to a similarly alarming assessment¹³. The ecological condition of the bodies of water crossed by the NSP2 is assessed as "unsatisfactory", and a "good" chemical status has also not been achieved.

In the spring of 2014, the Federal Agency for Nature Conservation (Bundesamt für Naturschutz -BfN) published the new Red Lists for marine species in the North and Baltic Seas. According to these, one in three species is endangered, while another 30%

¹² <http://www.meeresschutz.info/index.php/berichte.html>

¹³ Aktualisierung des Bewirtschaftungsplans nach § 83 WHG bzw. Artikel 13 der Richtlinie 2000/60/EG für die Flussgebietseinheit Warnow/Peene für den Zeitraum von 2016 bis 2021; http://www.wrrl-mv.de/index_bekanntmachungen.htm

lack the scientific basis to evaluate the extent to which they are endangered. In addition to bottom trawling, scientists hold the gravel and sand extraction and excessively high nutrient inputs responsible for the alarming development.¹⁴

The signatories to the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea (HELCOM) have committed themselves by means of various recommendations and action plans to reducing the pollution of the Baltic Sea by nutrients and contaminants, shipping, fishing and the like. The HELCOM Report "Ecosystem Health of the Baltic Sea", published in 2007, revealed that with the exception of smaller areas in the Gulf of Bothnia, not a single one of the surveyed sea areas is in a good condition. This resulted in the adoption of the "Baltic Sea Action Plan" in order to resolve the most urgent problems by 2021. The HELCOM Red List contains 42 species and 16 habitats which are endangered by human activity.¹⁵

With regard to the total of cumulative adverse effects, the Baltic Sea has reached and exceeded its upper limit. This high background pollution load and the poor condition of the Baltic Sea is used as an argument by the applicant, contrary to advice from a conservation and legal perspective, to demonstrate that further deterioration caused by NSP2 will be insignificant or too low to be considered.

NABU strongly objects to these views. In fact, the poor condition of the Baltic Sea, i.e. the failure to meet the objectives set by relevant European environmental and conservation guidelines, prohibits any further deterioration.

The following chapters explain in detail that the NSP2 project can result in a further deterioration as described or can cause further delay in achieving the goals set out by the Water Framework Directive, the Marine Strategy Framework Directive (MSFD), the EU Habitat Directive and the EU Birds Directive. We refer to the infringement proceedings initiated by the European Commission (EC) against Germany on the basis of an insufficient implementation of requirements concerning the Natura 2000 Network of protected areas. Against the background outlined here, the NSP2 project does not appear capable of approval.

In the event of implementation of the NSP2, the already-poor condition of the Baltic Sea, together with the fact that the pipeline crosses Natura 2000 areas throughout the entire German territorial waters, calls for a thorough study of all impacts on marine habitats and actual compensation measures which fully take into account the conservation value of these protected areas.

A - Project Application and Approval

Representation of spatial and temporal dimensions

For the ecological assessment of the NSP2, an evaluation of the spatial and temporal dimensions of the various pressure factors is imperative. A consistent evaluation requires clearly defined units with uniform usage. Although relative spatial and temporal specifications reflect proportionality, they do not illustrate absolute comparisons. The application and definition of spatial and temporal dimensions in A.01 is not comprehensible. A general overview detailing a definition of units (like in document D1.01/Environmental Impact Study, p. 459/460/G.12/LBP Economic Exclusive Zone, p. 28/29) and of the precise application area would have been helpful in introductory document A.01.

¹⁴ http://www.bfn.de/0322_veroe.html

¹⁵ <http://helcom.fi/Lists/Publications/BSEP122.pdf>

Conservation status of biotope types and habitat types

Criticism must be levelled at the fact that the status quo is being considered when assessing the status, but that comparisons with the natural desired status are being ignored. This presentation format is incomprehensible as it ignores the existing anthropogenic impact on the condition of the ecosystem. An example of this are the currently low macrophyte stocks which form a typical component of biotope type "Seagrass beds and other marine macrophyte stocks" (§30 BNatSchG). Biotope protection assessment F.01/biotope protection assessment (p. 98) states with regard to macrophyte stocks within the investigated area, that individual plants of common seagrass species *Zostera marina* were only rarely encountered in depths between 1.7m and 5.4m at the Lubmin 2 landfall site. This means that the criteria for "Seagrass beds and other marine macrophyte stocks" have not been met. West of the industrial harbour of Lubmin, very few spermatophytes were encountered due to the fact that the shallow water area has already suffered strong long-term anthropogenic degradation. Furthermore, the applicant entirely correctly acknowledges that FFH-LRT "Large shallow inlets and bays (sea bays)" shows a poor conservation status in FFH area "Greifswalder Bodden, parts of the Strelasund and the northern tip of Usedom", due to the absence or of macrophytes or their presence being limited to individual plants.

"Overall, the conservation status of FFH-LRT 1160 in MaP has been assessed as C (poor conservation status), which in particular results from reduced macrophyte populations (both with regard to the abundance of species as well as their spread over depth) and the high nutrient pollution." P. 22, E.03/GGB Greifswalder Bodden, Teile des Strelasundes und Nordspitze Usedom (DE 1747-301)

In Table 33: LRT and species showing poor conservation status at FFH area level (p. 184, management plan for FFH area DE 1747-301)¹⁶ states the conservation goal "Conservation and prioritised development" for LRT 1160. On the basis of a prohibited further deterioration in accordance with FFH-RL (Article 6 (para. 2)), the inevitable conclusion must be reached, that the planned project is not capable of approval. In this context, it is irrelevant who is responsible for causing the present condition. From a prohibited further deterioration alone can be concluded that no further intervention can be authorised in the conservation area. Any other decision by the approval authorities must be regarded as a violation of the FFH Directive.

Investigations have proven that the patchy spread (see Map E.04/ Map GGB Boddenrandschwelle) in the Greifswalder Bodden is a result of the increased introduction of inorganic matter in the period from the 1950ies to the 1980ies. This ultimately resulted in reduced light transmission which led to a dramatic reduction in macrophyte density from 90% to 15%. Furthermore, the boundary for their depth spread reduced from 14m to 6m. Both developments occurred over a period of only 30 years¹⁷. Figure 10, p. 377 *ibid.*, highlights that the degree of coverage in the phytal has severely decreased.

It must be emphasised that any assessment of condition, in general, projects a severely degraded condition of the subjects to be protected and that these show their natural structures and function only rudimentarily. This assessment should have led to the conclusion that the planned project cannot be implemented due to the poor condition of the assessed ecosystem or LRT.

¹⁶ STALU VP/STAATLICHES AMT FÜR LANDWIRTSCHAFT UND UMWELT VORPOMMERN 2011: Managementplan für das FFH-Gebiet DE 1747-301 Greifswalder Bodden, Teile des Strelasundes und Nordspitze Usedom. (Management plan for FFH area DE 1747-301, part of the Strela Sound and the northern tip of Usedom). Decree of the Mecklenburg-West Pomerania Ministry of Agriculture, Environment and Consumer Protection (Ministerium für Landwirtschaft, Umwelt und Verbraucherschutz MV) of 15/12/2011

¹⁷ MUNKES, B. 2005: Eutrophication, phase shift, the delay and the potential return in the Greifswalder Bodden, Baltic Sea. *Aquatic Science* Vol. 67: 372-38

Presentation of facts

Application documents A.01 refer to preparatory construction works which could be regarded as significantly interfering with the approval procedure (*'Europipe GmbH (Mülheim a. d. Ruhr/Germany), United Metallurgical Company JSC (OMK, Moscow/Russia) and Chelyabinsk Pipe-Rolling Plant JSC (Chelpipe, Chelyabinsk/Russia) have been selected to deliver approximately 2,500 km of large-diameter pipes with a total weight of roughly 2.2 million tonnes. The first pipe deliveries are scheduled for the end of September 2016.'*, p. 13, A.01). It must be emphasised, however, that the applicant commits to such preparatory construction works and obligations at his sole entrepreneurial risk.

They must not be used as an argument in favour of approving the project by the authorities.

Renaturation following the end of the operating phase

As stated in application documents A.01, the construction of the NSP2 requires the introduction of large numbers of foreign objects into the sensitive ecosystem of the Baltic Sea where they will remain for at least 50 years. *Roughly 100,000 steel pipes with a concrete coating, each weighing 24 tonnes, will be placed on the seabed."* p. 11, A.01). This makes the planned project (besides already implemented pipelines 1 and 2) the largest anthropogenic structure in the Baltic Sea. In connection with the Espoo documentation, for example, it becomes apparent that there are no specific and, above all, applicable guidelines for the Baltic Sea with regard to the decommissioning and renaturation of gas pipelines. Instead, documentation from Norway/the United Kingdom and the general principles resulting from these are to be referred to alternatively when it comes to the decommissioning of the NSP2 (see p. 556, J01). The principles referred to, however, state the following principle: "Prior to decommissioning, the possibility of a re-utilisation should be explored. *If a re-utilisation is deemed feasible, suitable and adequate measures for maintaining the pipeline should be specified.'* p. 556, J01, **which cannot be reconciled with the presumed idea of bridging technology, but permits the further utilisation of fossil fuels.**

The applicant is stating with this reference that the planned pipeline is a structure which is intended to remain for a currently indefinite period of time within the ecosystem. For an assessment of the depth and intensity of the intervention and the compensation requirements resulting from these, it is therefore inevitable to include a consideration of possible measures for pipeline maintenance and care at the current point in time. **The approval authorities must urge the applicant to add to their application relevant documentation on the maintenance and renaturation of the NSP2. Otherwise, the approval procedure must be regarded as grossly flawed.**

The Espoo Report furthermore lists potential influencing factors which have to be expected if the pipeline should remain (possibly partially) in-situ (*'Presence (physical presence) of the pipeline on the sea bed and the potential impacts related to this with regard to commercial fishing and further habitat development. Continued release of contaminants from pipeline anodes which related effects on water quality (through increased metal concentrations'*, p. 559, J01). Decomposition products resulting from other components have, however, not been considered. In the long term, the other pipeline components will also be subject to weathering and therefore display changed properties. It must be ensured that this will, at no point in time, pose any risks to the marine environment. (*'Subsequently, the pipelines and rock berms remain on site (in situ) where they slowly degrade through natural processes in the*

marine environment." p. 558, J01).

The phrase "*slowly degrade through natural processes in the marine environment*" suggests that the pipeline disappears smoothly and without leaving any harmful waste. A seemingly poetic wording is however deemed unsuitable for assessing an intervention affecting nature and the environment. We expect the applicant to use knowledge- and fact-based explanations and clarifications in support of their assumptions.

In case of a negative impact on assets to be protected, these should primarily be avoided completely in the first place or, if necessary, mitigation, compensation and replacement measures be taken. No arrangements for the period following the end of the operational phase have been explicitly stated. Therefore, it remains unclear whether and how the pipeline is supposed to be deconstructed, who is responsible for this renaturation and how and by whom this renaturation is supposed to be financed. This represents, from NABU's point of view, a serious flaw in the documentation. Passing on the responsibility for the period following the end of the operational phase to future generations contradicts the costs-by-cause ("the polluter pays") principle. Ultimately, there is a risk that subsequent costs are externalised and imposed on the public in general. The documentation must be supplemented by a clear concept for the period following the end of the operational phase as well as plausible cost estimates. Based on these cost estimates, prior to the commencement of construction works, suitable financial reserves must be deposited in a special account, which can only be accessed by the approval authorities. This seems particularly advisable in view of the questionable necessity in terms of energy policy and the fact that pipeline NSP1 is currently not used to its full capacity, which question the project's economic viability.

Should future legal provisions or scientific findings require that a full or partial renaturation of the pipeline must be carried out, the applicant must be in possession of the financial means for this. **This requires that the planning approval decision for the construction and operation of the NSP 2 does already contain a stipulation on the provision of securities. NABU demands that the approval procedure makes stipulations with regard to reserves for a renaturation at a later point in time.**

Information relating to NSP1 repair works

The introductory document on the project and approval procedure states that repairs are "reasonably" excluded (p. 35, A.01). To support this statement, a report is requested detailing the maintenance and repair works carried out on the NSP1 so far. Currently no relevant data (publicly available and accessible by everyone) are available. Furthermore, the question arises which service life the applicant proceeds from, as they also consider a possible further utilisation (p. 556, J01).

C - Technical explanatory report

Replenishment and flooding

As detailed from p. 139, C.01/Technical explanatory report, replenishment works and rockfilling are required to protect the sea pipelines against erosion and in unsupported sections. There is an increased likelihood that this can result in the exposure of munitions which may require detonation on site.

Therefore, injury to/the death of marine mammals such as the porpoise cannot be excluded. For a small subpopulation such as the one represented by the porpoise in the Eastern part of the Baltic Sea, the loss of even one individual animal cannot be tolerated.

When considering the worst case scenario, a significant adverse effect on the porpoise population must be expected.

The description continues: *"The medium employed in the offshore areas for flushing, cleaning and subsequent leak testing by means of water is filtered sea water, which has been treated with UV light to avoid bacterial contamination. In order to avoid corrosion caused by oxygen, the oxygen binder sodium bisulphite (NaHSO₃) can be added to the sea water to be used."* p. 171, C.01

An analysis of the environmental impact of sodium bisulphite is missing. The relevant documentation must be added to the submission.

D - Environmental Impact Assessment

The evaluation and assessment of the environmental impact of NSP2 is based on the monitoring data obtained during the construction and operation of NSP1. However, the publicly-accessible monitoring reports for NSP1 only present results in a highly aggregated form. These are suitable for consultation by a broad public in a generally understandable way. However, they do not permit any technical assessment of the methodology or interpretation of the data. This means that the aggregated monitoring report of NSP1 is unsuitable for drawing logical conclusions about the effects of constructing a pipeline. The underlying raw data of the monitoring reports are not publicly accessible, however. A request by NABU for this to BSH asking for access to the raw data was met with a reference to the data portal operated by NSP2 (<http://www.nord-stream.com/de/umwelt/data-and-information-fund/>) Registration is required to use the data. Registration was effected in the middle of May, but access has not been granted as of today (30th May 2017). Furthermore, the portal does not claim to be in any way complete (*"The data are very project-specific and do not claim to be complete or suitable for scientific analyses in all aspects"*).¹⁸

This is a severe deficiency in the environmental impact assessment and the current planning approval. Since all the NSP2 documents relating to the impact on nature and the environment are based on the results of the NSP1 monitoring, the assessments it contains concerning the duration, spatial extent and severity of the impact are systematically not capable of endorsement.

Marine mammals

The non-technical summary of the environmental impact assessment states that an increase in numbers of grey seals and harbour porpoises was documented (*"During construction of NSP1, no effects on marine mammals were observed. The recolonisation of the Bay of Greifswald by grey seals was not disturbed; rather, a significant increase in the seal presence was documented over the years"*, p. 37, D1.02 / Non-technical summary). The welcome fact of more frequent sightings of grey seals in the Bay of Greifswald in recent years is undoubtedly not causally linked to the construction and operation of NSP1. Rather, it reflects the relevance of the habitat and should be treated with caution. In a small population, a significant increase in numbers can be caused by individual animals. The fact of more frequent sightings of grey seals during the construction phase of NSP1 cannot lead to the conclusion that no impairment will arise as a result of the project which is the subject of the present application.

The assessment of the harbour porpoise numbers in the Pomeranian Bight by the applicant is neither understandable nor appropriate. (*"The same applies to the harbour porpoise, for which since 2008 in the Pomeranian Bight in summer and autumn months an unlimited increase has been observed for harbour porpoises detected by measuring systems for listening to underwater noise"*, p. 37, D1.02.) With a current population size of only some

¹⁸ <https://www.nord-stream.com/de/umwelt/data-and-information-fund/>

450 individuals in the central Baltic (east of the Darss Peninsula, footnotes 19, 20), the situation of the harbour porpoise population is critical with even a cautious assumption of a positive trend in the numbers.^{19 20} The effusively positive assessment by the application looks more like an attempt to play down the situation.

The exponentially-increasing detection rate in the later wildlife protection study (F.07/Technical paper on the law on the conservation of species) ("*DIEDERICHS et al.* (2014, unpublished) were able to show signs of exponentially-increasing detection rates in the Pomeranian Bight, based on the monitoring data of the German Oceanographic Museum (DMM) and data from the monitoring accompanying the Nord Stream pipeline (NSP1 MONITORING SCHWEINSWALE (harbour porpoises) 2013)", p. 47) cannot be endorsed, since the NSP1 monitoring of harbour porpoises is not available and *DIEDERICHS et al* 2014 has not been published. NABU demands that the applicant seriously confronts the adverse effects on marine mammals caused by the construction of the pipeline. Appropriate documents dealing with the matter in sufficient detail must be submitted.

Resting birds

It is stated:

"In the resting areas, the displacement of resting birds in the area of construction activities is to be expected due to optical and acoustic disturbances (maximum disturbance radius of 1-2 km per ship; for the pipe-laying fleet the result is areas of 50-100 km in total). This occurs for most species outside the (main) rest period." P. 36 D1.02

The Federal Environmental Agency on the other hand describes an avoidance of wind farms within a radius of 2-4 km for loons, gannets, common scoter, razorbill and common guillemot²¹. Recent results from the DIVER project also suggest that loons avoid wind parks within a radius of up to 10 km²². The particularly sensitive loons are reported for the bird protection areas of West Pomeranian Bay and Pomeranian Bay, both of which are crossed by the route. The protected area is effectively lost to the birds within the avoidance radii. The birds arrive in the protected area during spring, autumn and winter.

The interfering stimuli resulting from the construction measures can trigger an escape reaction in birds (scare effect) and in the case of longer duration and frequent recurrence, can lead to stress reactions and altered behaviour. *DIERSCHKE et al.* (2016)²³ give a good overview of species-specific adverse reactions, which oppose the applicant's hypothesis of a general radius of disturbance of 1-2 km. In general the scare effect leads to a reduced physical condition or fitness of the individual. The consequences are time losses in food intake and regeneration, which adversely affect the energy balance of the birds (e.g. for breeding, wintering or migrating birds) and ultimately the development of populations. The optical disturbance impact leads to changes in activity patterns and/or space utilisation. This can lead to a complete or partial avoidance of areas and thus to a reduced habitat use in the resting and wintering sites. Optical disturbances can lead to a reduced probability of survival of individuals, to the loss or functional devaluation of (partial) habitats and thus to the devaluation of resting and moulting and food habitats.

NABU calls for the disturbance radius due to NSP2 be determined and evaluated species-specific on the basis of the latest scientific data according to *DIERSCHKE et al.* (2016).

¹⁹ <https://www.welt.de/wissenschaft/article135237459/Kinderstube-der-Ostsee-Schweinswale-gefunden.html>

²⁰ <http://www.sambah.org/SAMBAH-Pressemeldum-DE-2014-12-10.pdf>

²¹ Federal Environmental Agency: Assessment of environmental impacts when approving offshore wind turbines. <https://www.umweltbundesamt.de/sites/default/files/medien/pdfs/offshore-windenergie.pdf>

²² <http://bioconsult-sh.de/de/nachrichten-archiv/erste-ergebnisse-der-grossraumigen-digitalen-seetaucher-erfassungsfluge-in-deren-hauptverbreitungsgebiet-auf-der-deutschen/>

²³ *DIERSCHKE, V., FURNESS, R.W. and GARTHE, S.* 2016: Sea birds and offshore wind farms in European waters: Avoidance and attraction. *Biological Conservation* 202:59-68

Due to the construction of the NSP2 the three Natura 2000 areas (EU bird protection areas)

"Greifswalder Bodden and southern Strelasund", "Western Pomeranian Bay" and "Pomeranian Bay" shall be directly affected by the crossing of the pipeline. In regions which have been established for the protection of bird species, any further stresses on the target species must be avoided. Solely conservative projections by BELLEBAUM (2011) show how greatly the bird population is already being effected ("For the herring fishery in Greifswalder Bodden, in the period from February to May projections according to the data base revealed an annual total bycatch of 918-2259 birds." P.56)²⁴

In addition to Annex I bird species belonging to the Pomeranian Bay bird protection area include: *Gavia arctica*, *Gavia stellata*, *Larus minutus* and *Podiceps auritus*. The shallow water areas of the protected area include the German part of the Oderbank (FFH-LRT 1110) and the Adlergrund (FFH-LRT 1170) and have an outstanding ecological function for migrating and resting sea birds.

In addition to Annex I bird species belonging to the Western Pomeranian Bay bird protection area include: *Gavia arctica*, *Gavia stellata*, *Larus minutus*, *Podiceps auritus*.

In addition to Annex I bird species belonging to the Greifswalder Bodden and southern Strelasund (Code 1747-402) include: *Acrocephalus paludicola*, *Alcedo atthis*, *Asio flammeus*, *Botaurus stellaris*, *Branta leucopsis*, *Calidris alpina schinzii*, *Chlidonias niger*, *Ciconia*, *Circus aeruginosus*, *Circus cyaneus*, *Circus pygargus*, *Crex*, *Cygnus columbianus bewickii*, *Cygnus*, *Falco columbarius*, *Falco peregrinus*, *Gavia arctica*, *Gavia stellata*, *Grus*, *Haliaeetus albicilla*, *Lanius collurio*, *Larus melanocephalus*, *Larus minutus*, *Limosa lapponica*, *Lullula arborea*, *Mergus albellus*, *Milvus migrans*, *Milvus*, *Pernis apivorus*, *Phalaropus lobatus*, *Philomachus pugnax*, *Pluvialis apricaria*, *Podiceps auritus*, *Recurvirostra avosetta*, *Sterna albifrons*, *Sterna caspia*, *Sterna hirundo*, *Sterna paradisaea*, *Sterna sandvicensis*, *Sylvia nisoria*, *Tringa glareola*. Strelasund and Greifswalder Bodden together form a structured, disturbance-low coastal landscape. Closely interlocked terrestrial and marine coastal habitats are resting and reproduction areas for a variety of bird species.²⁵

Special protective measures must be taken for the European bird species listed in Annex I to the EU bird protection regulation (Regulation 2009/147/ EC of 30 November 2009). The designation of protected areas alone is not sufficient. These areas must also be cleared of disturbances in order to ensure their protective function.

In NABU's opinion the pipe-laying outside the (main) rest period of most species is not sufficient, since disturbances will also occur outside this period, which lead to a devaluation of the protected area during the construction time.

Our view is underpinned by the example of the Scaup (*Aythya marila*). This is clearly evident in Greifswalder Bodden. According to the management plan for the FFH area DE 1747-301 "Greifswalder Bodden parts of Strelasund" and the northern tip of Usedom²⁶ the lack of disturbance for the Scaup is, according to all estimates, a decisive

²⁴ BELLEBAUM, J. 2011: Untersuchung und Bewertung des Beifangs von Seevögeln durch die passive Meeresfischerei in der Ostsee. (Investigation and assessment of the bycatch of sea birds by passive sea fishing in the Baltic Sea.) BfN Skripten 295, 79 S.

