North Sea Energy offshore system integration

D2.1

North Sea Energy 2023-2025

Practical guidance for developing a stakeholder engagement strategy in offshore energy projects

Navigating the North Sea transition!

For centuries, the North Sea has been a source of economic strength, ecological richness, and international cooperation. Always subject to change, yet steadfast as a connector of nations, cultures, and economies. Today, it once again takes center stage—this time as a lighthouse region for the transition to a sustainable, affordable, and reliable energy system. The North Sea Energy program marks an important step in this development.

North Sea Energy is a dynamic research program centered around an integrated approach to the offshore energy system. Its aim is to identify and assess opportunities for synergies between multiple low-carbon energy developments at sea: offshore wind, marine energy, carbon capture and storage (CCS), natural gas, and hydrogen. At the same time, the program seeks to strengthen the carrying capacity of our economy, society, and nature.

The offshore energy transition is approached from various perspectives: technical, ecological, societal, legal, regulatory, and economic. Our publications provide an overview of the strategies, innovations, and collaborations shaping the energy future of the North Sea. They reflect the joint efforts of companies, researchers, and societal partners who believe in the unique potential of this region as a hub for renewable energy and innovation.

What makes this program truly distinctive is not only its scale or ambition, but above all the recognition that we are operating in a dynamic field of research. The energy transition is not a fixed path, but a continuous process of learning, adapting, and evolving. New technologies, a dynamic natural environment, shifting policy frameworks, and changing societal insights demand flexibility and vision. Within this program, we work together to ensure that science and practice reinforce one another.

This publication is one of the results of more than two years of intensive research, involving over forty (inter)national partners. This collaboration has led to valuable insights and concrete proposals for the future of the energy system in and around the North Sea. All publications and supporting data are available at: https://north-sea-energy.eu/en/results/

We are deeply grateful to all those who contributed to the realization of this program. In particular, we thank our consortium partners, the funding body TKI New Gas, the members of the sounding board, the stakeholders, and the engaged public who actively participated in webinars and workshops. Their input, questions, and insights have enriched and guided the program.

At a time when energy security, climate responsibility, and affordability are becoming increasingly urgent, this work offers valuable insights for a broad audience—from policymakers and professionals to interested citizens. The challenges are great, but the opportunities are even greater. The North Sea, a lasting source of energy, is now becoming a symbol of sustainable progress.

With these publications, we conclude an important phase and look ahead with confidence to the next phase of the North Sea Energy program. In this new phase, special attention will be given to spatial planning in the North Sea, European cooperation, and the growing importance of security in the energy system of the future.

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Prepared by:

MSG
George Wurpel
Jana Suilen

Checked by:

MSG
Anne-Mette Jørgensen

Approved by:

TNO
Madelaine Halter

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Graphical summary

Figure 1 provides a graphical summary of the different steps in drawing up a stakeholder engagement strategy:

Figure 1 Graphical summary of stakeholder engagement strategy steps.

- **Setting goals**: Define stakeholder engagement goals.
- **Identify stakeholders**: Based on your project, create a list of internal and external stakeholders.
- **Analysing stakeholders' perspectives**: Assess stakeholder issues and their priorities.
- **Stakeholder approach**: Based on the stakeholder engagement goals and analysis of stakeholders' perspectives, develop a stakeholder approach.
- **Communication and activity plan**: Make a concrete elaboration in a communication and activity plan.
- **Evaluate and adjust**: Evaluate and adjust the effectiveness of the stakeholder approach.

Introduction

The North Sea is set to play an important role in the energy transition. In the North Sea Energy (NSE) program we search for how to leverage this potential for a climate-neutral energy system through an integrated approach. This requires the management of a large and diverse group of stakeholders. Their support or opposition can significantly influence offshore energy projects, either driving progress or creating obstacles. Effective stakeholder engagement will thus be essential to realizing the North Sea's energy potential: it helps identify risks and opportunities, builds support and manages expectations. It also promotes transparency and effective problem-solving.

This whitepaper builds on other work on societal embeddedness within the programme. In 2022 a stakeholder analysis was conducted, providing the dominant perspectives of stakeholders on system integration. In 2025 a whitepaper (D2.2) was published on best practices in stakeholder engagement, based on an analysis of international offshore energy cases. This whitepaper complements these studies by providing practical guidance for stakeholder engagement. It breaks down the process into discrete steps and gives templates and examples that can be adapted for any specific offshore energy project.