²⁵ https://www.bfn.de/0316_steckbriefe.html#c33722

²⁶ STALU VP/STAATLICHES AMT FÜR LANDWIRTSCHAFT UND UMWELT VORPOMMERN 2011: Managementplan für das FFH-Gebiet DE 1747-301 Greifswalder Bodden, Teile des Strelasundes und Nordspitze Usedom. (Management plan for the FFH area DE 1747-301 Greifswalder Bodden, parts of the Strelasund and Nordspitze Usedom.) Erlass des Ministeriums für Landwirtschaft, Umwelt und Verbraucherschutz MV vom 15.12.2011 (Decree of the Ministry of Agriculture Environment and Consumer Protection MV of 15.12.2011)

factor for the selection of the area (see Table 23: *Habitat of the species in Annex II of the FFH-RL as well as relevant bird species according to Art. 4 of the VS-RL, P. 71*). MENDEL *et al.* (2008) note that even in less travelled areas shipping can lead to a reduction or fragmentation of the habitat for Scaup.²⁷

The applicant proposes preventative measures for the species protection: AFB VM 1 = Construction time constraints in the middle of May until the end of December in Greifswalder Bodden as well as in the south west of Pomeranian Bay (see p.152 F.07). Only a few pages later however it states:

"The animals stay in the Greifswalder Bodden from October, with maximum resting population levels being reached in December or January depending on the weather." P.154, F.07

The applicant concludes that the disturbance shall be minor, 1. by avoiding the spring rest period and 2. as active laying and accompanying vessels move continuously or slowly. (According to the applicant, only during a time-limited period of overwintering shall small rest areas of the Scaup be affected, see P. 154 F.07).

The protected area will be used by Scaup as early as October and at least temporarily devalued due to the disturbance impacts of the construction project. These are three full months and Greifswalder Bodden is the most important resting place in the German east seas according to HELBIG *et al.* 2001 (in MENDEL *et al.* 2008).²⁸ This long period of disturbance is contrary to the ban on deterioration from the FFH guidelines, which with the introduction of the FFH guideline in 1992 also covers all declared bird protection areas. The preventative measures: AFB VM 1 = *Construction time constraints in the middle of May until the end of December in Greifswalder Bodden as well as in the south west of Pomeranian Bay* is not sufficient for Scaup. In connection with the protection of the long-tailed duck - NABU calls for the construction work in Greifswalder Bodden to be restricted to mid-May to the end of September.

Also in the case of the long-tailed duck (*Clangula hyemalis*) it is evident that the stated construction time constraints (AFB VM 1 = Construction time constraint between mid-May and the end of December in the Greifswalder Bodden as well as in the south west of Pomeranian Bay, AFB VM 2 = Construction time constraint at beginning of September to end of December in Pomeranian Bay P. 166 F.07) are not sufficient. The applicant itself writes that the birds arrive in Pomeranian Bay from October / November (P. 165/166). MENDEL *et al.* (2008) specifies that during the autumn Scaup form high concentrations in the Pomeranian Bay (especially Adlergrund and Oderbank) and numerous animals gather in autumn in the Greifswalder Bodden (P. 72).

The logical conclusion would therefore be that construction work in Pomeranian Bay and Greifswalder Bodden may only take place up until the end of September. The NABU calls for an adjustment of the construction time constraints to the arrival dates of the long-tailed duck in Greifswalder Bodden and in Pomeranian bay.

Also for the red-breasted merganser (*Mergus serrator*) it is apparent that the construction periods are not specific to the species. The applicant recognises that

²⁷ MENDEL, B., SONNTAG, N., WAHL, J., SCHWEMMER, P., DRIES, H., GUSE, N., MÜLLER, S. and GARTHE, S. 2008: Artensteckbriefe von See- und Wasservögeln der deutschen Nord- und Ostsee. (Species fact sheet on sea and water birds of the German North Sea and Baltic Sea.) Verbreitung, Ökologie und Empfindlichkeiten gegenüber Eingriffen in ihren marinen Lebensraum. (Distribution, ecology and sensitivities against intervention works in their marine habitat). Conservation and biodiversity, Landwirtschaftsverlag. Leaflet 59: 437 P.

²⁸ MENDEL, B., SONNTAG, N., WAHL, J., SCHWEMMER, P., DRIES, H., GUSE, N., MÜLLER, S. and GARTHE, S. 2008: Artensteckbriefe von See- und Wasservögeln der deutschen Nord- und Ostsee. (Species fact sheet on sea and water birds of the German North Sea and Baltic Sea.) Verbreitung, Ökologie und Empfindlichkeiten gegenüber Eingriffen in ihren marinen Lebensraum. (Distribution, ecology and sensitivities against intervention works in their marine habitat). Conservation and biodiversity, Landwirtschaftsverlag. Leaflet 59: 437 P.

Greifswalder Bodden forms one of the main wintering areas on the German east coast, a high density is found at the mouth of the bay and the main passage takes place in October/November (P.160 ff F.07). Nevertheless the construction time constraints are described as being appropriate for the red-breasted merganser even though the construction work covers the entire span of the main passage. NABU calls for an adjustment of the construction time constraints to allow for the main passage of the red-breasted merganser in Greifswalder Bodden/at mouth of the bay (construction time constraint until the end of September).

Another example is the common scoter, which occurs in high individual numbers in the Pomeranian Bay in winter and spring but also uses the area to moult in summer²⁹. NABU also calls for the use of the protected area by the common scoter to be taken into account during construction planning and a transparent assessment of the disturbances caused by the construction work.

For NABU the example of the "scaup" (and further listed bird species) illustrates the applicant's thoughtless handling of the importance of Natura 2000 areas. Natura 2000 areas are protected areas for species and habitats, which are of the utmost importance in the heavily polluted Baltic Sea. A devaluation of their function, even if it appears to occur only in part or in time, is not allowed. Currently NABU does not detect the lawful taking into account of the protection and conservation objectives of the EU bird protection regulation and calls for a new calculation and illustration of the predicted impacts, in particular to the expected loss of land and disrupted individual species.

Consideration of the 1% criterion

In order to determine the significance (in connection with impacts) of the impairment, often e.g. for the approval of offshore wind parks by the Federal Maritime and Hydrographic Agency (BSH), the so-called "1% criterion" is used, which takes a species-specific limit for the significance of habitat loss when at least 1% of the biogeographical population is affected.

The 1% criterion is an internationally recognised reference for the designation of bird protection areas. In accordance with the Ramsar Convention an international importance of a resting area exists when it regularly accommodates 1% of the biogeographic population of a species. The criterion is also used for sea birds. However, for the assessment of intervention works, national inventories should be used because of the better data situation. Thus, if 1% of the national population of a sea bird species is affected by disturbance in at least one season, the level of populations is likely to be affected.

The reference biogeographical population is not suitable for determining the significance (in connection with impacts) of an impairment in a bird protected area. The stock numbers for the protected area concerned (standard data sheet) must be referenced here. If the limits of the 1% criterion are not met there is a risk of environmental damage. The cumulative impairment of a protected area is crucial, not the impact of a single project.

The Lambrecht & Trautner convention (2007) suggests that a significant impact on a Natura 2000 area occurs if 1% of a habitat is affected by a project. It is therefore assumed, that a significant impairment certainly exists *inter alia*, when more than 1% of a habitat is lost. If the loss of habitat is below the 1% threshold it is necessary to check for each individual case, whether a significant impairment exists. According to the convention, for large areas the significance threshold for impairment by area losses is even considerably lower than 1%, as this criterion has been developed for smaller habitats

²⁹ https://www.bfn.de/0314_pommersche-bucht.html

and species habitats.

With regard to the utilisation of areas, the EuGH has also made it clear that even very small area losses can represent a non-tolerable reduction of a protected area. In the case of "Lappel-Bank" (EuGH, Court of Justice judgement of 11.7.1996 - C-44/95, "Lappel-Bank") an area of 22 hectares was to be excluded from the 4.681 hectare protected area of the "Medway estuary and swamp area". This corresponds to approximately 0.47% of the protected area.

NABU calls for a comprehensible assessment of the 1% criterion on the areas affected by NSP2 in the relevant FFH and bird protection areas. It is necessary to examine the direct loss of the area and the impairment (including disturbances) of the protected products, here in particular of the species of birds taking into account the avoidance radius according to Dierschke and Garthe (2016).

In den monitoring documents *Results of Environmental and Social Monitoring 2010*³⁰ it is reported that a 14-day (29 September to 12 October 2010/Germany) bird strike monitoring took place on the pipe-laying barge Castoro Sei. 32 deaths were discovered. There was no survey on the cause of death, it was not estimated how many animals were not found (because they had fallen into the sea) and there was also no species list of the dead birds published (*P. 68 Results of Environmental and Social Monitoring 2010*).

The questions that emerge from this:

1. What were the bird species? A publicly accessible species list is required
2. How many animals died according to projections (including extrapolation model for the calculation of unexplained deaths in the sea) during the entire laying period? (How many in Germany how many in all the countries concerned?)
and
3. What were the causes of death?

The NABU calls for the answer to these questions and depending on the results, a reassessment of the risk of injury or death resulting from the construction and/or operation of NSP2 for each species concerned.

Species should not experience any further disturbance, even during their main period because not only endemic species of birds are endangered, but the stock situation and the state of conservation have also deteriorated, considerably in some widespread species of birds. According to GARTHE & SUDFELD (2012) these include the long-tailed duck and the velvet scoter, whose populations rest and overwinter to a considerable extent in German territorial waters. Since the beginning of the nineties the population of sea duck species, which overwinters in the Baltic Sea has declined by 60%³¹. Such drastic reductions have resulted among other things, in that the long-tailed duck was selected as the sea bird of the year 2017.³²

The impact on the bird world by NSP2 is undervalued according to NABU assessment.

Aluminium

Zinc and/or aluminium are continuously being locally released from pipelines lying on the sea bed. (*"Zinc and/or aluminium are continuously being locally released into the water column along pipelines lying on the seabed" P49, D1.20.*)

³⁰ Nord Stream AG 2011: Results of Environmental and Social Monitoring 2010, 110 P.

³¹ GARTHE, S. & SUDFELD, C. 2012: Eisente und Samtente weltweit gefährdet. (Long-tailed duck and velvet scoter endangered worldwide.) Der Falke 59:348/349 http://www.dda-web.de/downloads/texts/publications/falke/59/garthe_sudfeldt_2012_eisente_u_samtente_weltweit_gefaehrdet.pdf

³² <https://ahrensburg24.de/2016/11/18/verein-jordsand-die-eisente-ist-seevogel-des-jahres-2017/>

The measured concentrations are not considered a hazard: *"Aluminium is not known as a contaminant in the marine environment. There is currently no evidence that aluminium is having a harmful impact on the prevailing concentrations in the marine environment. These impacts are large-scale, long-term and low in intensity, resulting in low SuF. No significant adverse environmental impacts are possible due to interaction."* P. 49, D1.02

Even cumulatively, only low structural and functional changes (SuF) are expected. *("Depending on the plant, the impact of the emissions from the sacrificial anodes act together with the already laid Nord Stream Pipeline. The amount of metal potentially dissipated in solution is roughly doubled with the implementation of the project considered here. The total mass of the installed sacrificial anodes is approx. 830 t for NSP1 and approx. 780 t for NSP2. The sacrificial anodes are designed for a lifetime of 50 years. During this time, up to 50% of the active material can be consumed. For the pipeline sections laid in the seabed, it is to be assumed that a part of the metal dissolved will accumulate locally in the seabed. The impacts are local, long-term and low in intensity, resulting in a low SuF. No significant adverse environmental impacts are possible due to interaction."* P, 49, D1.02)

Exceedances are only predicated in the immediate vicinity:

"The resulting concentration of metal ions in the water column will not differ from the background load outside the immediate vicinity of the anode (i.e., <5 m). In the immediate vicinity of the anode, the PNEC values can be exceeded for zinc and aluminium." P. 158, J01

The following questions arise from the information under consideration:

1. Aluminium is a topic that is currently much debated, because of its potential carcinogenicity and as an active contributor to dementia arising from hygiene products for people.³³ The pipelines lying on the seabed form an artificial reef that is populated by molluscs and which in turn is a new source of food for birds such as long-tailed ducks, (See Offshore Monitoring I3.04). Therefore, it can be assumed that the aluminium will accumulate in the molluscs and be passed along the food network to subsequently accumulate in the higher consumers. The applicant's assessment, which is based solely on a short-term measurement of concentrations in the water, is not sufficient for the assessment of long-term impacts, in particular of enrichment in different species or the food chain. The conclusion that significant environmental impacts are not possible lacks reasonable justification, because the long-term impact must also be considered.
2. The applicant indicates that this problem exists should the pipeline be used beyond 50 years and the consumption of 50% of the active material in the sacrificial anodes (P. 559, J01). However, only a few pages later qualifies that *a program for decommissioning will be worked out only in the late years of the operating phase. This would enable the inclusion of future determinations and knowledge (p. 562, J07)*. The prediction of permanent, significant environmental impacts is implausible without adequate investigation results.
3. The applicant also omitted to provide information on a cumulative impact of emissions from the sacrificial anodes of offshore wind turbine anodes, ships, etc. However, these are necessary in order to be able to assess the

³³ <http://www.zeit.de/wissen/gesundheit/2014-07/aluminium-gesundheitsrisiko>

environmental compatibility of the project.

It must also be ensured that no risks arise when the pH conditions (which are currently at 7-8.5 along the route and lead to the formation of insoluble aluminium hydroxide (p. 348, J01)) or anoxic conditions. *ZnS and AL (OH) 3* are currently accumulating on sections where the pipeline is covered with sediment (anoxic conditions), (P. 610, F01).

The problem is that dissolved Al^{3+} ions are toxic to plants because they cause root damage and reduce phosphate intake; aluminium from mining waste has a detrimental impact on all aquatic biocenoses (aluminium ions deposit on the gills, clogging them with mucus and impairing breathing). Aluminium is also a known neurotoxin. It damages the nervous system and depending on the concentration can, for example, lead to the loss of the sense of direction in salmon.³⁴

NABU calls for a comprehensive analysis of future scenarios and alternative rust protection methods. A reliable assessment of the environmental impacts resulting from the use of sacrificial anodes must be based on the current state of the art. The mere presumption of further technical developments cannot be decisive for the assessment.

Cumulation

In Chapter 5.8.2 *Interaction with other projects in a terrestrial area (D1.02)* states: *"Basically, impacts can only have a cumulative impact if they are of the same species. For example, the particular terrestrial use by the MES and the EST plants are cumulative."* P. 50. This statement is vague and inadequate. Dependencies and interactions, which at first glance do not have the same properties, can cause cumulative impacts. HILDEBRANDT *et al.*, (2017) distinguishes between additive cumulation (accumulation of similar stresses, same paths of action/similar type of impacts on objects of protection considered) and synergetic cumulation (combination impact of *different* stresses; e.g. loss of feeding habitat and danger of collision (e.g. wind energy) or consequential impacts: breaks in grassland and increased collision risk due to the evasion of wind farms).³⁵

The statement *impacts can only have a cumulative impact if they are on same species* is therefore incorrect and disregards the ecosystem approach according to the EU Marine Strategy Framework Directive (Chapter I, Article 1. (3)).³⁶ NABU calls for an assessment of the additive and synergetic cumulative impacts of the proposed project. If this assessment is not carried out, the UVS is grossly flawed. In the absence of appropriate rework, the present documentation is incomplete and the project is not eligible for approval.

Macrophytes

The following statement *"Aquatic plant stocks do not occur along the route in the EEZ because of the absence of natural hard substrates (for example rocks). The pipelines lying on the seabed therefore have no impact on aquatic plants."* P. 35, D1.02 is regarded as too general and therefore incorrect. Correctly speaking, it is said that marine macrophyte stocks are relatively rare in the Baltic Sea EEZ due to the prevailing depth of water and are so far only known on parts of reefs in the Baltic Sea EEZ.³⁷ The synonymous use of

³⁴ <http://www.lenntech.de/pse/wasser/aluminium/aluminium-und-wasser.htm>

³⁵ HILDEBRANDT, S., SCHULER, J., STEINHÄUSSER, R. and KRÄMER, C. 2017: Berücksichtigung kumulativer Wirkungen in der Umweltplanung. (Consideration of cumulative impacts in environmental planning.) Natur und Landschaft 92:209-213. (Nature and landscape)

³⁶ Directive 2008/56/EC of the European Parliament and of the Council for establishing a framework for community action in the field of the marine environment (Marine Strategy Framework Directive - MSDF)

³⁷ BfN 2012: Methode zur Bewertung der Erheblichkeit von Beeinträchtigungen im Rahmen des gesetzlichen Biotopschutzes nach § 30 BNatSchG in der AWZ version 27.02.2012. P. 19 (https://www.bfn.de/fileadmin/BfN/awz/Dokumente/Biotope_Erheblichkeit_Kurz_2012_02_27barrierefrei.pdf)

"aquatic plants" and "macrophytes" in this section prevents clear understanding.

Moreover, a characteristic, natural lack of hard substrates indicates that they are not part of the habitat in the affected areas.

Consequently the artificial reefs created by the construction of the NSP2 and small-scale deposits of stone ballast, represent a significant change in the features of the seabed.

Macrophyte stocks have been found elsewhere that have a dominant stock of red algae (*reef areas of the Boddenrandschwelle as well as the bordering hard substrates in Pomeranian Bay near Nordperd* P. 541, D1.01). Resettlement can begin after restoration. (P. 541, D1.01). Own data should prove that a regeneration of the macrophyte community had begun after only three years (P. 541, D1.01).

In the area of the 12 nautical mile zone, only medium-term or short-term impacts of turbidity plumes are considered for the macrophytes in the close vicinity on the routes (P. 542, D1.01).

These passages show that the applicant does not know how to assess and appreciate the value of the unfortunately few remaining macrophyte stocks on Boddenrandschwelle / Pomeranian Bay.

No account is paid to the fact that submerged macrophytes often counteract a negative impact to a certain dimension through different feed-back mechanisms. Accordingly, there is no linear response to a gradual deterioration in light availability This makes the point at which a "switch" (i.e. breakdown) occurs difficult to predict. Due to the prior pollution that the Baltic Sea is already under, however, the risk of reaching this point change is increased by every further (even only "temporary") deterioration. This event would also see the last of the macrophyte stocks disappear. Dense submerged vegetation has a feedback mechanism that reduces the amount of turbid materials that are stirred up, consequently preserving itself.^{38 39}In the event of large-area collapses, this self-preservation function becomes disturbed and it is extremely difficult to re-stimulate. This can be observed in the disappearance of extensive zoster stock.

Specifying the spoil ground to be used

As far as can be seen in the documents, there is no specific naming of the operation on whose land material with increased organic content is to be brought. (*"It is assumed that, for the period of the dredging operations an area will be available for depositing the previously specified quantity of excavated material on the spoil ground."* P.57, D1.02

Without proof of the proper disposal of this material the project is not eligible for approval. The impacts of depositing this material are part of the building-related impacts and must be considered in the permission process.

Considering the above the applicant's conclusion that: *"As the activity takes place as part of the continuous operation of a spoil ground with specified limit values for emissions, there are no significant adverse environmental impacts on the other individual subjects of protection."* P. 58, D1.02 is premature and can only be verified after the operation is known and the specific conditions verified.

It is also necessary to consider the case that none of the approved spoil grounds are

³⁸ MUNKES, B. 2005: Eutrophication, phase shift, the delay and the potential return in the Greifswalder Bodden, Baltic Sea. *Aquatic Science* Vol. 67:372-381

³⁹ SCHEFFER, M., HOSPER, S.H., MEIJER M-L., MOSS, B. and JEPPESEN, E. 1993: Alternative equilibria in shallow lakes. *TREE* Vol. 8, no. 8: 275-279

available. In this case it cannot be assumed that no significant environmental impact is to be expected from the disposal of dredged material with an increased organic content. To ensure that this assessment is safe, it is not possible to rely on the applicant's statement that there will be a suitable spoil ground with fixed limit values for emissions. Without the precise verification of the spoil ground to be used for disposal, the UVS and the approval based on it are faulty.

Information on marine deposit sites

The statement: *"The marine deposit site will not be located in a Natura 2000 area or other protected areas or high-quality habitat. Significant sustained impacts on such an area can therefore be excluded"* P. 61, D1.02 is incorrect, as significant sustained impacts on a protected area/high-quality habitat is not dependent on the direct crossing/immediate vicinity in the protected area. Only after the marine deposit site and the present conditions are known can a reliable assumption be made about the impacts.

Statements such as: *"The material required for embedding the pipeline (a gravel-sand mixture) is obtained from a suitable external marine deposit and transported to site. For NSP2 this should be performed under the following principles: the shortest possible transport distances, the lowest risk of importing non-local species and the use of autochthonous material."* P. 58, D1.02 must not be optionally described ("should") but as a binding statement ("must"). Only the specific naming of a marine deposit site can result in reliable estimate of the environmental impact.

To ensure that this assessment is safe, the applicant's assertion that significant adverse impacts to Natura 2000 areas can be excluded by the extraction of maritime gravel and sands should not be trusted. The UVS and the approval on which it is based are faulty, without any precise evidence as to which deposit is to be used for the removal of the material.

E-FFH-VU Flora Fauna Habitat Compatibility investigation

Crossing NATURA-2000 areas

In the areas under German responsibility NSP2 should run completely through NATURA 2000 areas. The NSP2 construction route currently planned in the 12 nautical mile zone crosses four NATURA 2000 areas and one EEZ zone. These include two FFH areas ("Greifswalder Bodden, parts of the Strelasundes and Nordspitze Usedom/DE 1747-301" and "Greifswalder Boddenrandschwelle and parts of the Pomeranian Bay/DE 1749-302") as well as three EU bird protection areas (Greifswalder Bodden and southern Strelasund/DE 1747-402", "Western Pomeranian Bay/DE 1649-401" and "Pomeranian Bay/DE 1552-401 "). The applicant's assessment that concludes that there is no significant impairment in all FFH and EU bird protection areas that are crossed is incorrect in the opinion of NABU. The incorrect assessment seems to serve the sole purpose of not jeopardizing the approvability of the project.

Taking the FFH area DE 1747-301/Greifswalder Bodden, parts of the Strelasundes and Nordspitze Usedom as an example, which is dealt with more closely in the management plan FFH area DE 1747-301.⁴⁰ Here it states:

⁴⁰ STALU VP/STAATLICHES AMT FÜR LANDWIRTSCHAFT UND UMWELT VORPOMMERN 2011: Managementplan

- *"The protection purpose of the FFH area DE 1747-301 " Greifswalder Bodden, parts of the Strelasund and the northern tip of Usedom" is the preservation and development of a structurally-rich complex of characteristic types of habitat of the Boddengewässer and the directly neighbouring coast with the fauna and flora bound to the special habitat conditions that, besides the numerous breeding and resting birds, also includes the grey seal, otter, large copper butterfly, large white-faced darter, narrow-mouthed and Des Moulin's whorl snails and the fen orchid. S. 2/3*
- *"The favourable conservation status of the large area LRT of the Boddengewässer – the condition of sandbanks with weak continuous flooding, vegetation-free mud, sand and mixed flats and reefs is to be secured and the unfavourable condition of the estuaries, the lagoons of the coastal area and the flat large marine arms and bays improved." S. 153*
- *"The outstanding function of the marine LRT as a resting and feeding habitat, especially for the bird species listed in the LSG-VO" Greifswalder Bodden "from 10.12.2008, will be secured." P. 153*

In Table 22: The importance of the resting birds occurring in the area for the Natura 2000 network, P 69 for example, the scaup, long-tailed duck and red-breasted merganser are listed whose share in the flyway population in the area is > 1%. The scaup is in an unfavourable condition all over Europe.

Table 26: Assessment of the conservation status of the habitat types shows that the overall assessment, rates the current conservation status of the LRT at C (A 286.85ha/B 11.534.73ha/C 45.215.95ha). Particularly noticeable is LRT 1160 (area of large marine inlets and bays), with its core habitats in the Greifswalder Bodden and an area of 40,601.6 ha: However, the WFD rates the condition of the Greifswalder Bodden as unsatisfactory (Table 4: Results of the condition assessment according to the EC Water Framework Directive, p. 20).

It is found that both LRT and faunistic individual subjects of protection are endangered. Any impairment of a protected area jeopardizes the established protection and conservation objectives and weakens the protected area network. The coherence of the regional network must be protected. The prohibition on deterioration must apply. When ecosystems are heavily stressed any intervention must be considered as a deterioration and is therefore cannot be approved.

The standard of review is that any impairment, the relevance of which cannot be ruled out according to scientific standards (Art. 6 Para. 3, 4 FFH-RL) in conjunction with § 34 BNatSchG) is significant.

This is to be examined and verified in a comprehensible manner within the scope of the FFH-Impact NABU calls for a route that does not infringe on NATURA 2000 areas.

Monitoring methods and expected regeneration

Benthos

With regard to the development of benthos, the monitoring observation period revealed significant peculiarities that caused an unusually positive development of zoobenthos across a wide area (including the affected construction area). In 2011, four stronger salt-water inflows from the North Sea occurred, including the most important first "Major Baltic Inflow" since 2003. Three further fresh water inflows followed in 2012. These extraordinarily strong and steady inflows subsequently resulted in a particularly positive development of the benthic populations (2012 / P. 6, 2013 p. 4).

Against this background it can hardly be considered a success if the benthic populations have relatively quickly approached the condition at the beginning of the construction measures on the pipeline, that were characterised by repeated oxygen deficiency situations. Unfortunately, such a substantial regeneration within two years is not normal. On the contrary, if the construction work on Nord Stream 2 is followed by a period of lower salt water inflows, a regeneration period of the benthos populations could possibly take in excess of ten years.

The regeneration of the benthos as suitable food for marine/diving ducks is unlikely within two years, as stated repeatedly. The error of generalising the single result of the Nord Stream observations is repeated here. In fact, the development of larva is very different from year to year for most of the benthos organisms. The HzE marin of LUNG⁴¹ comments on this fact: *"As this mollusc (here: Mya arenaria) has a life expectancy of 10 years or more and larval production does not necessarily occur annually depending on the environmental conditions, the complete restoration of the state of origin of this population can take 10 to 13 years under unfavourable conditions such as oxygen deficiency or delayed larvae production (IfAÖ 2008b). In addition, there are other long-lived species in the Baltic Sea, e.g. Arctica islandica, which can reach an age of >50 years."* (P. 14)

The area surveyed in detail (duB)

When defining the duB, the Nord Stream 1 monitoring serves as a basis, which – as shown above – has documented a situation that does not match the standard situation. The duB will therefore to be extended. In particular, the habitat width of 100m is clearly too narrow.

NABU calls for these limitations in the interpretation of the monitoring data to be assessed accordingly and to be included in the assessment of the project impact, for the duB to be adapted accordingly and for further data surveys to be added.

FFH DE 1747-301 Bay of Greifswald, parts of Strelasund and the northern tip of Usedom Island

Avoidance behaviour in animals

In the application documents, a duration of 7.5 months is specified for the non-tangible impact of acoustic/optical stimuli (Table 1-1: Relevant constructional impacts, p. 10 f, E.03). Furthermore, it is assumed that any impairment can be ruled out based on the evasive behaviour of grey seals. These are expected to avoid areas with excessive noise levels and thereafter not be impaired (P 115, E.03). This assessment is completely incorrect, because forced avoidance behaviour is always an impairment. Affected animals

⁴¹ https://www.lung.mv-regierung.de/dateien/hze_marin.pdf

must give up their current activities (such as feeding), depriving them of energy and then they must escape the area, which in turn consumes energy and time. Gray seals rely on a disturbance-free habitat. The scientific knowledge on the acoustic sensitivity of seals is currently poor. At this point, the seals are only representative of all mobile species with a large area of distribution.

The acoustic and optic disturbances from the construction measures have a wide impact on birds. Besides the spontaneous escape and avoidance reaction, recurring influences can lead to stress and reduced fitness. The animals are excluded from important resting and feeding habitats and have to escape to areas with poorer living conditions. There they concentrate, the population density increases and the competition for food escalates. This may result in increased mortality rates. Observations of oyster catchers off the British Isles showed a 2.5-5 per cent increase in mortality for a one percent increase in the density of the population.⁴² The sum total of all affected species resulted in reduced habitat use and weakening and/or failure to meet the protection and conservation objectives in the bird protection area.

Optical disturbances can lead to a reduced probability of survival of individuals, to the loss or functional devaluation of (partial) habitats and thus to the devaluation of habitats. Depending on the type and individual characteristics avoidances are differ incisively. However, there are always impacts.

Slight shortfall of orientation values

When considering the cumulative impact (*Fig. 6-1: Cumulative temporary, gradual impairment of FFH-LRT 1160 (without special expression) in FFH DE 1747-301 in the case of the simultaneous laying of 3 sea cables (50Hertz) and Nord Stream 2 2018 (worst-case assumption), P. 109, E.03*), the LT orientation value is only slightly fallen short of (orientation value of the individual LRTs for the (permanent) "quantitative-absolute loss of area" according to the convention proposals of LAMBRECHT & TRAUTNER 2007). The assessment of the cumulative impacts of other projects is part of the assessment of the relevance.⁴³ In Chapter 6.2 the determination and assessment of cumulative impacts is based on the establishment and operation of 6 AC systems (220 kV) for network connection from the offshore wind farm clusters "Westlich Adlergrund" and "Arkona-See" (50Hertz) to the network connection point at the "Lubmin transformation station". As the applicant is guided by a self-chosen principle in assessing the impacts of its intervention works *"Impacts can only have a cumulative impact if they are of the same species"*, it can be assumed that a detailed survey/distinction between additive and synergetic impacts did not take place. Under these conditions, the assessment that the LT orientation value would be undercut, even if only slightly, is incorrect. There is a risk that the LT orientation value will be exceeded when evaluating additive and synergetic impacts. NABU therefore calls for the necessary new calculation with the inclusion of additive and synergetic impacts.

EU bird protection area DE 1649-401 "Western Pomeranian Bay"

Existing load on the area

In the FFH-VU of the EU bird protection area "Western Pomeranian Bay":

"A part of this route section is located within highly frequented shipping corridors (Fig. 4-1), so that the distribution of seas is already restricted by existing shipping traffic." P. 49, E.11/EU bird protection area DE 1649-401 Western Pomeranian Bay. The applicant correctly points out the heavy load placed on the protected area. A further additional load

⁴² DONG Energy 2013: Burbo Bank Extension Offshore Wind Farm, Paper 7: Red-throated Diver Displacement, 16 S.

⁴³ http://ffh-vp-info.de/FFHVP/Lrt.jsp?m=2,0,8,14&button_ueber=true&wg=0&wid=1&kategorie=4

will result in the area being further impaired as a resting, moulting and feeding habitat. According to the FFH-RL, there is a prohibition of deterioration (Article 6 (2)). For this reason alone, the project is not eligible for approval. NABU therefore calls on the authorities to refuse permission.

The applicant notes that existing shipping has led the protected areas, which are potentially suitable for feeding and resting, to only having low bird densities or which are largely avoided (p. 59, E.11).

As a result, there are already many negative impacts on existing individual subjects of protection. This is reinforced by cumulation impacts of the planned pipeline construction. There is an obligation to improve the damage already present and therefore no further intervention can be approved. Approval of the project would be equivalent to a breach of the FFH-RL.

Bird protection area "Pomeranian Bay" (DE 1552-401):

Existing load on the area

For this protected area the applicant also states that the frequent shipping causes the avoidance behaviour of birds, but qualifies that: "The restriction of the construction period to outside maximum resting areas limits the intensity of the project impacts. A restriction in the construction period is also foreseen in the case of an AWTI construction site within the EU bird protection area" (P. 70, E.13 / EU bird protection area DE 1552-401 Pomeranian Bay). Here too, the construction of the pipeline will add the NSP2 pipe laying ships to the already existing shipping, which will further intensify the cumulative impact of the NSP2 construction. The project is therefore not eligible for approval for this reason alone, because the prohibition of deterioration would be disregarded.

On the contrary, any increase in disturbances should also be avoided outside of resting areas in protected areas that were established solely as bird protection areas. Protected areas are priority areas for individual subject of protection that are relevant to nature protection. The objective of preserving such subjects of protection is a priority in the defined Natura 2000 areas.

FFH DE 1652-301 "Pomeranian Bay with Oderbank"

State of knowledge

The statement that the FFH area is supposed to serve as a food habitat/ migration area for the harbour porpoise (P. 32 E.14/GGB DE 1652-301 Pomeranian Bay with Oderbank) shows that there is still significant lack of knowledge regarding the harbour porpoise. This lack of knowledge must be cause for extreme caution and allow conclusions to be drawn only under reservation, regarding the function of partial areas of the habitat for the species. It is however crucial for the assessment that the species is using the habitat and that it this is being put at risk.

The data sheet for the Pomeranian Oderbank states that despite lack in data, the aim is to develop the populations of this species, which are endangered in German waters (P.8). The lack of knowledge regarding the life of harbour porpoises does not reduce the need for protection of their habitats and the intensity of the intervention of the project.

FFH DE 1749-302 "Greifswalder Bodden mouth and parts of

Pomeranian Bay"

Habitat types in the FFH-VU DE 1749-302

The FFH-RL is limited to only a few LRTs in the marine area and it would be expected that at least this has been comprehensively assessed in an FFH-VU and its impairment described. Unfortunately, this is not the case. The LRT 1170 is nevertheless still superficial in the FFH-VU, and in many respects incorrectly dealt with in Chap.

4.3.1. The LRT 1110 is only recognised as existing (P. 15), but is ignored in the further analysis. It remains therefore unclear in what form and to what extent impairments occur here. The FFH-VU is clearly unlawful in this form and the project is not eligible for approval.

FFH DE 1251-301 "Adlergrund"

State of knowledge

There is also a lack of knowledge here (exact function of the flat ground for sea mammals such as harbour porpoises and grey seals) P. 29 E.15 / GGB DE 1251-301 Adlergrund).

Once again: the lack of knowledge about the habitat of harbour porpoises/grey seals does not reduce the conservation importance of their habitats and the intensity of the intervention of the project.

Cumulative impacts

It is important to note that a cumulative interaction is not necessarily dependent on spatial overlaps or simultaneous construction work.

Moreover, criticism is once again expressed, as the exclusive consideration of current projects ignores other anthropogenic environmental impacts. Material environmental impacts such as for example inflows from agriculture and daily shipping are not taken into account in such a consideration, which leads to a fundamental misjudgement of the total and cumulative impacts.

HILDEBRANDT et al. (2017) document to define cumulative impacts:

"Cumulative impacts are understood to be environmental impacts, which result from a plurality of distinguishable anthropogenic stress carriers or pressure factors (Heiland et al. 2006 Siedentop 2005 Cooper 2004). These factors are the result of one or of a series of past present or future projects (CEQ 1997; Siedentop 2005)." P. 210. According to the ecosystem approach, ecosystems can only be properly managed and protected when viewed as a whole. By adding and interacting impacts cascades, buffering systems and various sources of stress, linear cause-effect relationships are often not close to reality. Instead a complex mesh of effects is formed.

Table 7-2: Tabular overview of projects in the 12-sm zone (coastal seas M-V) (P. 47 ff, E.01/multi-territory part) false conclusions are made in the explanation of the assessment e.g.:

10: OPAL-NEL gas pipeline system/gas pipeline network "Status: in operation; no plant-related impacts, since not in the GGB or VSG, therefore interaction is not possible" P. 49 E.01

→ This assessment is based on the incorrect assumption that the impact of other projects can only interact with the planned project, if they are located in the immediate neighbourhood. The marine Natura 2000 areas are however three-dimensional habitats, the borders of which are defined by human beings and do not lead to a hermetic closure

of the area in situ.

11: OPAL/NEL Landing station (Anlandestation (AST)) Greifswald. "Status: in operation; no emissions are emitted from NSP2 therefore no interaction is possible" P. 49 E.01

→ Not only an operation-related cumulation possibility should be considered, but whether permanent and building-related/plant-related impacts accumulate with those of NSP2

13: Extension Marina Kröslin. "Status: in operation; is located on the Peenestrom, not on the Greifswalder Bodden, therefore an interaction is not possible" P. 49 E.01

→ A direct local overlap is not absolutely necessary

14: Ryck-Sperrwerk. "Status: commissioning took place on 27.04.2016. Located outside of GGB and VSG therefore an interaction is not possible." P. 49 E.01

→ A direct local overlap is not absolutely necessary

18: Dumping sites 508, 521, 527, 551. "Currently not used, therefore an interaction is not possible" P. 50 E.01

→ Non-use excludes only current operating-related interactions

32: Nord Stream-Pipeline. "Status: in operation. Regeneration proof of the affected FFH-LRT was provided again by Monitoring 2016 so interaction is not possible

→ The assessment that the construction of NSP 2 could have no impact on the affected FFH-LRT because regeneration took place after the construction of NSP1 is firstly, incomprehensible as access to the data collected is denied.

Secondly, it is assumed that these habitats would regenerate after each additional intervention work. This assertion is neither justified nor credible according to current knowledge.

The applicant's line of reasoning in the overview table reveals a strong assessment deficit, since the EUGH (court of justice) legislation for the interpretation of the cumulation concept remains completely unobserved.

The EuGH- court of justice judgement of 11 February 2015 on the EIA Law/Screening (C 531/13 OJEU 2015, No C 118 7-8) clarifies the current interpretation of the cumulation concept. It states: "Thereby it makes clear that by no means only "similar" projects can cumulate, which is again made clear by the EU law from § 3b Section 2 Sentence 1 of the UVPG. This also applies to the spatial restrictions set out there ("located on the same operation site or building site" and "in a narrow spatial context") and as set out in § 3b Section 2 Sentence 2 Nos. 1 and 2 – these criteria are also EU law. The criterion of "simultaneous implementation" does not correspond to EU law, as this criterion favours the so-called "salami-tactics" (Dr. W. Sinner, Scientific Advisory Council of the EIA).

In this way it is clear from European law perspective, that dependencies and interactions can also lead to cumulative impacts, which do not exhibit the same properties (see HILDEBRANDT et al. 2017: A differentiation can be made between additive cumulation (accumulation of similar stresses, same paths of action/similar type of impact on objects of protection considered) and synergetic cumulation (combination impact of different stresses: loss of food habitat and danger of collision (e.g. wind force) or subsequent impacts: Breaks up grassland and subsequent evasion of wind farm areas with increased risk of collision). It is clear however that both forms of stress are the sum of the cumulative impacts. A restriction to the additive cumulation leads to false positive evaluation results.

NABU calls for a differentiated distinction between 1. additive cumulation (with and without the same path of action) and 2. synergetic impacts (with and without interaction), (particularly in the case of potential cumulative impacts with NSP1, wind park cluster "West Adlergrund" and network connection of the OWP cluster "West Adlergrund" and "Arkona See") The focus here should be on individual case considerations. The permitting authority is asked to request appropriate reassessments from the applicant.

Chapter 6 in document E.01 "Multi-territory part" with two overview tables for justification (Table 6-1, 7-2), as to why the considered projects are not relevant for a cumulation impact test is clearly too compressed. NABU insists on more detailed justification.

In addition to the assessment deficit, a lack of observance of the planned Fehmarnbelt Fixed Link also results in a test deficit for the applicant. According to Article 6 Section 3 of the FFH Guidelines, for the assessment of the compatibility of the proposed project, the plans for future projects are to be taken into account in addition to impairments caused by already known projects. For an overall ecosystem assessment of cumulative impacts of infrastructure projects and human activities, the scale should not be too narrow, particularly in a delimited bordering sea such as the Baltic Sea. Local impacts on sediments, re-suspension of nutrients and contaminants and resulting plankton blossoms and oxygen deficiency situations can lead to far-reaching changes in the communities. It is therefore necessary to include further infrastructure projects, in particular the planned Fehmarnbelt Fixed Link, in the cumulative consideration. It is imperative that an extensive project such as the planned tunnel construction be included in the test. The construction of a tunnel of this size results in massive sediment deposits and the formation of widely distributed turbidity plumes, which could reach as far as Rügen.

Assessment procedures for FFH areas

Since the development of the LAMBRECHT & TRAUTNER expert convention, a widely used and proven procedure has been used to assess the significance (in connection with impacts) of interventions works for FFH areas. This expert convention has been developed and extensively discussed as the standard method for assessments within the framework of the FFH-Assessment in Germany and in a long-term research and development process, involving a large number of experts. Nord Stream 2 has decided to use a different procedure. The assessment procedure used is a proprietary development of Nord Stream 2, which is only used in the planning approval documents of the German pipeline section. The deviation from established and accepted assessment procedures is in no way inadmissible per se, but is subject to very strict limits, which are also confirmed by law. These are clearly exceeded in the present case, which in turn has led to considerable professional misjudgements of the significance (in connection with impacts) of the intervention.

F-B F biotope and species conservation

Sand gaper

On page 74 F.01 the restoration of age structures in long-lived species is discussed. It is shown that in the Greifswald Bodden two types of molluscs with a life expectancy of more than three years occur. The alien to the area sand gaper and the Baltic clam. A high sand gaper mass is shown as an indicator of a high trophic level. It is stated that up to a shell length up 15mm the species serves as food for the scaup and up to a maximum shell length of 20mm for the common scoter. It is stated that sand gapers of up to 20mm are in

the age range of 3 to 4 years. The function of larger mollusc individuals should be limited to the filtration capacity and their presence as a predator should be negatively correlated with the advent of the common cockle. This correlation should also have been shown in the Offshore Monitoring 2016. The conclusion is drawn that "Until the rebuilding of the population structure of the sand gaper, the filtration capacity is temporarily adopted by polychaetes (Gattung Marenzelleria), other mollusc species and also young sand gapers (consequence of higher local survival rate due to lower predation/competition). The protected biotope of the "Boddon waters with areas of sediment" is therefore fully restored in the area of the pipe trench after 3 years." P. 77 F.01.

All molluscs feed on plankton, also on the larval stages of the other species. Therefore the reference to the favourable impact of pipeline construction is not relevant with regard to predation. A lifetime age of more than 15 years is assumed for the sand gaper. In the life span after the age of 3-4 years the individuals not only filter but also multiply and thus produce food for plankton eaters. Due to the high age of this species the complete regeneration of the biotope after the intervention works takes substantially longer than three years as stated by the applicant. NABU dismisses the reduction of the function of the sand gaper in the ecosystem to its filtration performance and does not see any conclusive evidence in the applicant's argumentation.

NABU wishes to emphasise that the information given on the sand gaper also primarily illustrates the poor initial state (trophic level) of the water. In addition, replacing one species with the other as long as main functions are preserved, it is not in the meaning of the comparative function. If this were to become the general rule, significant changes in the species composition could be accepted, but the protection efforts and commitments become ridiculous.

The applicant also states that even without the construction of NSP2 a change in the age structure/biomass of sand gapers in the Greifswalder Bodden would occur. The reason for this is a large-area oxygen deficiency occurrence during 2009/2010. It is concluded by the applicant that if "(...) this development continues until 2018, then the age structure of the sand gaper will also reach the conditions within 4 years after completion of the construction work on the pipe trench for the Nord Stream 2 pipeline in the non-influenced environment. For the complete regeneration of both the sediment properties and the macrozoobenthos stock, a period of at least 4 years should be assumed."(P. 77 F.01).

The explanations given are not conclusive for NABU. It can not be understood how a continuous decline from 2006 to 2016 is attributed here to a single occurrence in 2009/2010. In the case of an oxygen deficiency in 2009/2010 a slump in the inventory would be logical. Such a slump, as a result of oxygen deficiency was not observed at any of the surveyed stations, as was demonstrated in 2002, 2005 and partly also in 2008. In 2010 oxygen deficiency was observed, which affected the deep areas of the Fehmarnbelt and the central Mecklenburg Bay, similar to the years 2002, 2005 and 2008. However, the IOW did not detect an oxygen deficiency occurrence in the Baltic Sea in 2009 and the occurrence in 2010 was not shown in the project area but in the Fehmarnbelt and in Mecklenburg Bay.

The statements are thus not only contradictory but also incomprehensible. In addition, explanatory data which the reader is to draw from Fig. 3-13 P. 48 E.03 are missing. A legend is missing that explains the bar designations (GB_G200, GB_FWM, GB_R200). Also Fig. 3-11 P. 46, E.03 does not provide a clear explanation of the position of the transect, as shown in the figure label of Fig. 3-13. Due to the inadequate presentation, the information provided by the IFAÖ can not be understood and observed.

The information given by the applicant on the sand gaper is not conclusive or convincing

as evidence of a regeneration and alignment with the surrounding reference conditions after the planned construction of the pipeline and is therefore dismissed.

In the process of the basic surveys for the Nord Stream 1 project (NSP1 application documents 2008) the survey of taxa survey found that since 2011 different taxa from the crustacean group have been regularly missing due to the oxygen deficiency occurrence of 2009/2010, and or less coverage with macrophytes in the shallow water (p. 76 F.01).