This whitepaper focuses on developing a stakeholder strategy but does not describe how to execute it. For this, we refer to a large body of knowledge on mutual gains theory, rooted in negotiation and conflict resolution. This theory emphasizes creating value and finding solutions that benefit all parties involved (see e.g., Fisher et al. 1981).

The whitepaper consists of two chapters. The first chapter describes the steps to build a stakeholder engagement strategy, that can be adjusted to the needs of a specific project. For this, we provide examples and templates in the annexes. Chapter two presents a description of the interests, needs and concerns of a few North Sea stakeholders. For this, the overview that was provided in the 2022 report has been updated and revised. These short descriptions can serve as a basis for a project-specific stakeholder strategy.

1 Stakeholder engagement strategy steps

The following steps provide more detailed guidance in drawing up a stakeholder engagement strategy (figure 2). These different steps are further explained in the sections below. These are recommended steps that can be adapted to suit specific needs and projects. Not all steps may be necessary, steps might partly overlap, or their sequence may vary depending on the situation. Box 1 provides more information on integrating stakeholder engagement into your organization or project and aligning your engagement strategy with a policy inventory.

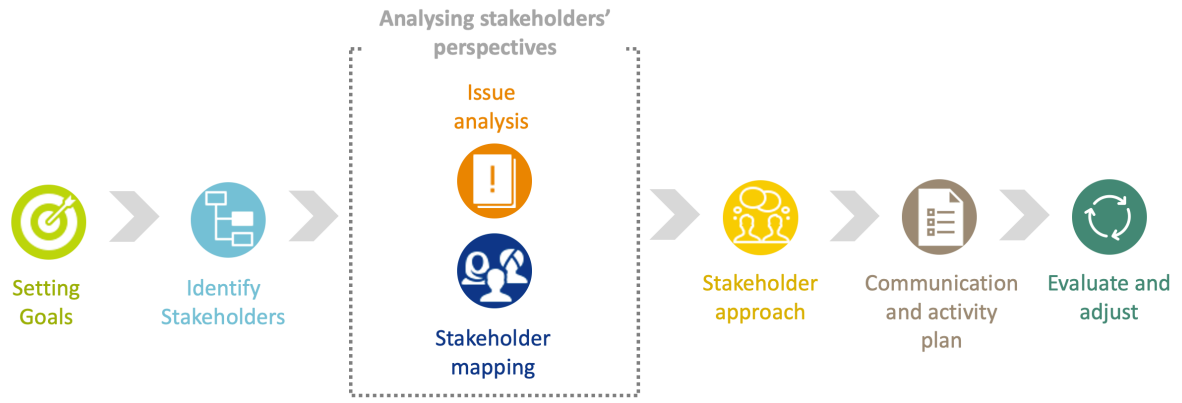

Figure 2 Graphical summary of stakeholder engagement strategy steps.

Box 1 – Organisation of stakeholder engagement

Go through the steps together with your project team, involve relevant stakeholders where possible or necessary, and engage your communications department at an early stage. This enables different perspectives in drawing up a stakeholder engagement strategy, fosters shared understanding and strengthens the connection between stakeholder engagement and decision making.

To ensure effective stakeholder engagement, it should be well embedded within your organization. Clearly define responsibilities for stakeholder engagement and establish a structured approach to its management. Make sure that it is clear who is responsible for what and that there is collaboration across different departments. Different departments, such as communication, project management, and public relations, have a different role in the engagement process. Use supporting systems to guide employees in their approach to stakeholder engagement. It is important to ensure that staff understand the methods and systems in use and that these systems are regularly updated to remain effective (Wesselink, 2010). There are also different customer relationship management (CRM) software packages, providing possibilities for creating databases with this information and keeping track of interactions with stakeholders in this manner.

Preferably align your stakeholder engagement strategy with a policy analysis. At a minimum this would include an inventory of existing policies, regulations, and guidelines that may influence or be relevant to your project or initiative. Within NSE the following publications can help to create a policy analysis:

- Legal Challenges for Offshore System Integration in Energy Hubs (NSE, 2022)
- Quick-scan policy analysis offshore system integration options North Sea countries (NSE, 2022)

As a starting point for a policy inventory, we provide an overview of relevant European and Dutch frameworks and regulations for North Sea Energy in Appendix A.