It should be emphasised that the absence of typical macrophytes in the Greifswalder Bodden mainly confirms the precarious initial situation. The shift of the lower growth limit (see eutrophication, phase shift, the delay and the potential return in the Greifswalder Bodden, Baltic Sea. Britta Munkes, Aquatic Science Vol. 67, 2005: 372-381) is also a sign of the poor state of the ecosystem and more than clearly suggests that the limit of exposure may be reached and thus further anthropogenic interventions are no longer permissible. With the approval of another major intervention such as NSP2 it is unquestionably contrary to the prohibition on further deterioration.

Reefs

It is stated that outcropping till cannot be restored. It shall be replaced by block and stone ridges (P. 83, F.01). These however belong to the characteristic biotope at the site. It is irrelevant that the till is not populated by epibenthic macrophytes or invertebrates. What remains for the assessment is the fact that the natural initial state cannot be restored. The till is described in the LRT Reef fact sheet as a characteristic form. A significant impairment is to be assumed. This cannot be used to restore reefs where till is proportionally present. Sand and block ridges do not reflect an adequate replacement. As reefs among others occur as LRT in the FFH area Greifswalder Boddenrandschwelle and in parts of Pomeranian Bay (DE 1749-302), an FFH exception procedure is likely to be necessary and should be carried out for safety reasons.

Harbour porpoises

In the present documents, it is concluded that injury and killing risks can be ruled out due to collisions with the slow-moving ships of the laying fleet and that significant disturbances of the harbour porpoise cannot be expected during breeding and migration periods during the construction period of the Nord Stream 2 pipeline. In particular, the anticipated acoustic disturbances during the construction period in a FFH area designated for the harbour porpoise has lead to the ad absurdum statements made by the applicant.

For NABU the representations of the applicant primarily document a valuation deficit.

The population of the harbour porpoise in the central Baltic Sea east of the Darss peninsula is very small. The last count with acoustic click-loggers revealed a population of approximately 450 animals with a confidence range of 90 to about 1000 animals. The population is thus threatened with extinction and immediate protective measures are required. The Baltic Sea harbour porpoise is therefore listed on the international "Red List" as an endangered population. The highest threat level is to be assumed in a species threatened with extinction, which only occurs with so few individuals in the ecosystem under consideration.

The only reason for this is the low population size, which is attributable to human interference (fishing, pollution by plastic and poisonous waste, antibiotics, etc., noise from shipping, blasting and offshore wind turbines). These existing interferences are further exacerbated by the project. The documents correctly point out that the noise caused by the construction work results in a continuous disturbance.

The EIA states: "The submarine noise emissions that will occur during the construction

phase of Nord Stream 2 are exclusively a continuous sound so that the limit values for pile-driving acoustic noise (impulse noise) are not transferable here. In Germany there are no binding limit values for continuous sound. For continuous sound (e.g. dredger noise, pipeline laying), a limit value for the occurrence of a temporary hearing threshold shift (i.e. transient influence of the hearing organ without injury) of 188 dB re 1 μ Pa is assumed from various investigations for the bottlenose dolphin (*Tursiops truncatus*) which is related to the harbour porpoise (FINNERAN 2015). The hydrosound immission prognosis for the construction of NSP2 (NSP2 application documents for hydrosound immissions) prognosticates a source sound level at 1 m distance of <188 dB re 1 μ Pa for almost all bulkheads. Only very large hopper dredgers can have a higher source level.“ P. 49, F.07

It remains unclear which levels occur at what distance and at what frequencies within the scope of the NSP2 construction work. The frequencies dominant with ships are determined by the slow rotational speed and the propeller beat frequency. These, however, are superimposed on high wideband levels, mostly due to cavitation. The positioning of thrusters results in high noise levels and have very audible frequencies in the middle range for harbour porpoises, which trigger corresponding flight reactions (DYANDO et al., 2015). In addition, according to the noise protection concept of the BMUB, a temporary hearing threshold shift in harbour porpoises occurs from 140 dB. Even if this value applies to impulsive sound and is only conditionally applicable to continuous sound, it is the only available limit so far. **The documentation on noise emissions is to be extended by the points mentioned (i.e. the levels at which distance and at which frequencies are to be expected) and the threshold value of the noise protection concept in the assessment of the effects.**

Even if, as a result, physical hearing damage should appear unlikely due to dredging work, the matter of fact of disturbance according to § 44 BNatSchG still applies. From studies in the Fehmarnbelt region, for example, it is known that the areas with high harbour porpoise densities are those associated with rather calm areas, which are not influenced by ship traffic and the resulting continuous noise. A further increase in noise in the Baltic Sea in the area of the NSP2 route will presumably have an impact on whether and how porpoises use the project area. It is likely that habitat will be lost due to construction noise as well as increased shipping traffic during construction work.

Considering the existing knowledge gaps (p.44, F.07 and p.46, F.07) on the behaviour and habitat use of the harbour porpoise, it must be assumed that the entire area must be kept free from disturbances because it serves the species as an indispensable habitat and disturbances may lead to a restriction of fitness, including a reduced reproductive success of the animals. The Jastarnia plan of the small cetacean protection agreement ASCOBANS (2009) notes that any additional mortality caused by human activities seriously jeopardizes the recovery of the stock.

"The effects of pipeline routing and maintenance do not lead to 'damage or destruction' of the reproductive or resting places of the harbour porpoise." Reproduction sites of the harbour porpoise are not known east of the island Rügen in the German sea area. There is no "resting place" of the harbour porpoise in the actual sense of the word, as mother-child-pairs also move freely in the sea. A concentration area such as the "Sylt Outer Reef" in the North Sea is also not known in the German Baltic Sea ", p. 50, F.07

The wording chosen by the applicant "Damage or destruction of reproduction and resting places" is based on the corresponding wording of § 44 para. 1 sentence 3 of the Federal Nature Conservation Act. It reads as follows: "It is prohibited... to remove, damage, or destroy the reproduction or resting places of wild animals of specially protected species ...".

In the case of a species floating freely in the sea, it is naturally difficult to identify resting and reproducing sites, as is e.g. with aeries of birds of prey. The applicant has also correctly recognized this. However, it has failed to include in its considerations the second sentence of paragraph 1 of § 44 BNatSchG. It is prohibited to disturb wild animals of strictly protected species and European bird species during reproductive, rearing, moulting, hibernation and migration periods; a considerable disturbance occurs when the condition of the local population of a species deteriorates due to the disturbance. The harbour porpoise is a strictly protected species. "The definitions for central indefinite legal provisions of the Federal Nature Conservation Act" (LANA 2009) have been defined as follows: "A deterioration of the conservation status is always assumed when the size or the reproductive success of the local Art is significantly and sustainably reduced.... On the other hand, in the case of rare species with low population sizes, a significant deterioration can already be present if the reproductive capacity, the breeding success or the survival chances of individual individuals are impaired or endangered."

The harbour porpoise is a strictly protected species and the conservation status of the Baltic Sea harbour porpoise is very bad at the time of the application, so that each individual of the species is indispensable to maintain the population. The applicant will not be able to verify and certainly rule out the fact that the project does not affect a single harbour porpoise. The project of the applicant is therefore not capable of approval on the basis of the prohibition of injury and death under Section 44 of the BNatSchG and the prohibition of deterioration in the Flora and Fauna Habitat Directive.

- BMU⁴⁴ comes to the conclusion that harbour porpoises are located in the North Sea throughout the year during the breeding and rearing season (p. 6). Since the population of the porpoise in the central Baltic Sea east of the Darss peninsula is only a very small, poorly researched population, all impairments are to be considered as significant.
- The BMU also describes the following: "Noise is a recognized stress factor and causes stress reactions in harbour porpoises. The threshold from which sound becomes noise cannot be determined precisely for pig whales at the present time and also varies depending on the individual condition, the life phase (juvenile, rearing, mating) and the respective activity of the animal(s). In addition to the intensity of the noise the frequency range is of crucial importance because the hearing and noise sensitivity of the harbour porpoises are variable depending on the frequency." P. 16. The BMU also refers to the so-called PCAD model (Population Consequences of Acoustic Disturbance Model), which describes an effect chain of the causative source to the population effect, but also writes that the effect and concatenation between the individual stages is still inadequately known.

As long as such uncertainties persist, accurate statements are hardly possible. There are sudden tipping points, domino and cumulative effects.

Monitoring of marine mammals 2014 in the German North Sea and Baltic Sea⁴⁵ by the BfN emphasizes the importance of the area of the Pomeranian Bay as a winter retreat for the endangered harbour porpoise of the Central Baltic Sea. Herewith, special attention is to be paid to the protection of the harbour porpoise.

G-LBP

⁴⁴ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety 2013: Konzept für den Schutz der Schweinswale vor Schallbelastungen bei der Errichtung von Offshore-Windparks in der deutschen Nordsee (Schallschutzkonzept). (Concept for the protection of harbour porpoises against noise pollution during the construction of offshore wind parks in the German North Sea (noise protection concept).) Berlin, 32 p.

⁴⁵ BfN 2015: Monitoring von marinen Säugetieren 2014 (Monitoring of marine mammals 2014.) P. 83

Concept for compensatory measures in the 12 nm zone

NABU rejects compensation for interventions in the marine environment by setting compensatory payments and calls for full real-world compensation. The poor state of the Baltic Sea and the unsatisfactory conservation status of the protected areas in the area make any fixing of financial compensation appear to be a violation of the improvement requirement. The applicant must be obliged by the authorities to provide real compensation or compensation to the extent required.

The documents submitted hitherto allow the conclusion that the applicant is seriously unwilling to meet the compensation or compensation obligation to the extent necessary.

NABU, in principle, doubts the reasoning behind the project and considers the applicant's argument that there are no measures of rebalancing available as ostensible. Considering the hasty evasion, it seems the applicant is unwilling to take responsibility for compensation payments. NABU calls on the authorities, in the event of an authorisation, to establish measures for real compensation to the full extent. **In addition, we note once again that the planned project cannot be approved because of the state of the Baltic Sea in general and the Natura 2000 protected areas.**

A compensation area of 21,539,126 m² is determined for the NSP2 interventions (coastal area and landing area), taking into account the natural seaward regeneration (*"In conclusion, there is a need for 2,134.6 ha for compensating measures for the remaining sea and land interventions. On the land side, there is a compensation requirement of 30.6573 ha (taking account of the compensation of 27.8862 ha as part of B Plan No. 1 "Industrie- und Gewerbegebiet Lubminer Heide", 2.7711 ha remains). "P. 279, G.01).* The bulk of the consequential compensation requirement therefore lies seawards.

In principle, the extent of the seaward compensation requirements determined by the applicant is questionable. During their investigations, natural regeneration was offset against the intervention sequences. The fact that the natural regeneration capacity is regularly clearly overestimated by the applicant is a matter which is often discussed here. **Indeed, a much lower regenerative capacity is to be assumed. This has to be taken into account and the required compensating requirement must be corrected upwards.**

However, for the purpose of developing a compensation concept *"(...) whether legal or factual (...)"* p. 281, G.01, no seaward compensation has been worked out. Instead, the focus is on the reduction of pollutant inputs by land-based inflows. NABU agrees with the appellant's assessment that the condition of many coastal waters has blatant deficiencies and there is an unacceptable problem of nutrients and pollutants, but the introduction or release of organic/harmful substances is not the only intervention by Nord Stream 2. The construction works endanger animals which cannot be compensated adequately by the improvement of the water quality. As a result of the reduced use of substances, there is also no compensation for altered biotope properties, as is the case with rockfill and the introduction of the pipes themselves.

A derivation of the compensation concept from the management plans appears to be logical, but it is not effective. The management plan for the FFH area Greifswalder Bodden was already published in 2011. The underlying investigations and data surveys are several years older. Thereby, the plan considers a state before the construction of both pipelines. The measures laid down in the plan are therefore generally to be implemented anyway. **The intervention by the construction of the NSP2 is thus only to be compensated for by measures which, to the extent necessary, go beyond what was then defined in the management plan, even over those then regarded as supplementary. Since the NSP2 intervention is still due to the burdens of the Greifswald Bodden which were already determined in 2011, additional measures are to be developed than were foreseen in the 2011 management plan.**

Compensation measures must pay particular attention to the following points:

- The creation of secure resting and stopover areas, in particular for the seas of the open Baltic Sea, which are not compensated directly by compensatory measures on land.
- Measures which are aimed at improving the conservation conditions of affected habitats. This also applies to LRTs (e.g. macrophyte stocks) which occur only in low distribution, which the applicant has not been able to demonstrate in its investigations by definition, but which is the potentially natural underwater conservation group of the Greifswalder Bodden. Regeneration by the resettlement of seagrass would be an adequate compensatory measure.
- Concrete connections between NSP2 interference/adverse effects and compensatory measures must be demonstrated.

Since a civil law availability of the intended areas (at least in part) is questioned⁴⁶ and substitute funds are not an option for nature protection, **a new compensation concept must be drawn up**. The disclosure by statements such as: *“The further clarification of the group of measures, also with regard to their availability under civil law, will show which groups of measures, or partial areas from the group of measures can be specifically defined as compensatory measures in the planning permission.”* p. 286, G.01 are unacceptable in the approval procedure. The authorisation must be used to set appropriate and feasible compensatory measures by the authority. It is misleading and contrary to the principle that the authorisation documents are based on a compensation concept which basically only lists conceivable or desirable measures without which the general public can also rely on the implementation of these measures and flouts the requirements in §13 of the Federal Nature Conservation Act, which states that compensation must be paid by way of offsetting and replacement.

There must be no doubt that an unpredictable interruption of the active cascade ultimately results in lower positive targets for, for example, the water quality of the Greifswalder Bodden and thus the existing flora and fauna. Thus the mobilisation of nutrients must be excluded by reflooding measures. In addition, the release of iron-bound phosphorus or the absence of small-scale flow breakers (submersed vegetation which in turn consolidates sediment and swirls water streams on the other) could lead to no significant improvement (see SCHEFFER, M., 1990: Multiplicity of stable states in freshwater systems. *Hydrobiologia* 200/201: 475–486 in Eutrophication, phase shift, the delay and the potential return in the Greifswalder Bodden, Baltic Sea. Britta Munkes, *Aquatic Science* Vol. 67, 2005: 372-381).

The five groups of measures to compensate for project-specific interventions are justified by an *“(…) immediate spatial-functional connection to the natural space affected by the project.”* P. 285, G.01.

In this case, however, it must be emphatically stated that the spatial-functional relationship is only an interface between the waters of the 12 nm zone/EEZ. **No inland water can replace the ecological functions of a coastal water and vice versa. This must be taken into account in the suitability of the measures.**

Table 11-23: *Comparison of intervention balancing and compensation* page 317, G.01 / LBP 12 nautical miles zone shows that the individual groups of measures K1, 2, 3, 4 and 7

⁴⁶ <https://www.svz.de/regionales/mecklenburg-vorpommern/bauern-gegen-nord-stream-plaene-id16758431.html>

have different sales of compensation area equivalent balances. **The setting of compensatory measures must ensure that a balance is achieved. At the same time, provision must be made for the fact that, despite thorough planning and preparation, the individual compensation measures laid down are not feasible due to unavoidable circumstances.**

The Concept of Replacement Payments in the EEZ

NABU rejects compensation payments to compensate for the impact of the NSP2 project. The justification: *"No areas for the implementation of appropriate compensation measures are available in the marine area within the respective natural environment. A compensation payment is therefore inevitable."* (P. 80, G.12) considering the bad general condition of the Baltic Sea this is unacceptable. There is also no clear justification for the claim by the applicant that there are no areas available for the implementation of appropriate compensatory measures in the marine sector. A compensation payment to be made by the applicant amounting to € 2,033,491 (as a result of the calculated total compensation requirement of 426,308 m²) is rejected. **NABU calls for an intensive examination of real compensation measures which can take place in the marine sector.**

Project impact: Data basis for the assessment of environmental impacts

When it comes to the impact of the planned project, the NSP1 Monitoring Reports/Offshore Monitoring 2016 are constantly referred to (*"On the basis of the current project-specific knowledge and planning status (NSP2 application documents TER) and the NSP1 monitoring reports 2010 to 2014 as well as NSP1 offshore monitoring in 2016, the effect factors / project effects within the framework of the EIA (NSP2 application documents EIA, section 1.6) were substantiated."* P. 28, G.12). In particular, however, the monitoring reports 2010-2014 only provide a popular scientific review of the results. Data sheets which allow independent assessment are not presented with the approval documents.

In the documents submitted to the NSP2 itself, reference is made to further documents which, however, are not included in the current application documents.

However, for a detailed traceability of the impacts, this is indispensable. The following should urgently be made available to the general public: NSP1 harbour porpoise monitoring 2013, monitoring concept Germany 2010 and NSP1 monitoring of seabirds from 2010 and in addition to the raw data of the monitoring, the methods of data collection are also to be presented.

On the basis of the documents submitted by the applicant, an objective assessment of the project and its effects is not possible because the applicant has collected non-published data on the basis of an unpublished methodology. Almost the only basis of the approval procedure is the interpretation of the collected data by the applicants themselves. This approach seems quite unique. Without a disclosure of the data collected by the applicant and the comprehensible presentation of the methods used for data collection, sequences of operations cannot be objectively tracked and therefore the approval procedure cannot be completed. If the authority refuses to comply with the NABU's request for disclosure of the monitoring methodology and the collected raw data, it will be extremely vulnerable legally because this is obviously a breach of the principles of administrative management.

H-WFD and MSFD

Expert Contribution to the WFD

In the coastal waters, an overlapping area consists of the provisions of the WFD and MSFD. Partially, aspects related to the WFD were only explained in the section on the MSFD. These include, for example, turbidity effects and heavy metal release. The corresponding explanations also apply to the WFD.

Preliminary note

In general, the expert contribution to the WFD must be considered to be imprecisely weighted. On the first 50 out of a total of 192 pages, it is concerned with a description of the project and its construction, a very general explanation of the WFD, and only a marginal description of the project in the context of the WFD. The project and construction description has already been included elsewhere in the documentation and is merely a repetition. Whether the general representations of the WFD must be so detailed seems at least doubtful. As a result, however, these first 50 pages diverge from the actual subject matter of the expert contribution and seriously affect readability. In contrast to this, content is "saved" at the core of the expert contribution, namely the presentation and assessment of the project impacts on the objects of protection and quality criteria of the WFD. For example, a detailed list of criteria is missing, such as the evaluations in Table 2-4. Only the EIA is referred to. This also worsens the readability and leads to the fact that the effects and evaluations in this expert contribution cannot be independently comprehended. **This qualitative shortcoming should be addressed in order to facilitate access to the results of the expert contribution.**

Another deficiency is that sources are missing in the source list, e.g. LEONHARD and BIRKLUND (p. 133)

Comments on individual contents of the expert contribution

In particular, there is no discussion about alternatives for which water legislation makes a definite statement due to the incomprehensible assessment that the planned project does not lead to a deterioration in the sense of water law.

The assessment of the impact of the project also does not take into account the cumulative effects of other existing human interventions in the marine ecosystem.

Project Impacts

Overall, it is noticeable that the possible negative project effects are minimized or of "small-scale". Even taking into account the comments made in the expert contribution to the subject, it is not convincing that a project of the described dimension should not lead to any negative impact in the sense of water law, i.e. it does not violate the challenging management objectives of the WFD. This is particularly true also because the state of the water is already moderate or bad in various respects (this is recognized in the expert contribution) so that any further intervention is significant and undermines the offered improvement.

Methodically, the presentation of the project effects aggregated over the entire project area makes no sense (Tab 2-4). This is because the WFD makes its own assessment for demarcated bodies of water. The rule of no deterioration must be observed for each individual body of water, and the improvement requirement applies in each case. This requirement is undermined by the aggregated representation.

Overall, the presentations of the project effects are incomplete and evaluations of the project effects are partly implausible. The fact that a list of criteria for the assessment of extent, duration and intensity is missing has already been mentioned above. Furthermore, the following points, for example, are deficient:

The constructional factors are incomplete. **By re-suspending nutrients during**

dredging, impact factors on phytoplankton, visibility and oxygen content are also very likely. These are missing and must be supplemented accordingly.

The downgrading of the project effects according to the criteria extension, duration, intensity are partly implausible. In many cases the impression arises that effects are to be downplayed. For example, the duration of the effect factor "Influence of the sea floor, change of sediment parameters silt content and organic content" is classified as "short-term (4 months per site of intervention)". Due to the dredging work, however, the sediment parameters are permanently changed, as is also stated elsewhere in the expert contribution. The same applies to losses of macroalgae and vertebrates caused by the production of the pipe trenches, which are also assessed as "short-term". The notes on the intervention regulation (1999)⁴⁷, which are valid for the project, assume regeneration times of more than 150 years, and the effects are therefore permanent. **NABU requests that the assessment of all the impact factors be reviewed and revised as necessary.**

The induction of possible oxygen depletion events as a result of dredging (by re-suspension of organic matter from the sediments) is rejected with reference to the allegedly low content of organic substances. The expert contribution speaks here of contents below 1%. However, the measurement results of the sediment chemical investigations show a different picture. Here, significantly higher concentrations of up to 3% were measured at the measuring points in the Greifswalder Bodden. **For the Greifswalder Bodden as an independent body of water of the river basin Warnow/Peene, there is thus no traceable assessment as to how the project can affect the oxygen content and whether there is a deterioration in the sense of the WFD. This must be supplemented.**

Negative effects of turbidity plumes are rejected in the expert contribution because corresponding turbulences are also caused by strong winds. This is only partly correct. The contribution shows the course of turbidity on the basis of satellite data, which measured suspended matter content. Here it can be seen that the turbidity is strong especially in autumn and winter. This is to be expected since this is the season with stronger winds and corresponding swirling of the water bodies. In the summer, on the other hand, very low suspended solids were observed. **However, the construction measures fall directly into this naturally very low-suspended phase, in which the species and habitats are more sensitive to turbidity (photosynthetically active phase, spawning period, larval stage). The assessment of the opacity caused by the project is therefore deficient and leaves no assessment of the actual effects. This must be corrected accordingly.**

Furthermore, the temporal dimension of the resulting turbidity plumes is minimized.

As it states: *"As the turbidity associated with dredging in the 1 to 12-mile zone is limited in time and space (extent of turbidity plumes <500 m, sedimentation of suspended matter mostly within 1 to 2 hours, see chapter 6.1.1 -Turbidity), negative effects on phytoplankton communities are excluded in this respect"* (p. 97 Expert Contribution MSFD)

This description gives the impression that turbidity only occurs very briefly and within 1-2 hours the water is clear again. But the opposite is the case. In fact, digging would take place for a few weeks at the trench, so that sediments are mobilized over weeks and nutrients are re-suspended. It is only during working breaks that the water will gradually clear up again, according to the applicant's estimates, within 1-2 hours.

Furthermore, the contribution does not distinguish between solid particles, which visually cause opacity and the re-suspension of nutrients. If the nutrients are dissolved in seawater, they may not be visibly perceived (the water appears unadulterated), but

⁴⁷ LUNG (1999). Notes for impact regulations. LUNG publication series 1999 (3). 166 p. <http://www.lung.mv-regierung.de/dateien/eingriff.pdf>

remain available to the food network with corresponding effects on the phytoplankton and zooplankton. How long the nutrients remain dissolved in the water and how they are withdrawn from the water remains unclear. **Thus, possible effects on phytoplankton cannot be estimated either. Corresponding information must be supplemented and professionally substantiated.**

After the construction of NSP1, increased concentrations of longer-chain mineral hydrocarbons were measured and this effect is also expected for the construction of NSP2. However, instead of discussing the environmental impacts seriously, the contribution to the subject is based solely on the legal requirements. According to "The surface water ordinance it is not obligated to measure mineral hydrocarbons". **This is in stark contrast to the precautionary principle. NABU calls for an assessment of the mineral oil release to be completed, since otherwise the project effects cannot be estimated.**

Violation of the rule of no deterioration according to the WFD

In the case of arsenic, zinc, cadmium, mercury and chromium, the Joint Transitional Arrangements for the handling of dredged material in coastal waters guide values are partly exceeded. At the same time, the "reason for the bad chemical state (is) the burden of the surface water bodies caused by mercury." (p.108). Since, in the case of a "bad" condition under WFD, any further deterioration is to be avoided, no significant materiality thresholds apply here. The further release of mercury by sedimentary movements is in breach of the wording of the WFD.

The phytoplankton ecological quality component is classified as unsatisfactory in the Greifswalder Bodden. The re-suspension of nutrients caused by sedimentary deposits is suitable for further increasing the phytoplankton concentration. The contribution to the WFD does not provide a clear estimate of how much nutrients (nitrogen, phosphorus) are released by the sediment transfer in the individual affected bodies of water of the FGE Warnow/Peene river basin and how this translates into phytoplankton concentrations. In cases of doubt and in the sense of a worst-case scenario based on the precautionary principle, it must be assumed that there is a further deterioration and therefore a violation of the rule of no deterioration according to the WFD. Originally the Greifswalder Bodden was 90% covered with macrophytes; but today only 10-15% is currently covered (Munkes 2004). The sparse occurrences registered in the NSP / NSP2 recordings suggest that the levels of macrophytes have even declined further. The classification of the component "large algae and angiosperms" according to WFD into the category "moderate" is very questionable and suggests rather an unsatisfactory or bad condition. The remaining deposits are endangered by the already poor light conditions, which are made worse by the turbidity plume during the dredging work. In addition, the macrophyte population continues to be destroyed by trench digging operations. As already mentioned above, this damage is to be assessed as permanent.

NABU calls for the assessment of the project impacts against the background of the already bad conditions in the Greifswalder Bodden. For this is missing in this expert contribution, or the bad conditions are interpreted rather interpreted to legitimize further destruction. Here, too, the expert contribution is in conflict with the requirements of the WFD, which clearly state the need for an improvement. It is already contravention if the goal of a good ecological and chemical condition is further delayed, which is to be expected in the light of the project.

In view of the above, the project appears to be unacceptable. An exemption case inspection pursuant to § 31 of the Federal Water Act must be carried out.

Too optimistic regeneration expectations

The regeneration of habitats is considered too optimistic in the expert contribution. The

valid HzE (notes on impact regulation) (1999) assumes regeneration times of more than 150 years for most benthos habitats. This is in sharp contradiction to the rapid recovery in a few years that has been assumed. Doubtless, disturbed areas are resettled within a short time. However, significantly longer periods elapse until the entire complex is restored in its original species composition and age structure. Whether sea grass meadows regenerate at all independently and above all in such a short time appears to be more than doubtful. Even targeted active restoration measures for seagrass meadows are often unsuccessful and of poor water quality, as in the project area due to eutrophication, which has been identified as an important factor⁴⁸. Also the benthic invertebrate fauna will not regenerate within the assumed 2-4 years in its typical age structure. The resettlement with sensitive species is accordingly more lengthy.⁴⁹ The extremely short regeneration times claimed in the expert contribution are not comprehensible because of inaccessible monitoring raw data (see above)

MSFD Expert Contribution

In the coastal waters, an overlapping area consists of the provisions of the WFD and MSFD. Where, in the opinion on the WFD expert contribution, the protective aims and protective objectives of the MSFD are concerned, the statements made here apply accordingly.

Violation of the objectives of the MSFD

In general, NABU notes that the project is contrary to the protection objectives of the EU Marine Strategy Framework Directive (MSFD). The MSFD expert contribution recognizes this to the extent that it identifies those environmental issues which may be affected by the NSP2 project. Beyond the mere observation that the project has a relation to all seven formulated environmental objectives (see www.meeresschutz.info), however, the expert contribution remains without consequences. Something is all the more surprising:

Obviously, the environmental impact of the project is undermined, therefore a detailed discussion on how to deal with these expected effects would therefore be required. This debate, however, is limited to the systematic rejection or trivialization of effects. **NABU refers here to the opinion of the German environmental associations regarding the program of measures of the MSFD⁵⁰ and demand a detailed contentwise study by the project proponent with the measures registered with the EC, which must be operationalised by the end of 2017.**

In this context, we would like to highlight the ecosystem approach of the MSFD (Recital 8 of the MSRD⁵¹). It serves to control human activities and ensures the cumulative overall view of all anthropogenic stress factors. The ecosystem approach is the basic prerequisite especially for the environmental objectives⁴.

The individual environmental impacts concerned are:

Target 1 (Seas without impairment by anthropogenic eutrophication)

Target 2 (Seas without pollution due to pollutants)

Target 3 (Seas without impairment to marine species and habitats due to the impact of human activities)

Target 4 (Seas with sustainable and conserved resources) Target 5

⁴⁸ van Katwijk et al. (2016). Global analysis of seagrass restoration: the importance of large-scale planting *Journal of Applied Ecology*, 53, 567–578

⁴⁹ Krause (1998). Auswirkungen des Sand- und Kiesabbaus auf das Makrozoobenthos an der Küste vor Mecklenburg-Vorpommern. In: v.Nordheim und Boedecker, Umweltvorsorge bei der marinen Sand- und Kiesgewinnung. (Effects of sand and gravel mining on the macrozoobenthos on the coast off Mecklenburg-Vorpommern. In: v.Nordheim and Boedecker, environmental protection in the production of marine sand and gravel.) BLANO Workshop 1998. BfN scripts 23: 58-71

⁵⁰ https://www.nabu.de/imperia/md/content/nabude/meeresschutz/141010_nabu-meeresschutz_schattenliste_umweltverbaende.pdf

⁵¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:de:PDF>

(Seas without pollution from waste)

Target 6 (Seas without impairment due to anthropogenic energy input)

Target 7 (Seas with natural hydromorphological characteristics)

According to NABU, the proposed project runs counter to at least six of these seven environmental targets for the Baltic Sea according to the MSFD. For example, according to environmental target 1, where also atmospheric nitrogen inputs are to be reduced, while the project intensifies shipping traffic in the area as part of the extensive dredging and pipeline laying. According to environmental target 2, pollutant inputs from sources in the sea and pollutant concentrations in the marine environment (water, organisms, sediments) are to be reduced. The re-suspension of pollutants by the planned sediment shifts contradicts this. Under environmental target 3, there is the obligation to create spatial resting and retreat areas and to maintain migratory corridors. However, the project cuts through protection areas throughout the course of the trench in the area of German jurisdiction. According to environmental target 4, the integrity of the seabed is to be preserved and, according to environmental target 7, no permanent hydrographic conditions with adverse effects on the marine environment may occur. It remains unclear how the planned construction project will meet the environmental requirements of the MSFD.

The MSFD rule of no deterioration

Preventing the deterioration of the marine environment is a central concern and objective of the MSFD (Article 1, recital). At the same time, the MSFD aims to achieve a good environmental status of European marine areas by 2020. This intention and objective are undermined by the project. According to the current HELCOM assessment⁵², the criterion of biodiversity in the project area is in a "bad" condition. At the same time, biodiversity is a prominent feature of the qualitative descriptors for a good environmental condition (Annex I). **Any further burden or destruction of living communities must be avoided in order not to jeopardize the achievement of objectives of the MSFD.**

The good environmental condition according to MSFD also includes food webs, the components of which are supposed to have a normal frequency and diversity. A disturbance of the food web can be detected, for example, by increased phytoplankton concentrations, which are signs of increased nutrient loads. The condition is unsatisfactory in this respect, especially in the Greifswald Bodden⁵³. A disturbance of the food web for the project area can also be seen in the unsatisfactory state of the "eutrophication" criterion, which was the result of the HELCOM assessment. The contribution to the subject does not provide a clear picture of how much nutrients are released by sediment transfer and how this translates further into the food web. In cases of doubt and in the sense of a worst-case scenario based on the precautionary principle, it must be assumed that there is a further deterioration and therefore a conflict with the targets of the MSFD. The actual results of the sediment samples as well as their textual summary in the expert contribution are also contradictory. "The concentrations of nutrients and pollutants were similar in all excavated trench sections." In fact, considerable fluctuations sometimes occur between the individual stations, and **there is**

⁵² HELCOM cited in: BLANO (2012): Umsetzung der Meeresstrategie-Rahmenrichtlinie RICHTLINIE 2008/56/EG zur Schaffung eines Ordnungsrahmens für Maßnahmen der Gemeinschaft im Bereich der Meeresumwelt (Meeresstrategie-Rahmenrichtlinie) Anfangsbewertung der deutschen Ostsee nach Artikel 8 Meeresstrategie-Rahmenrichtlinie (Implementation of the Marine Strategy Framework Directive DIRECTIVE 2008/56 / EC establishing a framework for community action in the field of marine environment (Marine Strategy Framework Directive) Initial assessment of the German Baltic Sea under Article 8 Marine Strategy Framework Directive)

⁵³ LUNG (2015): Aktualisierung des Bewirtschaftungsplans nach § 83 WHG bzw. Artikel 13 der Richtlinie 2000/60/EG für die Flussgebietseinheit Warnow/Peene für den Zeitraum von 2016 bis 2021 (Update of the management plan according to § 83 WHG or Article 13 of Directive 2000/60 / EC for the river district Warnow/Peene for the period from 2016 to 2021); http://www.wrrl-mv.de/index_bekanntmachungen.htm

no consideration of the extent to which effects of nutrient and pollutant release can be expected in individual marine areas such as the Greifswalder Bodden. Effects are to be reassessed from these points of view. At this point, we also refer to our comments on the WFD.

Analysis of the impacts

All in all, it is striking that the project effects are also relativised and trivialised in this expert contribution. Effects are "not relevant", "low", "local", etc. The technical basis for these assessments is regularly not mentioned.

Overall, the assessment of the project's effects is therefore not transparent. In addition, as well as the WFD expert contribution, it should be noted that the evaluations made here cannot be comprehended since the underlying criteria list is only shown in the EIA, but is missing here. Scrolling back and forth between different documents clearly limits the readability. **It is also emphasized that the criteria catalogue developed in the EIA has been "interpreted under the specific requirements of the MSFD". How this has actually been implemented, on the other hand, remains unclear and needs to be ascertained.**

The overview of the relevant impacts and their evaluation (Tab 2-4) are incomplete and partly incomprehensible. For example, the structural changes of the seabed and the sediment parameters are classified as "short-term". This neglects the fact that the building-related effects continue after the immediate construction process, as it is to be expected that the regeneration times will be very long (HzE (notes on impact regulation) 1999). **In general, permanent effects on the marine environment are to be expected from the NSP2 project. The extremely long regeneration times are only one reason for this. From the point of view of NABU, the pipes are long-term unnatural foreign bodies in the ecosystem, and necessary repair measures along the entire route must be expected.**

Another example of implausible assessments is the intensity of the driving away of marine mammals, which is classified as "medium". The project area is regularly used by porpoises.^{54,55} Because of the extremely small population (450 animals), any disturbance of the habitat is significant. **Even the expert contribution to the subject confirms that the animals can be expelled from their habitat, however, the resulting effects for this very small population are excluded. Further examples can be found. The overall assessment of the project effects must therefore be critically reviewed and adapted accordingly.**

Effects from turbidity

The MSRL experts opinion has determined: "Turbidity is temporarily influenced by the project. Based on the standards of the WRRL, a modification of the status class in accordance with table 5 Annex 4 OGeWV (ordinance on surface waters) with regard to physical and chemical properties are ruled out insofar that the conditions for the biological quality components do not change in a scope that would lead to a deterioration of the values described." This interpretation of the MSRL falls short and does not satisfy the basic idea of MSRL. MSRL establishes a so-called ecological system for the protection and use of the seas. Limitation to the ecological components of the WRRL (phytoplankton, larger algae / angiosperms and benthic invertebrate fauna) seems to be disproportionate. The descriptors for the positive state of the environment (Annex 1) includes, for example, abiotic components of the marine ecosystems, pollution factors but also commercially used fish stocks and generally, the biological diversity. This means that effects must also be implemented for fishes, marine mammals, seabirds or certain habitat types. Such an effect appears to be probable. For the most important herring stocks in the Western Baltic Sea, next to the

⁵⁴ Nord Stream 2 experts opinion MSRL

⁵⁵ BfN (2012): Endangered diversity in the German North and Baltic Seas. Nature conservation and biological diversity 116, Bonn, 674 S

Strelasund, the Greifswalder Bodden is the most important spawning area.⁵⁶ A huge reduction in the number of larvae has been observed over the past years, the stock has respectively under pressure.⁵⁷ Turbidity and sedimentation have an influence on the mortality of the salmon, in particular in the sensitive development phase from the egg to the larvae (February - June) and harmful substances (heavy metals already in a low doses) have an effect on their development.⁵⁸ In addition, the Autumn herrings spawn in the run-up to the Greifswalder Boddens that has been observed more frequently over the past years is missing in the consideration (and assessment). The question has to be asked how construction work in the scope of the NSP2 can respond when the spawning season in the Greifswalder Bodden starts later due to weather conditions, and persists for longer. The possible negative impact affect at least one salmon season and may also have a respective negative effect on the fishery. The construction measures in the Greifswalder Bodden intended for May do not avoid the sensitive phase for the herrings. The planning documents do not deal with a temporal conflict with the spawning season of the herrings and can therefore not assess the extent of the impact on the herring population. These details must be supplemented accordingly. The details already made in the planning documentation are however, insufficient for a description of the impacts. The following is claimed: *"The highest amount of larvae in the last*

12 years was determined in 2010. The excavator and installation work of the Nord Stream Pipeline took place this year. As a result, the excavator and installation work of the Nord Stream Pipeline did not have any verifiable negative impact on the amount of larvae of the herrings." The fact that a high amount of larvae was recorded in 2010 is correct, when referring to the cited ICES data. However, decisive details are missing in order to verify the plausibility of the conclusions drawn, such as: When did the excavation work take place and when was the data recorded?

How large was the spawning population in the years used for comparing, thus how many eggs were potentially available? Would the amount of larvae probably been even more without the excavation work? In the years following the pipeline installation, the amount of larvae has also drastically reduced. Has a spawning area probably actually been destroyed by the project? This clearly indicates that the data presented raises more questions that they are suited to assess the impacts of the pipeline construction to the herring population. NABU demands respective data to be supplemented in order to clarify this impact.

Heavy metal release

Along an approximately 67 kilometre section, the pipeline should be installed directly on the seabed and as a result, due to contact with the Baltic Sea water, this has an affect that zinc is released from sacrificial anode into the Baltic Sea water. According to assessment of the documents, the annual total amount of 200 kg zinc is above the 67 km of the German pipeline length. The release of zinc may, depending on temperature and salinity, vary strongly. The parameters used to assess the zinc release or the literature used as a basis are not specified in the documents. Details in which form zinc is released, thus if it is bioavailable is also missing. NABU demands that these details are supplemented. On the basis of the existing information, at this point no assessment of the impact on the marine ecological system can be carried out and it is astonishing that the NSP2

⁵⁶ Klenz (2005). Evaluation of historic data of the German larvae survey in the main spawning region of the herrings of the Western Baltic Sea. Inf. Fischereiforsch 52: 33-35

⁵⁷ <https://www.svz.de/regionales/mecklenburg-vorpommern/kinderstube-des-ostseeherings-macht-probleme-id16923591.html>

⁵⁸ Hammer C., Zimmermann C., von Dorrien C., Stepputtis D., Oeberst R. (2009) Assessment of the relevance of the impact of the cooling water of the planned coal-fired power station in Lubmin to the marine fish stocks of the Western Baltic Sea used by the fishery (herrings, codfish, flounder, plaice, garfish). Final report of the Ministry of Agriculture, the Environment and Consumer Protection Mecklenburg-Western Pomerania, represented by the State Agency for Environment and Nature Protection Stralsund (StAUN Stralsund). Johann-Heinrich von Thünen-Institut, Federal Research Institute for Rural Areas, Forestry and Fisheries /Institute for Fisheries Baltic Sea Rostock, 24.08.2009, 278pp.

documents can rigorously rule out effects.

Basically, the heavy metal zinc can only accumulate in organisms. The fact that no increase in the zinc concentration could be measured 1 to 2 metres away from the pipeline does not principally rule out the effect. In another section in the documents, draws the attention that the pipeline should act as an artificial reef and be inhabited by mussels which, on the other hand, serve as nutrition for the larger resting bird stocks in the bird protection area Pommersche Bucht of NSP2 being crossed. If the zinc is ingested by the mussels and these can be eaten by the birds, it can be accumulated directly in the protected birds. An assessment of such accumulation effects through the food web must be supplemented and included in the assessment.

Impact from underwater noise

The intensity of the impact only classified as "Medium" caused by construction-related shipping traffic (including noise) has already been addressed above and a check has been requested. Moreover, the impact of the project only considers such emissions as underwater noise that immediately result from the construction process. Extreme noise loading are completely ignored that, where applicable, result from controlled or uncontrolled exploding munition. For the German area, conflicts with old munitions are completely ruled out by the project initiator with the reason that munition has either been recovered or avoided by a local adjustment of the route. The intended measures for treatment of the old loads are too vague and insufficient. A conclusive concept for dealing with the old munition is missing. At this point, we refer to the respective versions in the ESPOO statement. The requirements mentioned by NABU there also apply here respectively.

Here we are also making aware that there is a serious shortcoming in conjunction with old munitions: The project initiator is planning to flush the pipeline in the seabed, or use stone ballast locally or as required. Where these measures should be met is still unclear. During this work, old munition that was not found by a detection carried out previously can be released by flushing. This results in a significant risk and it is not clear how this is going to be dealt with. NABU demands that this shortcoming is eliminated in the planning documents to be revised.

Missing environmental impact assessment in event of disaster

Damage to the pipeline has not been ruled out in the technical article for a reason. The thing missing in the technical article for WRRL and MSRL is an assessment of the possible environmental impact of a disaster. MSRL explicitly mentions the ingress of hydrocarbon fires as "Contamination by hazardous substances". A respective risk analysis with assessment of the disaster consequences must be submitted subsequently.

Conclusion concerning the technical articles WRRL, MSRL

With the extensive excavation measures, the project intervenes in the sensitive ecology system of the Baltic Sea in a significant manner which is already in a poor state anyway. Next to the immediate destruction of the seabed and the benthic communities, re-suspension of suspended sediment, nutrients and contaminants originate from excavators.

NABU has determined that the impact of the project has not yet been sufficiently described and assessed in a perceivable manner. At the current status, the impacts cannot be assessed and quantified yet. However, there where massive impacts are already imminent, there is a conflict with the targets of WRRL and MSRL. For these reasons, NABU is the opinion that the project cannot be approved.

11A-Volume of materials

Data basis and test methods

When viewing the survey methods for amphibians (I1.03/NSP 2 - Data basis and survey methods), we have recognised a serious methodology error. As on page 81, fig. 5-34: As apparent from individual buckets within a row of buckets along the amphibian strand guide from the Spring campaign 2016, you can see a significant distance between the fence and the buried catch buckets. This falsifies the results significantly as the animals move closely along the fence strip and thus do not fall into the catch buckets. The same with catch-cross fig. 5-33: *Catch-cross from the Autumn campaign 2015*, there is a significant distance between the bands and buckets. The edge of the bucket does not close flush with the ground surface, the escape aids for beetles, etc. have been chosen too wide. The individual values determined are therefore incorrect. For correct results, a catch-cross or amphibian strand guides must be setup again. The method used is very inaccurate. It does not correspond with the information sheet for amphibian protection on roads (MamS).⁵⁹

12-Volume of materials

Offshore-Monitoring Nord Stream 2016: Reference stations

In the Offshore-Monitoring 2016, it is not clear why in 2016 a comparison of the reference stations did not take place on the filled pipe trenches with the preliminary survey from 2006 (page 18/19, I3.04/- Offshore-Monitoring for Nord Stream 2016). As a consequence, in 2016 the eight pipe trench stations should have also been compared with the reference data from 2006 and additionally with the new reference points of the NSP2 route. This is the only way the data can be compared and consequentially interpreted. NABU demands a comparison of the pipe trench data from 2006 with that of 2016.

Offshore-Monitoring Nord Stream 2016: Trial period

Differences in the shell length from *Mya arenaria* were traced back to the seasonal differences when sampling (see page 47, I3.04 and "*When comparing the results, it must be considered that both surveys were carried out at different times of the year (the underwater video analysis in Spring directly after thawing of the Greifswalder Bodden and the scratch sample at high Summer) at a period of approximately three months.*" Page 114, I3.04).

The larvae of the soft-shell clams remain tight in the upper sediment once they have reached a size of approx. 240-300µ. Up to an age of four years, the digging feet of the shell are strong enough in order to still move and to dig themselves in again if they happen to be flown away. Adult animals live dug 15 to 30 cm deep in the ground and cannot leave their location on their own anymore as their digging feet have not grown as well. Shells that are older than four years are therefore forced to spend their entire life at one and the same location. It is therefore completely irrelevant at which season the sampling takes place. The difference between reference station and pipe trench station must have another cause. A probable cause is that the conditions of the pipe trench stations are not respectively suitable as habitat for the shells.

In this case, an assessment deficiency of the project initiator is also obvious as the results determined have been interpreted randomly in favour of the planned project.

NABU considers a methodical error in the choice of the sampling time (from an

⁵⁹ Federal Ministry of Transport, Construction and Housing 2000:Information sheet for amphibian protection on roads (MamS). 28 S.

astronomical point in the central European time zone, once in Spring and Summer), which makes the correct interpretation of the results more difficult. The results have a limited significance. The general statement: *"The results of the underwater video and scratch sample analysis also document a comparative dynamic of the epibenthic communities of the reconstructed reef area and the natural reef since 2013."* Page 114, I3.04 can only be checked once all data determined are available (e.g. Offshore-Monitoring before 2016). Assumptions about developments that may occur are not a serious basis for the assessment of the compatibility of the planned project. The project initiator is requested to present scientifically serious data. This also includes a comparison with regard to the methods used. The project initiator does not seem to be able to or want to follow this generally applicable demand. Without a respective subsequent provision or post-clearance, the permitting process cannot be concluded in a safe manner.