1.1 Setting goals

Define stakeholder engagement goals.

In this step, overall goals for stakeholder engagement are established to align diverse interests with organizational goals, create shared values within the organization, and monitor progress during and after the process. In a later step, goals are refined per stakeholder or stakeholder group (see 1.4)

When setting stakeholder engagement goals, set objectives that are in line with your project's ambitions, targets and phasing. What are your goals and ambitions for stakeholder engagement? What are the desired outcomes for each project phase (e.g., trust-building, gaining stronger support, minimizing risks)? Describe the goals as specifically as possible, for

example, by using the SMART framework (Specific, Measurable, Achievable, Relevant, Time-bound). Develop metrics for assessment so you can use these later in your evaluation. Some examples of goals and ambitions for stakeholder engagement can be found in box 2.

Box 2 – Examples of ambitions and goals for stakeholder engagement

Ambitions

1. Stakeholder engagement is one of the key success factors for the project.
2. Stakeholder engagement is proactive in contact with (key) stakeholders.
3. The project organization is reliable and ensures clear expectation engagement.
4. The project organization is open to new perspectives.
5. The project organization speaks with one voice.
6. The project organization is involving and transparent.
7. …

Goals related to stakeholder attitudes

1. Stakeholder engagement progresses from 'informing & consultation' to 'stakeholder integration'.
2. A supportive circle of stakeholders around the consortium has been set up.
3. Key stakeholders' attitudes are at least open or neutral towards the project.
4. Stakeholder engagement contributes to finding and engaging new project partners.
5. Regarding stakeholders who remain negative towards the project, at least a clear understanding of each other's motives and arguments emerges (agreement to disagree).
6. …

Goals related to policy & society

1. Awareness and relevance for long term policies has been raised.
2. A workable mandate for the next project phase has been achieved for the consortium partners.
3. Public awareness and public understanding have been raised.
4. …

1.2 Identify stakeholders

Based on your project, create a list of internal and external stakeholders.
Create a list of stakeholders that may influence your project or might be affected by your project or activities. Determine which stakeholders should be involved in the different phases of your project. There are different ways to identify relevant stakeholders, e.g., begin by brainstorming a list of relevant stakeholders with your project team, drawing on your collective knowledge of the context and objectives. This preliminary list can then be refined and expanded by engaging directly with identified stakeholders, who may suggest additional actors, through methods such as snowballing or social network analysis.

Figure 3 can help identify key stakeholder organizations in offshore energy systems, offering a systematic socio-technical classification for the North Sea. For each aspect of this system, stakeholder organizations can be conceived. Further, regarding offshore system integration on the North Sea, the main stakeholder groups are listed in chapter 2. An overview of specific stakeholder organisations with involvement in the North Sea energy discourse in the Netherlands is provided in Appendix B.

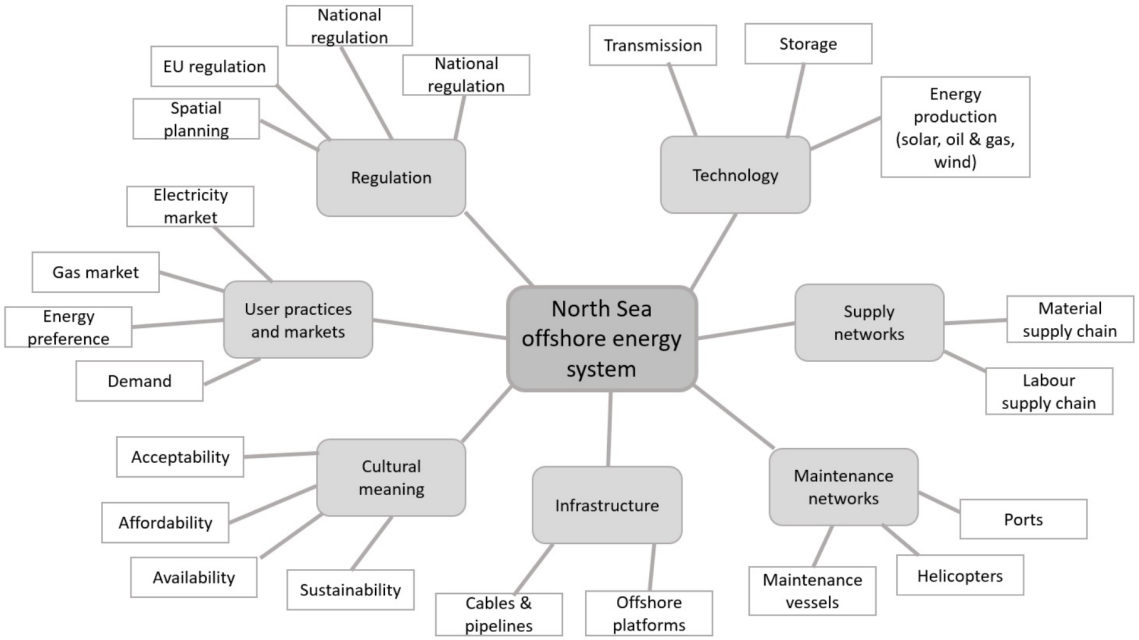

Figure 12: *Socio-technical system for North Sea offshore energy. Source: own elaboration based on Hafner and Tagliapietra, 2020; Scholten and Künneke, 2016; TenneT, 2023; Quirk et al., 2021; Schupp et al., 2021; Flynn, 2016; Gusatu et al., 2020*

Figure 3 Systematic classification North Sea offshore energy system (P. Schmidt, 2023).

1.3 Analysing stakeholders' perspectives

Assess stakeholder issues and their priority.

Analysing stakeholders' perspectives helps prioritise stakeholders based on their interest and influence. This supports the development of effective communication and engagement strategies and allows strategic decision-making. Analysis of stakeholders' perspectives can be conducted using various approaches and may include the following components:

- Issue analysis
- Stakeholder mapping

The following sections provide an explanation of these components.

1.3.1 Issue analysis

Assess the main perspectives, interests, needs and concerns of each stakeholder group.

Typically issues develop over time, moving through stages such as potential, emerging, current, crisis, and dormant. Emerging issues can put increasing pressure on the organisation of a project. Managing issues effectively in the early stages and taking a proactive approach addressing these can help prevent them from escalating into crises. By properly understanding and monitoring issues from the beginning, more influence is possible than later in the process. This is depicted by the issue life cycle (figure 4).