Only assumptions are possible (as follows) without adhering to the seasonal comparison. Assumptions of this type are however, intolerable for NABU.

"In the Greifswalder Bodden, the main growth phase of the macrophytes starts (depending on the water temperature and ice formation) in March / April at the earliest. Whereas green algae such as Ulothrix (0 - 3.5 m) initially dominate, types such as Ectocarpus silicolusus follow later on. Red algae types such as Polysiphonia nigrescens and Ceramium diaphanum as well as brown algae types (Fucus spp.) have their main growth period in July / August (SCHIEWER 2008). Due to this very premature survey time (beginning of April, shortly after the ice coverage of the Greifswalder Boddens) and respectively colder water temperatures, it must be assumed that with increasing temperature and light availability as well as continuing succession of the macrophytes coverage, in particular in the reef region of the Bodden bay threshold, the degree of coverage is equal to that of the previous year." Page 114, I3.04

Offshore-Monitoring Nord Stream 2016: Significance

When processing the methods, ensure for a sufficient number of samples. Statements such as:

"A static group comparison of the stations (Hols) is not a good idea due to the low number of hols." Page 49, I3.04 and

"Due to the low number of hols to be assessed, comparisons of longitudinal structure of the mussel population in the area between the intermediate storage only have a relatively low statement." Page 56, I3.04 or

"In 2013, the abundance as well as the overall biomass in the restored area of the reef were higher. Here the determined static characteristic values also only serve as indication for interpreting the results due to the scope of the low random sample." Page 60, I3.04

allow NABU to doubt the scientific sophistication of the method. The deficits represented allow the methods used as well as also the data determined by them to appear worthless to serve as the basis in this permitting process.

Offshore-Monitoring Nord Stream 2016: Usability of quantitative data

During the explanation of abundance, biomass and dominance (scratch samples) in chapter 4.2.5.2.3, I3.04 the following statement is conspicuous:

"In the following, the abundance, biomass and respective dominance structures of the epibenthos communities determined in the scope of the scratch samples in the restored and natural reef regions of the Greifswalder Boddens (Riff 3), der Bodden bay threshold (reef 4) and in the Pomeranian Bight (reef 10) are described briefly

and compared with each other. It should be noted here that the structural heterogeneity of reefs does not permit quantitative statements derived from a limited number of random samples (n = 3 per station or reef area) to be verified. This would entail far more complicated sampling strategies and sample numbers."
p. 99

Yet again the applicant presents interpretations of the data he has obtained himself using a clearly unsuitable survey approach, and is even good enough to point out these deficiencies to the reader. The data obtained in this way cannot be the basis for a serious approval process, because it does not permit any unambiguous conclusions. Furthermore, such data does not provide reliable information about any rapid regeneration of the affected habitats after the construction of NSP1 as asserted by the applicant either.

J-ESPOO

Comments on the ESPII Nord Stream 2 report

Thank you very much for the opportunity of commenting in the Espoo procedure. However, it was not possible to peruse and process all the documents in the short period allowed for comments. NABU therefore reserves the right to add further aspects before the discussion and to adduce them in the consultation.

Regarding the comments on the Espoo procedure, NABU points out that the points by NABU in the "Comments on the application for planning approval of NSP2" also apply to the Espoo procedure.

Project justification

Our reservations are of a totally fundamental nature regarding the Nord Stream 2 project (NSP2), and concern the project justification. As the demand for the natural gas transport capacity provided by NSP2 is not clear, there is no justification for the project. Furthermore, we refer to our comprehensive review of this matter in our comments on the German planning approval procedure, which apply to their full extent to our comments in the Espoo procedure as well.

General comments

The documents included in the Espoo report contain gaps and some of them are incomplete. The documents are not fit for submission, and consequently very extensive additional documentation and supplements are necessary for an assessment of the impact on nature and the environment. In some countries investigations will not take place until the next few weeks. For this reason, an assessment of the overall project is not possible at this time; any assessment based on the data available at the time would breach the precautionary principle. NABU therefore demands that all documents are completed. After these have been provided, we request a period of 6 months for evaluation and additional investigations, and a repeat participation procedure.

Comments on individual aspects of the Espoo report

We are completely astonished that individual impacts that were substantial within Nord Stream 1 have been categorised as "insignificant" for NSP2. There are no understandable grounds for this.

Examination of alternatives

The documents omit any examination of genuine alternative plans. Politically-favoured solutions or preferences of the applicant must not play any role here. For example, an alternative overland route was not shown or assessed in detail. The aim of the examination of alternatives is to identify the most suitable route alternative from an

environmental point of view. A selection procedure was only carried out in respect of maritime routes, but not for the land alternative.

Nor was the maritime route selected the most suitable from an environmental point of view. In Russia, for example, one alternative would be to bundle the land connection north of St. Petersburg with the NSP1 route. Even if additional capacity needs to be built, this route is to be preferred over the selected southern route. Infrastructure considerations, such as supplying the areas in the south of St. Petersburg, may be understandable in terms of economics, but are insignificant in environmental terms. These infrastructure considerations must therefore not result in particular versions being rejected or filtered out in the first evaluation stage, as the applicant is doing.

Interventions in nature and landscape

The most serious interventions occur at the landfall areas in Germany and Russia. Whereas in Germany the Greifswalder Bodden (Bay of Greifswald) with the protected geotope of the Boddenrandschwelle (Greifswalder Shallows), and the EU conservation areas of the Greifswalder Bodden, Pommersche Bucht (Pomeranian Bight) and the Oderbank (Oder Bank) are affected, in Russia the Ramsar area "Kurgalski Peninsula" is significantly and permanently affected.

Although in both cases the protected areas are significantly affected, the mitigation and compensatory measures are completely different. Whereas in Russia inexpensive open laying through internationally-acknowledged dunes and riparian habitats is selected, a considerably higher standard is applied in Germany; here the dunes of a Flora and Fauna Habitat area are crossed by an expensive microtunnel to avoid further pollution of the dunes already damaged by the NSP1, and jeopardising possible acceptability for planning permission purposes.

This also avoids any possible pollution of the waters by suspended sediments, just like the intervention in the Russian coastal habitats. The applicant suggests here that the sediments from trenching can be deposited in one lump over the pipeline, and predicts complete regeneration after a short time.

In the German area, a more differentiated backfilling method has been chosen with reference to safety and environmental requirements, where the sediment layers are restored in layers corresponding to their original layer positions.

Such double standards are unacceptable as far as NABU is concerned. These different ways of handling interventions in nature and landscape seem not to have arisen as a result of nature conservation considerations, but to have their basis far more in legal calculations and cost considerations. NABU demands that these double standards be corrected and nature conservancy considerations be placed at the centre of future planning in both countries.

The really rudimentary points on compensation measures are inadequate. The documents do not permit any specialist evaluation of the planning in this respect and must be completed accordingly.

Nutrient pollution

The ESPOO report is correct in recognising that the construction of NSP2 will result in an increase in the nutrient pollution of the water column. The assessment of the associated impact then comes to nothing, however. Any impact is categorised as not relevant, referring to the "natural" background pollution. This also includes the additional mobilisation of bioavailable phosphorus in the Pommersche Bucht amounting to 239 tonnes, and 15 tonnes in the Greifswalder Bodden. Without projects such as Nord Stream,

a total of 295 tonnes of phosphorus would be released in the Greifswalder Bodden annually by re-suspension (p. 110, H.01/ WRRL// technical article).

The construction activities of NSP2 will result in an increase in this internal release at the Greifswalder Bodden of more than 5%. In this connection, it must always be borne in mind that the nutrient release into the North Sea in recent decades in the main has no natural sources, but is caused anthropogenically. NSP1 has also contributed to this prior damage. Using this prior damage to legitimise releases and pollution seems abstruse and misunderstands the requirements arising from the European environment directives. Any further pollution carries far greater weight precisely because the existing pollution is so great and the condition of the Baltic Sea is so bad. The assessment of the impact of additional nutrient pollution must be carried out again in view of this background.

Moreover, it is noticeable that the logic used here, according to which the heavy pre-existing pollution legitimises further damaging interventions, is applied systematically throughout the assessment of the NSP2 environmental impact. NABU criticises this in each individual case and demands a re-assessment of all environmental impacts in question.

Pollution due to suspended sediments

Whereas the question of corrective measures on the seabed (seabed intervention) played a large role in NSP1, this aspect has been very largely played down in the current planning. However, the documents show that up to 700 km² (corresponding to a 71% of the surface area of Rügen) will be adversely affected by suspended sediments. The natural drift effects of storms and currents are cited here as a comparison. However, the following is true here as well: the turbidity induced by NSP2 must be assessed as additional to the existing prior pollution in the Baltic Sea (storms will not cease to occur simply because a new pipeline is built) (p. 335, J01).

Over 100 locations in NSP2 as well will need to be supported by masonry embankments in order for the pipeline to rest securely on the seabed.

Contaminant pollution

PAH (polycyclic aromatic hydrocarbons), heavy metals and dioxins, arsenic: various data exists for these substances at the moment (gained from measurements, calculations, modelling, and our own estimates), which depending on the land/water column can permit very different statements. Although the damage thresholds for mercury, PAH and arsenic have been exceeded in Russia (sometimes for more than 35 days), the effect is described as insignificant and the comment is added that in the Baltic Sea, the concentration starts to be diluted after a few days (p. 342, J01).

Modelling was only carried out in this respect for Russia and Finland, while no comparable grounds for an assessment exist for the areas of Germany, Denmark and Sweden - there is a need for additional modelling.

Marine mammals

The non-technical summary of the Espoo report states that the Gulf of Finland, where munitions clearance operations are taking place, has a very low density of harbour porpoises. Impacts in the form of permanent hearing loss or pressure wave injuries will consequently not affect a large enough number of individuals to endanger the survival or functioning of the species. Consequently, according to the applicant the impact is minor (p. 19, J01). This assessment is wrong, as every individual in such a small subpopulation is significant. Nor can the low densities be taken as evidence that the number of animals affected is not enough to affect the species. The assessment by the applicant that only a few harbour porpoises may be affected due to the low density of the animals in the Gulf of Finland may be right. The conclusion derived from this that

the impact on the population is minor is completely wrong, however, since it is precisely when only few individuals of a species are present that the health of every single animal is of great importance for the continuation of the species. The noise abatement plan of the BMU⁶⁰ points out that the behavioural effects can lead to harbour porpoises being temporarily or permanently driven out of ecologically important areas. These have a high metabolic rate and therefore need to consume food frequently in the course of a day. If a harbour porpoise goes without eating for only a few days, it can suffer from hypothermia and die. There are no reliable scientific findings about the magnitude of the sound pressure that will result in this behavioural reaction (p. 16). This evaluation should be treated with caution, because as stated at the outset: the notes on the central undefined legal terms in the Federal Nature Conservation Act (Bundesnaturschutzgesetz), LANA 2009⁶¹, include the following definition: "A deterioration in the conservation status must always be assumed if the size or successful breeding of the local species is significantly and lastingly reduced as a result of the disturbance (...). In contrast, in the case of species with low population sizes that are rare throughout the country, a significant deterioration may already be present if the ability to breed, the breeding success or the survival chances of individuals are adversely affected or jeopardised." The harbour porpoise is a strictly protected species and at the time of the application the conservation status of the Baltic harbour porpoise is already very bad, so that every single individual of the species is indispensable for the maintenance of the population. The applicant will be unable to prove and reliably guarantee that his project will not damage a single harbour porpoise. The project of the applicant is therefore not capable of approval on the basis of the prohibition of injury and death under Section 44 of the BNatSchG and the prohibition of deterioration in the Flora and Fauna Habitat Directive.

Old munitions hazards

After decades of waiting on the part of the authorities, the threat to the marine environment and to people from old munitions hazards from both world wars, but also from munitions dumping continuing to this day, has entered the public awareness and is the subject of discussion. More than 1.8 million tonnes of munitions are suspected to be in German maritime waters alone, of which some 300,000 tonnes are in the Baltic conventional munitions and up to 65,000 tonnes of chemical munition. This means that there is a high latent risk of encountering munitions when carrying out infrastructure projects.

In 2011, a report⁶² was presented on the results of several years of work by a German Federal/Interstate working party on behalf of the ARGE BLMP, which outlined the situation regarding types of munitions in German maritime waters and gave recommendations for dealing with legacy wartime hazards. Since then, regular progress reports⁶³ have been published, and discussions held with the Baltic riparian countries in the international context of international initiatives such as the "International Dialogue on Underwater Munitions".⁶⁴ At the same time, various research projects have been started which should in particular develop and test alternative recovery methods.

It is surprising that so little attention has been to such an important aspect as munitions hazards and the dynamic developments of recent years (cf. the Espoo specific subject areas, pp. 309-314). The statement under 9.13.1.5 on munitions in Germany, which reads:

⁶⁰ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit) 2013 : Concept for the protection of harbour porpoises against noise pollution during the construction of offshore wind farms in the German North Sea (noise abatement plan). Berlin, 32 p.

⁶¹ German Interstate Working Party on Nature Conservation (Länderarbeitsgemeinschaft Naturschutz (LANA)) 2010: Notes on the central undefined legal terms in the Federal Nature Conservation Act (Bundesnaturschutzgesetz) 26 pages.

⁶² http://www.schleswig-holstein.de/DE/UXO/EN/EN_node.html;jsessionid=79FDAD2E954CAD87B5ACD45D1287C33A

⁶³ http://www.schleswig-holstein.de/DE/UXO/EN/EN_node.html

⁶⁴ <http://underwatermunitions.org/>

"As part of the planning for the construction of the pipeline, Nord Stream 2 AG initially collected and analysed all available information on areas suspected to be contaminated with explosive ordnance, in particular on minefields and conventional and chemical munition dump sites in the Baltic Sea. The results of this research were considered in the optimization of the pipeline route" (p. 210, J01) is thus completely inadequate and cannot be understood as serious. There is no mention of which sources and information were used, or whether an up-to-date and complete picture of the situation along the route exists at all.

Although the detection methods and assessment of the extent of old munitions and how to deal with them have advanced considerably in the seven years since the last planning phase, the applicant still retains old data in places, the necessary investigations had not been completed at the time of the assessment, and new data sources and research projects have been omitted from consideration.

For example, investigations of conventional munitions in Russia were carried out in April 2017, but so far no results are available, however. The data collected in Finland is planned to be provided later. In Sweden two corridors were inspected purely visually in 2016, and in Denmark and Germany it is obvious that no new investigations have been carried out since the construction of the first line pipe.

Nor has any new screening been carried out, despite the further developments in modern detection technology which allow old munitions to be localised even in sediment. NABU demands the detailed publication of the analysis referred to in the Espoo report of all available information on minefields and munition dump sites. Whether all the possible sources set out below have been exhausted is open to doubt. At the same time, NABU points out that the position of munitions in sediment changes dynamically over the years and active displacements can occur due to anthropogenic exploitation such as demersal trawling or gravel and sand extraction.

The progress report of the Federation/States "Munitions in the Sea" working party of 2016⁶⁵ states that two shells near the Nordstream pipeline were removed and detonated. This is another piece evidence showing the dynamic changes in position of munitions in the Baltic compared with the NSP1 investigations. As a consequence, a new and up-to-date survey of the planned routes of NSP2 in an agreed procedure using the latest detection technology is imperative. The results must be added to the planning documents, which then need to be revised.

The construction of NSP1 has already shown that old munitions must be expected along the route. Old munitions were removed on 100 occasions⁶⁶ as a result of the environmental surveys in order to ensure a safe route. Since bypassing possible munitions finds by bending the route cannot always be ensured, a detailed munitions recovery concept must be drawn up and presented. Detonating munitions underwater is not an option either under the current state of scientific research and taking into account the requirements imposed by the EU Marine Strategy Framework Directive and also the Flora and Fauna Habitat Directive, so the concept must include the use of modern recovery technology. The hazard potential depends on the condition of the munitions and technology employed. The international MIREMAR⁶⁷ conference of NABU in 2010 gave a general picture of the recovery techniques available today. These include the use of subsea robots, mobile detonation chambers, water jet cutting and photolysis methods.

An additional chapter must be written in which environmentally-safe recovery methods

⁶⁵ http://www.schleswig-holstein.de/DE/UXO/EN/EN_node.html?blob=publicationFile&v=8

⁶⁶ https://www.nord-stream.com/.../file/.../nord-stream-in-zahlen_177_20131128.pdf

⁶⁷ <https://schleswig-holstein.nabu.de/natur-und-landschaft/aktionen-und-projekte/munition-im-meer/miremar/13081.html>

under the current state of scientific research and the state of the art technology are discussed, and an alternative recovery concept and accompanying mitigation measures for the protection of threatened and protected species such as harbour porpoises, seals and fish, and protected habitats are presented and proposed. It is inconceivable that preparatory construction work could be carried out without this concept. Classifying the damage to harbour porpoises, seals and fish as "collateral damage" is insufficient; instead, all possibilities of preventing this damage must be exhausted.

In the meantime, there are a number of joint projects in Germany or at European level with German participation dealing not only with the potential impacts of munitions on the marine environment (DAIMON project)⁶⁸ but also with the detection and environmentally-safe recovery of old munitions (UDEM⁶⁹ and RoBEMM projects⁷⁰).

NABU demands proof that the latest results of the projects named above are incorporated in the NSP2 planning and an environmentally-compatible recovery concept for any munitions finds and different munitions types is worked out and added to the planning documents.

Only the Danish areas were considered during the preliminary investigations of chemical munitions, as it was assumed that no chemical legacy hazards were to be found in the other areas. The Espoo report itself found that the analysis methods had been further developed and refined in recent years. This means that it may be possible to identify other chemical munitions dumps. Consequently, further chemical surveys of the sediment along the planned route must be undertaken. There is no doubt that both chemical and conventional munitions were dumped "en route" along the way from the ports of loading to the dumping areas. Research so far in old documents in German archives and the archives of the Allies is not yet complete, however, so that no such general clearance (clear of both chemical and conventional munitions) can be given for any maritime area.

The statement under Section 9.14.2.1 "Chemical weapons" that "(...) the shell cases of chemical munitions have in many cases corroded over time. so that chemical warfare agents (CWA) have been released into the surrounding marine environment, where they have been accumulating in the seabed sediments.", p. 312, J01, remains unclear. It is generally known that mounting chemical munitions were often fitted in their shells in glass cartridges, which rather than corroding simply cannot be detected chemically until they change position or suffer mechanical destruction. This confirms the urgent need for a comprehensive preliminary survey of the entire planned pipeline route using modern chemical and physical detection technology and additional video methods.

General shortcomings of the application documents

Environmental monitoring

The data of the environmental monitoring of the Nord Stream 1 pipeline are not part of the application documents. However, since the application documents refer extensively to this data, they are relevant for the current planning approval procedure. This concerns in detail the environmental monitoring in 2010, 2011, 2012,

⁶⁸ <https://www.thuenen.de/de/fi/projekte/daimon-wie-gehen-wir-mit-versenker-munition-in-der-ostsee-um/>

⁶⁹ <http://www.munitionsraeumung-meer.de/nationale-forschung/udem/>

⁷⁰ <http://www.munitionsraeumung-meer.de/nationale-forschung/robemm/>

2013 and 2014 (Results of Environmental and Social Monitoring). The concluding sixth report is not yet available.

Definitions of terms

Background level

The term *background level* or *background values* is not defined in the introduction (cf. Results of Environmental and Social Monitoring 2010). It is therefore not revealed to the reader whether the terms also cover anthropogenic influences.

The term *natural background sound pressure levels* suggests a natural component of the background noise. This is not the case, however. The word natural is used here misleadingly.

"After demobilisation of the equipment a selective analysis of the recordings was performed to evaluate natural background sound pressure levels (resulting from waves and rain, as well as commercial ship traffic and fisheries) in comparison with noise emissions caused by Nord Stream offshore construction activities (sheet pile driving near Lubmin harbour, trenching, pipelay by Castoro Sei and Castoro Dieci fleets)." S. 54, Results of Environmental and Social Monitoring 2010)

The lack of introductory definitions of the terms background level and background values, which are significant for assessing the intervention, and the misleading use of the term "natural" mean that the only conclusion to be drawn is that the reader is not intended to be given a full insight and overview of the methods. With any form of background level, whether of noise, turbidity or contaminants, it must be clearly recognisable how the original conditions would have looked without any anthropogenic influences, how the influence of man operated until the NSP1/2 interventions, and what impact the NSP1 project had.

Without a clear and accurate description, no uninfluenced assessment of the planned project free is possible.

Summary considerations

NABU rejects both the construction and operation of two further gas pipelines by Nord Stream 2 AG.

From NABU's point of view, there are no grounds for the project justification within the meaning of Paragraph 1 Section 1 EnWG.⁷¹ The security of supply within the meaning of Section 1(1) EnWG includes both the element of covering the demand for energy (here gas), and the fail-safe aspect by means of diversification of transport routes. The security of supply already exists today due the under-utilisation of the NSP1 lines, and a gas import and storage capacity that is 3 times the gas consumption in Germany. NSP2 makes no contribution to diversification of either energy suppliers or supply sources and transport routes; instead, "lock-in" effects can be assumed. In addition, there is a conflict between the stated service life and the Paris climate change agreement, which means that energy policy targets will be missed.

The construction of NSP2 does not represent a safe, good value, consumer-friendly, efficient and environmentally-compatible pipeline supply for the community as a whole; instead, the informal fallacy of a bridging technology is used to justify acceptance of increased uncertainty in terms of risks in Germany.

Furthermore, the NSP2 project would have a significant impact on the Natura 2000 areas

⁷¹ Electricity and Gas Supply Act (Energy Act - EnWG) EnWG date of promulgation: 7th July 2005 Full citation: "Energy Act of 7th July 2005 (German Federal Law Gazette [BGBl.] I, p. 1970; 2008 I, p. 3621) and as amended by virtue of Article 6(36) of the Act dated 13 April 2017 (BGBl. I, p. 1 p. 872)

it crosses (Flora and Fauna Habitat areas and bird protection areas), which with their subjects of protection are particularly dependent on protection in the heavily anthropogenically-impaired Baltic Sea. The descriptions of the impact of the project are incomplete and their assessments largely implausible. The project breaches the deterioration prohibition of the WRRL/, and in the view of NABU the planned project contradicts at least six of the seven environmental objectives for the Baltic Sea under MSRL. In the opinion of NABU, a significant impairment of the Baltic harbour porpoise population cannot be ruled out (prohibition of injury and death under Section 44 of the BNatSchG). Moreover, the planned prevention and mitigation measures are insufficient to avoid a breach of the prohibition of disturbance under Section 44(1)(2) BNatSchG in relation to resting migratory birds. The prohibition on deterioration in the Flora and Fauna Habitat Directive was disregarded during the construction of NSP1, since despite an unfavourable conservation status of Flora and Fauna Habitat types the intervention went ahead. In addition, the incorrect interpretation of the cumulation concept means that an underestimate of interacting consequences can be assumed. There is an urgent need for the applicant to catch up and remedy this.

The concept presented regarding compensatory measures in the 12 nautical-mile zone has not been properly thought out and is not properly founded. The intervention by the construction of NSP2 could only be compensated by measures going beyond the measures set out in the management plan in previous years by the necessary extent, and beyond what was then regarded as further than compulsory. NABU rejects the offsetting of interventions in the marine environment by specifying pecuniary indemnification sums (as envisaged by the applicant in the EEZ) and demands fully non-pecuniary compensatory measures. The monitoring data to which the applicant refers, and upon which he relies to a considerable extent, is not accessible to the public in the necessary detail. This non-transparent data situation is completely unacceptable and is a defect in the current planning approval procedure. Since all the NSP2 documents relating to the impact on nature and the environment are based on the results of the NSP1 monitoring, the assessments it contains concerning the duration, spatial extent and severity of the impact are systematically not capable of endorsement.

We ask for the arguments put forward by NABU to be taken into consideration.

With best regards



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**Comments by the BUND Landesverbandes Mecklenburg-
Vorpommern e.v.**

**on the planned Nord Stream 2 natural gas pipeline through the Baltic
Sea from Narva Bay (Russia) to Lubmin (Germany).**

- application documents of 05. April 2017 released for inspection by the applicant -

Thank you for sending the application documents for the planned gas pipeline of Nord Stream 2 AG. The intended area of German territorial waters for construction of the project is particularly sensitive as it includes a number of protected areas under Natura 2000, and the project will represent a significant and permanent intervention in the marine and coastal habitats.

In this document, the BUND sets out its comments on 5 of the documents submitted by Nord Stream 2 AG: first the Espoo report, then the environmental impact assessment, the FFH compatibility study, the wildlife protection study, and the accompanying landscape conservation plan. There are understandably extensive overlaps and repetitions between these submitted documents.

General remarks relating to one of the documents are supported at other places by more specific statements. For example, in our comments on the environmental impact assessment we have largely refrained from explicitly referring to threatened species, as these are extensively discussed in the notes on the FFH compatibility study and the wildlife protection study. The appropriate statements naturally also apply with regard to the environmental impact assessment. In our comments on the environmental impact assessment we have therefore concentrated on one or two more general aspects which require particular attention and consideration.

1. Comments on the Espoo Report

We appreciate that the Nord Stream 2 procedure is in compliance with the Espoo Convention in all countries - even Russia. Nonetheless, it must be noted that, despite improved knowledge of environmental impacts and more practical experience with the Espoo Convention by Nord Stream 2, the same gaps regarding the investigation of alternatives remain open as in case of Nord Stream 1, and that, despite the increased knowledge about nutrient load, contamination with munitions and their clearance and the endangerment of particularly protected species and habitats, the depth and scope of the investigation compared with Nord Stream 1 has been reduced during the additional Nord Stream 2 planning. Despite increased knowledge about the poor status of the Baltic region with respect to the criteria of the Water Framework Directive and the Marine Strategy Directive of the EU, the loads attributable to the pipeline project are trivialised by portraying the additional loads as negligible.

Processing of the full document package was not possible within the short time available, so we will provide further explanations in the runup to the discussions.

1.1. General Aspects

After the Nord Stream 1 pipeline, the Nord Stream 2 pipeline project is the largest engineering facility to be installed in the Baltic Sea. In contrast to Nord Stream 1, where the operators were able to communicate to the permitting authorities that the pipeline is necessary to ensure the security of Europe's gas supply, Nord Stream 2 is a supply infrastructure which would transport natural gas to Europe even long after the end of the fossil energy supply as stipulated in the Paris Climate Agreement. While in the case of Nord Stream 1 the negative consequences for the Baltic Sea environment were accepted because the project was considered to be of overriding public interest for the Baltic Sea countries, Nord Stream 2 is a project which, according to the planning documents, is of "overriding private interest"¹.

The project is subject to the Espoo Convention as the environmental impacts caused by the project directly affect the entire Baltic Sea (namely by induced nutrient inputs or emissions) or relate to species, populations or habitats (such as harbour porpoises, ringed seals, spawning areas for herring, dune habitats) that are important for the entire Baltic Sea system.

1.1.1. Suitability for application

Despite several years of project development, the planning documents indeed comprise a vast number of pages, but when it comes to important issues the documents remain diffuse and general. Technical planning for example seems to have matured, but the assessment of important environmental issues (updated munitions screening and clearance, assessment in

¹ cf. Chapter 5.4.4.4.2 of the application for the permission under mining law.

compliance with international environmental directives (MSFD, WFD, Helcom BSAP, Ramsar) is rather incomplete, planning of environmental measures, e.g. for the potential compensation of environmental damages e.g. in Germany, are in a sketchy preliminary phase (no surface availability, no reliable planning including measures, no reference to environmental impacts).

The BUND demands that without an assessable programme of compensation measures based on real availability of land, the technical planning for the pipeline must not be passed by the permitting authorities either.

1.1.2. Planning Justification/Demand

The planned construction of Nord Stream 2 is contrary to the climate protection and energy policy objectives of the Federal Government and the European Union. The “EU Reference Scenario 2016”² underlying the demand planning for Nord Stream 2 and mentioned in the consulted application documents relating to Nord Stream 2 assumes a mostly stable European natural gas demand until 2050.

The underlying EU reference scenario not only misses the energy efficiency objective of the EU of 20% energy savings by 2020, but also completely ignores the EU targets already agreed of 27% cuts in consumption and of 30% cuts in greenhouse gas emissions by 2030. The EU and Germany have committed themselves to become climate-neutral by the middle of the century. Neither the Climate Agreement signed in Paris in 2015 nor Germany’s Climate Action Plan 2050 adopted in autumn 2016 are taken into account in the demand analysis for Nord Stream 2. **The BUND demands that planning of long-term infrastructure projects must be in compliance with Germany’s and Europe’s climate protection and energy policy objectives.** Natural gas rightly acts as a bridging technology whose end is already clearly foreseeable today. Thus, the current Projection Report 2017 of the Federal Government assumes a 10% cut in fossil gas demand for Germany by 2035. Moreover, the BUND argues that the construction of Nord Stream 2 is also not justifiable for supply security reasons. In their study “Energy Union Choices - A Perspective on Infrastructure and Energy Security In the Transition” the WWF in cooperation with well-known partners showed that in a supply crisis in an important transit country, such as that prevailing in the Ukraine since 2015, a secure natural gas supply via alternative, already existing import infrastructures is possible.

Based on a Prognos study, Nord Stream 2 AG asserts that the project is necessary and advantageous for the European Union both from an ecological and an economical point of view and that it contributes to the “diversification” of the natural gas supply and covers a future demand of the EU for natural gas. Here, there is a failure to recognize that with the Paris Climate Agreement the EU has committed itself to an exit strategy for fossil fuels until 2050 and is also willing to adhere to these obligations. One cannot speak of diversification if an existing pipeline is simply expanded by a parallel pipeline, but at the same time closure of an existing pipeline - through the Ukraine - is not excluded. It is not diversification but a concentration/monopolization of the infrastructure - and above all cost saving for the companies - if a second transport channel is established free from transit

² Prognos 2017: “Current Status and Perspectives of the European Gas Balance - Analysis of EU 28 and Switzerland”)

fees.

The forecast of the gas demand in the underlying study assumes that the EU does not meet its energy objectives - consequently there will be a high future natural gas demand, also after 2050. In the study "More security, lower cost - a smarter approach to gas infrastructure in Europe" the Think Tank Energy Union Choices (March 2016) paints a completely different picture: Assuming compliance with the EU energy targets, the demand for gas imports will reduce by 63% (120 bcm) until 2050 (demand for electricity + 29%). The study also calculates that none of the gas megaprojects (neither Nord Stream 2 nor the Southern Gas Corridor) are needed for Europe's supply security - not even in situations of supply crises³. The same study points out that the previous five demand forecasts (2003 to 2013) of the EU commission consistently overestimated the actual demand so that there is also reason for doubt with respect to the official estimate.

Should there be any doubts as to the need for the pipeline through the Baltic Sea resulting from calculations including the energy supply strategy of the EU adopted by the German Government, the BUND expects that the environmental concerns also identified by the government will be classified higher than the private monetary interest of an energy transport company to save transit fees.

The BUND calls for a suspension of the application process and for a review of the demand calculation on the assumption that the EU targets will be met.

1.1.3. Special Urgency

Apart from the schedule set by the applicant itself and the very costly commitments undertaken at its own risk, there are no reasons justifying the decision to proceed with infrastructure planning on a national and international scale such as the Nord Stream 2 pipeline and corresponding accompanying measures within a short timeframe (less than 3 years). The investment risk entered into by the applicant is entirely the responsibility of the company: the delivery of the pipes well before submission of the application, the ordering of pipe-lay equipment and further implementation measures well before the applications are submitted or even approved can only be called gambling on reliance on subsequent political sanction. It is neither common practice nor does time permit to expect that, upon application in March of one year, execution of e.g. munitions surveys in summer and filling of serious data gaps in the expert opinions, a project can be approved in the same year. The compensation measures in Germany are not only technically questionable - it is also not possible to professionally implement them without unpredictable legal risks if significant aspects are not checked in advance. Thus, the "Ossen lowland renaturation Rügen" identified as a priority measure since 29.05.2017 (Nord Stream 2 press release dated 29.05.2017) has not only already been largely implemented in another process and is therefore unavailable for compensation of the pipeline, but taking the legal aspects regarding species and the FFH assessments into consideration requires at least one full vegetation period for investigations in order to determine the current condition of species and habitats in the region and to derive a population or impact prognosis as well as associated mitigation measures. The same applies to other nature conservation measures which require a lead time of at least 1 - 2 years in order to make reliable statements on the

³ JONATHAN GAVENTA, MANON DIFOUR, LUCA BERGAMASCHI (March 2016: "More security, lower cost - a smarter approach to gas infrastructure in Europe" p. 24 et seqq.)

future development.

The measures of the Nord Stream 1 pipeline have painstakingly demonstrated how hasty permissions on an unsustainable basis can counteract the implementation of nature conservation issues: The main region of the marine compensation measures in Germany off the coast of Peenemünde had been improperly planned although it was completely munitions-contaminated. The search for a replacement project then took several years - the natural area had to cope with the stress while the pipeline project was carried out without any delay. An order to properly assess the munitions-related contamination would have made the simultaneous approvability of the pipeline and compensation possible at an early stage.

The BUND considers the project to be unacceptable and not suitable for implementation and expects the permitting authorities to suspend processing of the applications until acceptable documents have been provided for all affected parts of the system (pipeline and compensation measures) in a correct time frame. A fast approval on an inadequate basis would be a formal defect which could result in protracted litigation (see Elbe judgements).

1.1.4. Assessment of Alternatives

Already during the planning of Nord Stream 1, the environmental associations had called for an assessment of all possible alternatives with respect to the environmental impact, as also required by the Espoo Convention. An assessment of the environmental impact of the onshore alternative as well as the offshore alternatives is called for by Espoo. The onshore alternative or the previous land route through the Ukraine respectively is as little assessed as the zero option. The zero option is said to have no negative and no positive effect and is therefore not relevant⁴. This, however, presumes the need for such a pipeline, which we denied above.

Alternative in Russia: The applicant argues that, although a connection of the pipeline in the Russian area at the northern shore of the Gulf of Finland parallel to Nord Stream 1 would possibly be more environmentally compatible, this alternative route had not been considered further for structural policy considerations (supply of a fertiliser factory and parts of St. Petersburg) and because of technical standards in Russia. It is not a question of political solutions favoured by the client, but of the route alternative most suitable for the environment. The analysis has been made for the offshore routes, but not for the onshore alternative.

We do not consider this reasoning to be in line with the requirements of the Espoo Convention and ask the applicant to submit a detailed assessment of the onshore route from the pipeline hinterland connection to the landfall of Nord Stream 1 for verification.

1.1.5. Dismantling

For the additional loads on the Baltic Sea system caused by the pipeline, the BUND expects a delineation of the compensation for damages which is then to be submitted to the permitting authorities.

⁴ Espoo Report, p. 8

The potential pipeline dismantling measures have also been presented in the Espoo report⁵. Different concepts are presented which consider everything from complete dismantling up to complete preservation of the installation on the seabed. The BUND considers it difficult to predict the appropriate dismantling method 50 to 100 years in advance. Nevertheless, the decision to build such an installation must be accompanied by the guarantee that the installation will be dismantled after the end of operation. Even though the method is not specified, from today's perspective the most extensive dismantling must be assumed as a basis for planning. In order to ensure this in the future, the permitting authorities, when granting permission, should urgently require the applicants to lodge a financial security in a legally binding way to enable dismantling of the pipeline in 100 years. The current construction costs for pipe-laying plus the inflation-related interest of this sum over 100 years can be used as an approach to this. **We call on the authorities not to grant any permission without such guarantee.**

1.2. Environmental Aspects with an Impact on the Entire Baltic Region

1.2.1. Global, EU and Helcom Obligations (Ramsar, WFD, MSFD, BSAP)

Planning of a pipeline across the Baltic Sea is subject to a number of international environmental regulations. As the pipeline affects several sub-regions of the Baltic Sea and both national as well as EU nature conservation law are concerned and the water bodies are addressed by the EU Water Framework Directive (WFD) and also the Marine Strategy Directive (MSD), stringent requirements apply here. Simultaneously, the stipulations of the Helcom action plan (water quality and Baltic Sea protected areas) and the Ramsar Convention (wetlands for water fowl) are immediately concerned and impacted. Individual protected species such as the harbour porpoise population in the Baltic Proper with 450 animals or the ringed seal populations in the Gulf of Finland are directly affected by the measures. Both the EU and the Helcom states have committed themselves to form a network of well-managed protected areas in the Baltic Sea. The pipeline project crosses several such protected areas in Germany, Sweden and Russia (Ramsar area). Through the network - and of course as migration stepping stones - these areas are interconnected and interdependent. The initial assessment of the MSFD confirms that the German Baltic Sea waters have a poor ecological status. All essential features and components of the ecological system are heavily loaded or impaired and do currently not have the desired good environmental status⁶. The current management plan in compliance with the Water Framework Directive (WFD) comes to a similarly worrying evaluation. The ecological status of the water bodies traversed by NSP2 is classified as "unsatisfactory" and the "good" chemical status is not achieved either. In spring 2014, the German Federal Agency for Nature Conservation (BfN) published the new Red List of marine species in the North and Baltic Sea. Thus, one in three species is endangered, while another 30% lack the scientific basis to evaluate their endangerment. In addition to bottom trawling, scientists hold the gravel and sand extraction and excessively high nutrient inputs responsible for the alarming development.⁷

In various recommendations and action plans, the member states of the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area

⁵ Espoo Report, p. 555 et seqq.

⁶ <http://www.meeresschutz.info/index.php/berichte.html>

⁷ http://www.bfn.de/0322_veroe.html

(HELCOM) have obligated themselves to reduce the pressure on the Baltic Sea caused by nutrients and pollutants, shipping, fishing, etc. The HELCOM Report “Ecosystem Health of the Baltic Sea” published in 2007 revealed that except for small areas in the Bothnian Bay none of the investigated sea areas was in a good state. Consequently, the “Baltic Sea Action Plan” was adopted in order to solve the most urgent problems by the year 2021. The HELCOM Red Lists indicate 42 species and 16 habitats endangered by human activities.⁸

This high background load and the poor status of the Baltic Sea is used as an argument by the applicant to demonstrate that further deterioration caused by NSP2 will be insignificant or too low to be considered. We disagree with this view. Instead, the poor status of the Baltic Sea, i.e. failure to meet the targets of the relevant environmental and nature conservation directives, forbids any further deterioration. In the following, it is shown in detail that **the Nord Stream 2 project can result in such a further deterioration or is likely to further delay the achievement of the targets set by WFD, MSFD, FFH-D and BD.** The existing infringement proceedings are only mentioned in passing here. **Against this background, the Nord Stream 2 project is not capable of approval.**

1.2.2. Nutrients

Eutrophication caused by excessive nutrient loads is rightly identified as the central problem for the health status of the Baltic Sea. Helcom and the Baltic Sea countries have been working on the amelioration of this status for decades. In the meantime, the pressure which was initially confined to certain water sections/subareas now affects the entire water body - in some areas the bottom zones are oxygen-free thus being excluded as habitats. The Espoo documents indeed admit an increase of the nutrient load of the water body by the pipeline project, however, with reference to the “natural” background load it is assessed as not significant.

For the identically constructed Nord Stream 1, the company reported 4000 t of additional mobilisation of phosphorus and 1% of the annual inputs into the Baltic Sea for nitrates. In the present documentation on Nord Stream 2, there are no figures for the expected overall load scenarios for N and P. Since the intervention works are almost identical to Nord Stream 1 - except for reduced burial depths - we assume that nutrient releases of comparable proportion also apply to Nord Stream 2.

We consider the project initiator's assessment of the nutrient load caused by the pipeline to be misleading and manipulative: Instead of presenting the high load status as an initial status of a disturbed water body, like a patient already suffering from a serious illness where every additional load can initiate system collapse, Nord Stream 2 AG describes the nutrient mobilisation by the pipeline as “not significant” supported by the statement: given 5000 t of phosphorus background load in the Pomeranian Bay, 239 t of nitrogen by the pipeline would have an insignificant impact. The nutrient inputs into the Baltic Sea are not natural as is suggested, but caused by numerous anthropogenic sources, among others also the construction of Nord Stream 1.

1.2.3. Suspended Sediment Load

While “Seabed intervention works” played a major role during Nord Stream 1, this aspect is largely de-emphasized in the current planning. In fact, the documents show that up to

⁸ <http://helcom.fi/Lists/Publications/BSEP122.pdf>

700 km² (equivalent to a good 70% of the surface of Rügen) will be impacted by suspended sediments. As a comparison, the natural spreading caused by storms and currents is mentioned here. The same applies here: the turbidity induced by Nord Stream 2 is an additional factor to the preload of the Baltic Sea.

1.2.4. Munitions

Given that according to the plan the pipeline extends through the entire Baltic proper and the Gulf of Finland, the entire area must also be considered with respect to munitions. It is presumed that about 300,000 t of conventional and up to 65,000 t of chemical munitions are located in the German Baltic Sea. Core areas for chemical munitions are located near Denmark; mine belts and further dumping sites are located in the Swedish, Finnish and Russian part of the route. Therefore, there is a latent high risk of encountering munitions when implementing infrastructure projects.

In 2011, after several years of work by a German Federal Government/Länder working group on behalf of the ARGE BLMP, an evaluation report⁹ was presented describing the current situation of all types of munition in German marine waters and expressing recommendations regarding handling of the remnants of war. Since then, progress reports¹⁰ are published at regular intervals and are discussed in an international context with the Baltic Sea countries and international initiatives such as the “International Dialogue on Underwater Munitions”¹¹. Simultaneously, different research projects were launched which are in particular meant to develop and assess alternative clearance methods.

It is incomprehensible that Nord Stream 2 AG seems to consider the munitions topic to be so uncontroversial that they have dispensed with new thorough surveys¹². Thus, they state under 9.13.1.5. Munitions in Germany:

“As part of the planning for the construction of the pipeline, Nord Stream 2 AG initially collected and analysed all available information on areas suspected to be contaminated with explosive ordnance, in particular on minefields and areas for the disposal of conventional and chemical munitions in the Baltic Sea. The results of this collection can only be called entirely insufficient and incomprehensible in terms of its seriousness”.

No reference is made as to the sources and information accessed and it is not clear if a current and complete assessment of the situation along the route is available.

Although the detection methods and the assessment regarding the extent and handling of old munitions have made considerable progress over the last seven years since the last planning phase, the project initiator partly relies upon the old data, the necessary investigations had not been completed at the time of the assessment or new data sources and research projects remained unconsidered.

Thus, investigations on **conventional munitions** in Russia were carried out in April 2017; however, no results are as yet available. The data collection in Finland will also be delivered later. In 2016, a visual inspection of two corridors was undertaken in Sweden. Apparently, no new additional investigations were carried out in Denmark and Germany after construction of the first pipeline.

⁹ http://www.schleswig-holstein.de/DE/UXO/Kurzfassung/kurzfassung_node.html

¹⁰ http://www.schleswig-holstein.de/DE/UXO/Themen/Fachinhalte/textekarten_Berichte.html

¹¹ <http://underwatermunitions.org/>

¹² Cf. Espoo Specific Topic Areas p. 309 - 314

Even despite the further development of modern detection technology enabling the location of old munitions even in the sediment, no new screening was performed. **We call for the detailed disclosure of the analysis of all available information on minefields and munition dump sites alluded to in the Espoo Report.** It may be doubted that all of the possible sources also mentioned in the following were covered exhaustively. At the same time, we would point out that the position of munitions in the sediment changes dynamically over the years and that anthropogenic activities such as bottom trawling or gravel and sand extraction cause active displacements. The progress report by the Federal Government/Länder working group Munition in German Marine Waters published in 2016¹³ states that two shells were displaced and detonated near the Nord Stream pipeline. This is further proof of the dynamic displacement of munitions in the Baltic Sea area in comparison to the Nord Stream 1 investigations. **As a consequence, a new and up-to-date survey of the planned route of Nord Stream 2 in a coordinated process using state-of-the-art technology is indispensable. The results must be attached to the revised planning documents.**

The construction of Nord Stream 1 has already shown that old munitions along the route must be anticipated. As a result of the environmental impact assessments, 100 old munitions¹⁴ were removed from the seabed to ensure safe routing.

As circumvention of potential munitions finds by diverting the route cannot be ensured in every case, a detailed concept for **munitions clearance** must be prepared and presented. Given that, according to the current state of scientific research and considering the stipulations of the EU Marine Strategy Framework Directive as well as the FFH Directive, the underwater detonation of munitions is not an option, the concept must include the use of state-of-the-art clearance technology. The condition of the munition determines the hazard potential and the technique to be used. The MIREMAR international conference¹⁵ held by NABU in 2010 has provided an overview of clearance technology already existing today. Among others, this includes the use of underwater robotics, mobile detonation chambers, water cutting and photolytic destruction methods.

An additional chapter is to be compiled in which environmentally compatible clearance methods according to today's state of scientific research and technology are discussed and an alternative clearance concept and accompanying mitigation measures for the protection of endangered and protected species such as the harbour porpoise, seals and fish as well as protected habitats are presented and proposed. Without this concept, it is inconceivable to carry out any preparatory construction work.

In the meantime, there are several joint projects in Germany or at a European level with German participation addressing the potential impacts of munitions on the marine environment (DAIMON project), and also the detection and environmentally friendly salvage and disposal of old munitions (UDEMM and RoBEMM projects).

We call for evidence that recent results of the projects mentioned are incorporated into the Nord Stream 2 planning and that an environmentally compatible salvage and disposal concept for potential munitions finds and different types of munitions are

¹³ http://www.schleswig-holstein.de/DE/UXO/Berichte/PDF/Berichte/ad_blano_fortschritt2015.pdf?__blob=publicationFile&v=8

¹⁴ http://www.nord-stream.com/.../file/.../nord-stream-by-the-numbers_177_20131128.pdf

¹⁵ <https://schleswig-holstein.nabu.de/natur-und-landschaft/aktionen-und-projekte/munition-im-meer/miremar/13081.html>

prepared and attached to the planning documents.

In the framework of the preliminary investigations regarding **chemical munitions**, only the Danish area was considered as it is assumed that no old chemical munitions can be found in the other areas. The Espoo Report itself states that the analysis methods have advanced and been refined over the last few years. It may be that additional deposits of chemical munitions are therefore identifiable. **Correspondingly, further chemical analyses of the sediment along the planned routing are to be carried out.** After all, there is no doubt that chemical as well as conventional munitions have already been dumped “en route” on the way from the port of embarkation to the dumping sites. However, the research of old documents in German archives and in archives of the Allies has not yet been completed so that no such general clearance (free of chemical or conventional munitions) can be granted for any marine area.

The statement under 9.14.2.1 Chemical warfare agents that

“[...] shell casings of many chemical munitions have corroded over the time and CWAs have been released into the surrounding marine environment, where they have been accumulating in the seabed sediments.” remains unclear.

It is generally known that chemical munitions were often installed in the shell in glass cartridges which do not corrode, but rather are not chemically detectable until displacement or mechanical destruction. **This confirms the urgent necessity for a complete preliminary investigation of the total planned route using state-of-the-art chemical and physical detection technology and additional video techniques.**

As some countries will only be carrying out their environmental impact assessments in the coming weeks, an evaluation of the total project and its impacts is not possible at this point in time. **A period of six months for follow-up investigations and re-participation is requested** as, in compliance with the precautionary principle, an evaluation on the basis of today’s data is impossible.

1.2.5. Protected Species

Harbour Porpoise

The harbour porpoise population in the Baltic proper, comprising up to 450 animals,¹ is directly impacted by the pipeline. They are present both in the German area of the Pomeranian Bay at certain times of the year and also in the area south of Gotland where a main breeding site is assumed. The area south of Gotland was only identified after the construction of Nord Stream 1 and is of great importance for the entire Baltic region. The pipeline would cut through the centre of the Natura 2000 site recently designated by the Swedish government for the area. The applicant's view that the project would have no impact on the harbour porpoise cannot be shared. The sole statement to have sent a corresponding report to the Swedish government does not allow any verification of content and methods. **Given that animals from the entire Baltic area may also potentially be concerned, the BUND expects that the reports are made available to all other Baltic Sea countries too. We ask the permitting authorities not to carry out any further processing of the application documents in this respect if no transparent public participation is possible across the entire Baltic region.**

Ringed seals

The Baltic ringed seal is restricted to the area east of Latvia. According to a recently-published report by WWF Finland, due to the climatic handicaps (repeated ice-free winters with significantly reduced reproduction, since the young are reared on the ice) the population has declined greatly in the Finnish-Russian part of the Gulf. The population in the area of the Kurgalsky reef is now estimated at some two to nine animals. Moderate deterioration of the ringed seal population is now to be feared in both the Finnish M3 zone, and the Russian M1 and M3 zones. The population is already endangered as a result of climate change, and the impact of Nord Stream 2 will further increase the adverse conditions affecting grey seals in the Gulf of Finland. For precautionary reasons, approval of the project cannot therefore be recommended.

1.3. Area-related aspects with an environmental impact

1.3.1. Germany

1.3.1.1. Nutrients

The project initiator sets out the calculation in terms of “natural background pollution” of the German area, whereby the additional mobilisation of phosphorus pollution is depicted as being marginal. In the Bay of Pomerania alone, the phosphate input is increased by 239 t, while the figure for the Bay of Greifswald is 15 t. The fact that existing levels of pollution for the Bay of Pomerania are said to be at 5,000 t/a is a reason for the applicant to claim that this is not significant or substantial. However, the opposite is the case: this would mean additional pollution of a severely affected system which is currently far from being in a well-maintained state according to the Water Framework Directive and the Marine Strategy Framework Directive. The measures proposed by the company for Germany relate only to the Bay of Greifswald – and here only indirectly through a reduction in nutrients in a drainage area of the Kleiner Jasmunder Bodden. Measures are urgently required to compensate for the 239 t of phosphorus input caused by Nord Stream 2 in the Bay of Pomerania.

1.3.1.2. Suspended sediment

One positive aspect is that in Germany the organic sediments caused by the construction of the pipeline are to be consistently placed on/transported to land. **It is imperative that the approving authority requires the project initiator to implement this on a compulsory basis.** Nonetheless there will be a sufficient quantity of suspended sediment in addition to the existing natural material for key functions of the Bay of Greifswald to be impacted. A study carried out by the Thünen Institute dated 29 May 2017 showed that reproduction has decreased considerably in the Baltic Sea's most important body of herring spawn for climatic reasons. For this reason, additional impairment caused by clouding of the water in the sensitive initial youth phase of the fish is definitely to be assessed as significant – even though the cause of the main pollution is a different source.

1.3.1.3. Munitions

In the German Baltic there are assumed to be some 300,000 t of conventional munitions

and up to 65,000 t of chemical munitions.

Even though new insights and methods have been developed in recent years for the detection of munitions (see above), Nord Stream 2 AG has once again failed to carry out detection for the Nord Stream 2 pipeline section in the German area. The munitions recovery service has also acquired new insights and the polluted areas in German waters have been significantly expanded in Mecklenburg-Western Pomerania (verbal notification). **We expect a survey to be carried out again for the pipeline section in the German area.**

1.3.1.4. Habitats

A number of Natura 2000 areas are crossed within the German region. Laying the pipeline through such areas is essentially to be regarded as an intervention and is treated as such in the documents.

One specific habitat here is the bay threshold between the Bay of Greifswald and the Bay of Pomerania. This is a marl cliff which is also protected as a geotope under German nature conservation law. The habitat cannot be restored since it was formed in this way during a glacial period. The surface structure can be recreated but it is not possible to restore the cliff's ecological value.

Breaking through the cliff can only be classified as incompatible with FFH law. This means that at most it would be possible to obtain conditional approval based on a detailed, exceptional FFH examination.

The pipeline is to be embedded into the bay threshold as well as in most of the German areas. For this purpose, the trench is to be filled in with gravel material in part. Very little evidence of the origins and environmental compatibility of gravel extraction is provided, and the same is true of any material that might be necessary for potential underpinning of free spans to stabilise the pipeline in the EEZ area. The project can only be objectively assessed if the relevant documentation is submitted.

The planning is not capable of approval as regards this aspect.

1.3.1.5. Compensation measures

In the German area, the project initiator has calculated compensation measures of considerable scope: apart from the fact that these have been arrived at by questionable means using a kind of “hybrid costing”, the planned measures are to be assessed as anything but transparent. No plans for concrete measures have been submitted: Nord Stream 2 talks of “proposals” and these are consequently lacking in any concrete detail. Instead they resemble rough project sketches rather than plans or even preparatory plans. The central Ossen wetland measure on Rügen proposed by the project initiator's press office is already covered by other plans already approved, much of which has in fact already been implemented. It seems highly questionable to pursue this measure further and count it as compensation for intervention in the marine area. The drainage area of the Ossen is located in the Kleiner Jasmunder Bodden and not in the affected marine area of the Bay of Greifswald. While we welcome the measures outlined in terms of their character, in the present form – and since it is not foreseeable that Nord Stream 2 AG will ever have these areas at its disposal – the project as it stands is currently without compensation measures. In view of the run-up period required for FFH examinations, assessments under species protection law etc., it will be necessary to allow at least one year to prepare an application and one year for approval planning.

The BUND calls on the approval authorities not to accept the compensation proposals put forward: the applicant should be required to develop new measures and instructed not to submit these until they have been fully elaborated and are ready for application. We insist that no approval should be issued for the construction of the pipeline until planning for any compensation measures is sufficiently advanced for the purposes of approval.

1.3.2. Denmark

For the Danish area, the same aspects largely apply as for the area as a whole in terms of nutrient pollution, the impact on porpoises and general environmental pollution. Since no specific information is provided regarding pollutants in the Danish area and modelling for this purpose has not been planned or implemented as for Russia and Finland, **more information has yet to be provided as to how pollution is to be assessed for the intervention area in Denmark and the appropriate modelling is to be carried out.**

1.3.2.1. Munitions

Although the Danish area contains the biggest munitions contamination area and it is to be assumed that conventional weapons were dumped here too, the basic investigation for Nord Stream 1 was regarded as sufficient and no new detection has been carried out. **In line with the procedure in the Swedish area, we call for a repeat investigation of the Danish marine area for conventional munitions, also using the latest insights and methods relating to chemical warfare agents.** (Cf. the section above entitled Munitions).

1.3.3. Sweden

The overall situation as described above applies in terms of nutrients and the impact of suspended sediment. In contrast to Russia and Finland, **there is no modelling for pollutant contamination. This must be carried out.**

1.3.3.1. Munitions

With several mine belts and munitions dumps as well as the munitions findings and detonations in connection with Nord Stream 1, Sweden is one of the main areas affected by munitions. It is true that, unlike other countries, an investigation has been carried out for conventional munitions in Sweden. However, Swedish waters also include **dump areas for chemical warfare agents. Another more detailed investigation is called for here, as is also necessary for Denmark.**

1.3.3.2. Natura 2000 / species protection

The documents for the project mention the existing conservation areas in the Swedish marine region and state that the species in the area will not be significantly affected. The new Swedish protection area for porpoises is mentioned, though it is depicted as not being significant with reference to a report submitted to the Swedish government. Since the new protection area would be completely cut through by the pipeline and this area is the main reproduction area of the Central Baltic population according to the latest porpoise research, the submission of a report to the government is not sufficient. **Here it is necessary to establish complete transparency and also indicate alternative route proposals. As**

such, planning for the Swedish area is not capable of approval.

1.3.4. Finland

1.3.4.2. Nutrients

The Gulf of Finland is one of the worst nutrient-contaminated areas in the Baltic Sea. Suspended sediment will rise in the Finnish area too, not just due to impact from the Russian border area. The planned munitions detonations will also release nutrients and suspended sediment that will additionally impact on the ecosystem. **The documents do not provide any specific details of how much suspended sediment will be released in the Finnish area, and we call for this information to be added.**

1.3.4.2. Pollutants

The measures will release toxic pollutants into the water column in the Finnish marine area, even though the levels of pollution will not be as high and as continuous as in the Russian area. The levels for polycyclic aromatic hydrocarbons (PAH) are exceeded over an area of 118 km² in the Finnish marine area for 19 hours, the levels for dioxins and furans for a period of more than seven hours. Nord Stream 2 AG regards this as insignificant. **The BUND deems a remobilisation of these dangerous pollutants from the sediment to be fundamentally unacceptable.**

1.3.4.3. Munitions

In the Finnish area, considerable pollution can be anticipated due to munitions clearance. In Section 9.13.1.2, the project initiator states that no detailed studies have yet been carried out in terms of concrete suspected munitions sites in the Finnish area. This means that there are no meaningful documents for assessment purposes relating to this important area.

The BUND calls on the Finnish approval authorities not to issue any further approvals until the relevant detailed investigations into munitions have been carried out and to require the relevant documents to this effect to be submitted. We are unable to carry out an assessment based on the documents available – we will provide further comment as soon as we have been provided with the relevant basis. The data relating to the impact on marine mammals already suggests that in the Finnish area there will potentially be a direct impact on porpoises and ringed seals from detonations.

1.3.4.4. Marine mammals

In addition to the very sporadic evidence of porpoises, grey seals are affected in the Finnish area and in particular the subpopulation of ringed seals.

Ringed seals:

At the beginning of the 20th century, ringed seals constituted the largest seal population in the Baltic Sea, comprising a total of approx. 200,000. As a result of selective hunting, climate change and environmental pollution leading to sterility, the number of ringed seals was reduced in the 1980s to 5,000 and has since recovered to 15,000 - 20,000. The current situation of the ringed seal population in the Baltic Sea is summarised in the

following WWF study¹⁶.

The ringed seal population in the Baltic Sea is subdivided into four populations. The smallest of these comprises 100 individual animals and is located in the Gulf of Finland. The following section looks at the occurrence of ringed seals in this area according to adjacent countries.

The main resting sites of the ringed seal in Russia are the coastal area of the Kurgalsky peninsula at the Narva Bay and the Moshchny and Malvy Island reefs to the north-west of it. Here there has also been a sharp decrease in the population in recent decades. More than 100 ringed seals were counted here in the 1990s, while in the years 2009 - 2012 no more than 40 animals were observed resting. At nearby Malvy Island, sighting figures dropped from 10-15 to two to three individuals.

Helcom published the results of a ringed seal radio marking investigation as part of the BALSAM project in 2015¹⁷. This also shows that the waters of the Narva Bay and the islands to north of it constitute a key ringed seal habitat.

In Estonia, the last ringed seal populations have been observed around the islands of Vaindloo and Uhju. The entire Estonian coast was once inhabited by ringed seals.

In Finland, most ringed seals in the Gulf of Finland have been registered on ice floes in the easternmost area near the Russian border, with a maximum of 16 individuals. At the Hamina archipelago there have been individual sightings of young animals.

This report shows clearly that the main area of distribution of the highly endangered ringed seal in the Gulf of Finland overlaps directly with the sections shown in the project area where the level for a permanent and temporary hearing threshold shift is exceeded for seals in connection with the detonation of munitions. It must therefore be assumed that the noise of underwater explosions (M1-M3 in Russia and M1 in Finland) would reach the ringed seal habitats situated in this area and that individuals of the protected species would be killed by the blast wave. Even though some colony sites are not located in the direct environment of the detonation, it is impossible to prevent ringed seals from being in the sea water in the immediate surroundings of the blasts. The probability of this occurring is in fact very high since the colonies (see above) are situated around the planned detonation centres (M1-M3 in Russia and M1 in Finland) and the animals pass back and forth between the colonies, so ringed seals could be directly adversely affected by the blast.

1.3.5. Russia

1.3.5.1. Nutrients/suspended sediment

For decades now, the Gulf of Finland has mainly been affected by nutrient pollution from the St. Petersburg region, with large quantities of nutrients having been deposited in the sediment. The construction measures would suspend large quantities of the sediment and be deposited on the seabed as suspended sediment with a thickness of 0.5 cm. In Russia there will be increased suspended sediment pollution over a surface area of at least 265 km².

The levels to be assumed in Russia are 5.4 P/kg of sediment and 10 N/kg. In terms of the 40,000 t of released suspended sediment, a release of 400 t N and 226 t P has to be

¹⁶ Ahola et al. 2017: WWF Finland Report – The Baltic Ringed Seal, URL: <https://wwf.fi/mediabank/9825.pdf>

¹⁷ <http://www.helcom.fi/baltic-sea-trends/data-maps/biodiversity/seals>

assumed in the Russian area alone (plus nutrients from munition detonations). Even though it only partly dissolves, such a release is to be avoided. Since no details are provided here that nutrient-polluted soil is to be placed on land or at waste disposal sites as in Germany, this pollution is in itself an indication that the application is not ready for approval. Nord Stream a AG assumes a mean value for the entire pipeline route, thereby failing to take into account the specific details of the Gulf of Finland as a subsystem of the Baltic Sea.

1.3.5.2. Pollutants

As in the case of the nutrients, the pollutants in the Russian area are the most severe contaminations over the entire pipeline route. The pollutant limits are exceeded for PAH over a surface area of 172 km² for more than 35 days, for dioxins and furans for up to 32 days over a surface area of 108 km² and for zinc for over 30 days over a surface area of 53 km². Nord Stream 2 AG describes the significance of these levels as high but classifies sensitivity as low. The company fails to draw any consequences in terms of dealing with these polluted sediments. **The BUND regards this exceedance as severe and calls on the approving authorities to require the same standard as in the German landfall area in terms of the treatment of dredged material, where polluted sediment has to be taken to waste disposal sites and compact material has to be brought onto land. We regard these pollution levels as a reason to refuse approval.**

1.3.5.3. Munitions

In the Russian area there are not only high levels of pollution due to munitions: the existing mine belts also mean that there is a high probability of large numbers of mines having to be blown up. This will result in significant endangerment of marine mammals as well as the suspension of sediment along with the pollutants and nutrients contained in it? The state of the ringed seal population is described above in connection with the Finnish area, and this applies likewise to the Finnish-Russian border area. In the case of an estimated population of 40 animals, it is unacceptable even for individual animals to be put at risk by mine blasts. Here, further consideration and assessments are required in order to protect these animals or the Kurgalsky pipeline section is to be avoided.

1.3.5.4. Landfall in Kurgalsky Peninsula and Bay

The pipeline section in Russia runs through the Ramsar conservation area of Kurgalsky Peninsula and Bay. This area is not only registered as a protected area under the Ramsar Convention, it is also listed as Baltic marine protected area under the Helcom protected area concept. The measures involved in laying the pipeline are described in the report, but the appropriate conclusion is not drawn: **The BUND regards the only option here to be complete avoidance of the area, as is the case with the southern alternative route. We explicitly call for the pipeline section on the Russian land side to be shifted to the north, parallel to the Nord Stream 1 pipeline.**

The protected dune landscape is made up of non-reclaimable material and cannot be restored.

All in all, planning for the entire landfall area in Russia is subject to significantly less rigorous environmental requirements than in Germany. **If Kurgalsky was to be considered as a landing point at all, the same standards would have to be applied**

as in Germany: i.e. tunnelling under the dune areas and moors using microtunnel technology subject to the same conditions as in Germany, moving all contaminated or nutrient-polluted excavation material onto land and to tipping areas, layered sediment shift and avoiding disruption of the ringed seals in the area in question between Kurgalsky and Finland. It must be technically impossible for contaminants to find their way back into the water column.

1.2.5.6. Pressurised water pipe

Nord Stream 2 AG proposes two conceivable methods for testing the pressure of the pipeline prior to commissioning: dry operation and wet operation. The dry operation method uses compressed air and would have little impact on the surrounding water. This is not yet part of regular approval procedures, however. The wet operation option uses NaHSO₃ as an antioxidant¹⁸, and the latter was used for Nord Stream 1. This method involves the use of 85 ppm of sodium hydrogen sulphite which is mixed with Baltic Sea water and is discharged into the Baltic again in the Russian marine area. The contaminated volume of water is 2.6 million m³, the amount of NaHSO₃ used is approximately 210 m³. Although NaHSO₃ is approved as foodstuff additive E 222, it is also used for leather tanning. According to the GisChem safety data sheet¹⁹, even small amounts may not be disposed of via the sewage system or as domestic waste. The Russian section of the Baltic Sea certainly cannot be used to dispose of 210 m³ of pure substance or 2.6 million m³ of waste water. It can in any case be anticipated that there will be a sharp increase in oxygen consumption in the discharge area (the substance is used to bind oxygen). The same method was already used for Nord Stream 1. **In order to be able to assess the impact of wet preparatory operation, expert modelling must be submitted of the existing pollution from Nord Stream 1 as well as a detailed estimate of the area affected including the relevant species and habitats.** Without such a reliable prognosis, it is not possible to assess the project as a whole. **Wet preparatory operation is to be rejected in principle for precautionary reasons.**

¹⁸ Sodium hydrogen sulphite, also known as sodium bisulphite

¹⁹ http://www.gischem.de/download/01_0-007631-90-5-000000_1_1_3287.PDF

1.4. Summary

The WWF Nord Stream 2 project is neither necessary to ensure security of supply to Europe nor compatible with the resolutions of the Paris climate treaty. What is more, in spite of the fact that descriptions and plans for the construction of gas pipeline itself are well advanced, the documents regarding assessment of the environmental impact are still incomplete and fragmentary. In particular, a distorted assessment of the existing pollution of the ecosystem as a result of prior use and the judgement that additional pollution caused by the pipeline cannot be much more severe anyway suggests that the absorption capacity of the Baltic Sea for further pollution has either been mistaken or deliberately ignored. The additional load is the “straw that breaks the camel’s back” – not the amount that can be withstood because there is too much anyway.

While original surveys were carried out on a diverse range of aspects for Nord Stream 1, the documentation for Nord Stream 2 does little more than draw on monitoring results for the first pipeline, often simply extrapolating or ignoring the results of the original investigations. In doing this, the project initiator fails to take account of the fact that seven years after the planning for Nord Stream 1, advances in technology and expertise have also created new possibilities in terms of detection and reduction, as in the case of munitions detection and recovery.

In this case, as in the case of alternative pipeline sections to avoid the Kurgalsky protected area in Russia and the porpoise protected area in Sweden, a new route alternative is to be submitted and the relevant surveys are to be carried out. Munitions recovery prognoses are also to be raised to a uniform forecast standard for all the areas affected.

In Finland and Russia the pipeline could potentially bring about the collapse of the endangered ringed seal populations in the Gulf of Finland – Nord Stream 2 AG offers no avoidance measures here.

Pollution in Finland and Russia involving significant nutrient levels from the sediment as well as the release of carbon compounds, furans and dioxins cannot be accepted and is rated by the BUND as significant. Cutting through the Ramsar area of Kurgalsky in Russia is a breach which can only be avoided by creating a new link section and implementing a shift back to the Nord Stream 1 route.

A two-tier assessment within the Baltic Sea region is not acceptable: open laying methods in Russia, closed landfall in Germany, removal of contaminated sediments to tipping areas in Germany, open dumping in Russia, and discharge of 2.6 million m³ of oxygen-free Baltic Sea water into Russian waters where EU standards do not apply.

In the German area, interventions are noted but the necessary compensation measures are proposed in such vague and unreliable terms that this can only be interpreted as a non-binding proposal and under no circumstances as a plan to be taken seriously.

Since the project is neither sensible nor necessary in terms of energy policy and has not been sufficiently elaborated in terms of environmental pollution, avoidance and compensation measures to a degree that would enable a decision to be made, we expect the approving authorities to deny permission. If the company still insists on pursuing the project it can submit another application with additional documents and surveys, fulfilling the requirements and suggestions put forward in this statement.