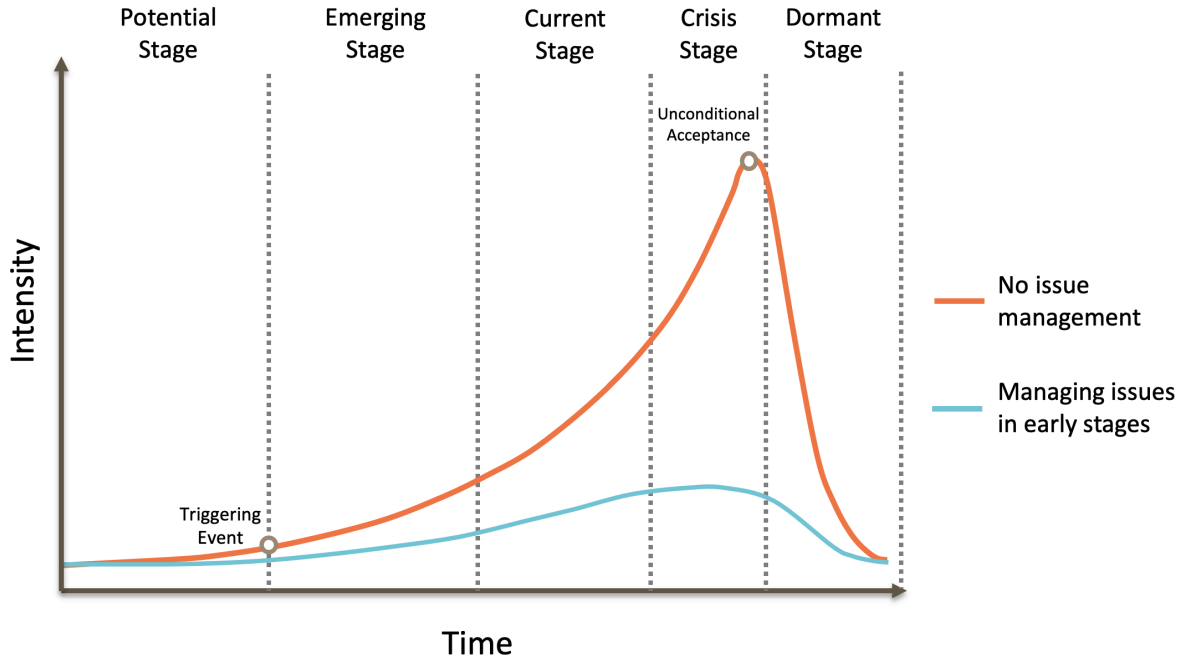

Figure 4 Issue life cycle (Adapted from Alexander Public Strategies, 2025).

Issue analysis starts with assessing the main perspectives, interests, needs and concerns of each stakeholder group, through desk research, interviews and workshops. Issues can be further structured by using an issue sheet (figure 5). For larger projects it is recommended to use some form of customer relationship management (CRM) software, allowing easy access and updating of the insights.

Creating a stakeholder-issue matrix helps identify which stakeholders are most concerned about or impacted by a certain issue. A stakeholder-issue matrix might also be helpful for prioritizing issues and identifying key issues that must be addressed in prevent potential escalation into a crisis. To prioritize and identify key issues, look for patterns in stakeholders concerned or involved in certain issues. Figure 6 gives an example of a stakeholder-issue matrix. For offshore system integration on the North Sea dominant perspectives are summarized and main interests, needs and concerns are listed for the most common stakeholder groups in chapter 2.

Issue title	A short and descriptive title, depicting the issue.
Assessment	Level of impact and risk to the project.
Explanation	Provide one or two detailed paragraphs that thoroughly explain the issue. Be as specific as possible.
Positions	Short description of typical stakeholder views/positions.
Status	What has been done up to now on the issue? Is it understood? Under control?
Emotions	How emotional is this issue for stakeholders? Why?
Intelligibility	Is the issue easy to understand or not? Are there many different interpretations of the issue?
Visibility	Is this an abstract issue or very concrete and notable?
Media sensitivity	Will media easily pick up on this issue? Why?
Development	How will the issue develop?
Related issues	To what other issues is this issue related? How?
Stakeholders	Which stakeholders have this issue?

Figure 5 Example of an issue sheet. Note that not all fields need to be filled in or fields can be added. Large numbers of issues can be grouped into categories. Note that the relation between issues for offshore wind has been studied in the NSE report WP2.4.

Theme	Issue	Oil and gas operators	Offshore wind	Infrastructure owners	Logistics and service	Demand-side industry	Dutch policy makers	Green NGOs	Other North Sea users
Energy Security & Technical Integration	Issue 1								
	Issue 2								
	…								
Economic and Strategic Issues	Issue 1								
	Issue 2								
	…								
Regulatory and Policy	Issue 1								
	Issue 2								
	…								
Environmental and Spatial Concerns	Issue 1								
	Issue 2								
	…								
…	…								

Figure 6 Example of a stakeholder-issue matrix

1.3.2 Stakeholder mapping

Determine the level of influence and interest of each stakeholder (group).

Stakeholder mapping helps visualize and categorize stakeholders based on their influence and interests. This allows prioritizing and is helpful drawing up a strategic stakeholder engagement strategy.

In stakeholder mapping, prioritize stakeholders based on their importance and potential impact on the project. Several stakeholder mapping techniques can help provide insight into this. Some examples are:

- Levels of engagement: categorize stakeholders according to the desired level of engagement. An example of a possible classification in engagement levels is listed below and depicted in figure 7:
  - Inform: Stakeholders that are informed about the project's progress.
  - Involve: Stakeholders that are actively approached to discuss their concerns and wishes and formulate possible solutions. These stakeholders have a meaningful influence on the development of the plans.
  - Integrate: Stakeholders that are proactively engaged in the project development. Where possible, their input is integrated, and they collectively take part in the project.
- Stakeholder matrix: plot stakeholders in a matrix based on their level of influence and interest (figure 8).
- The Salience Model: This model, developed by Mitchell et al. (1997), categorizes stakeholders based on three key indicators: Power, Legitimacy, and Urgency.

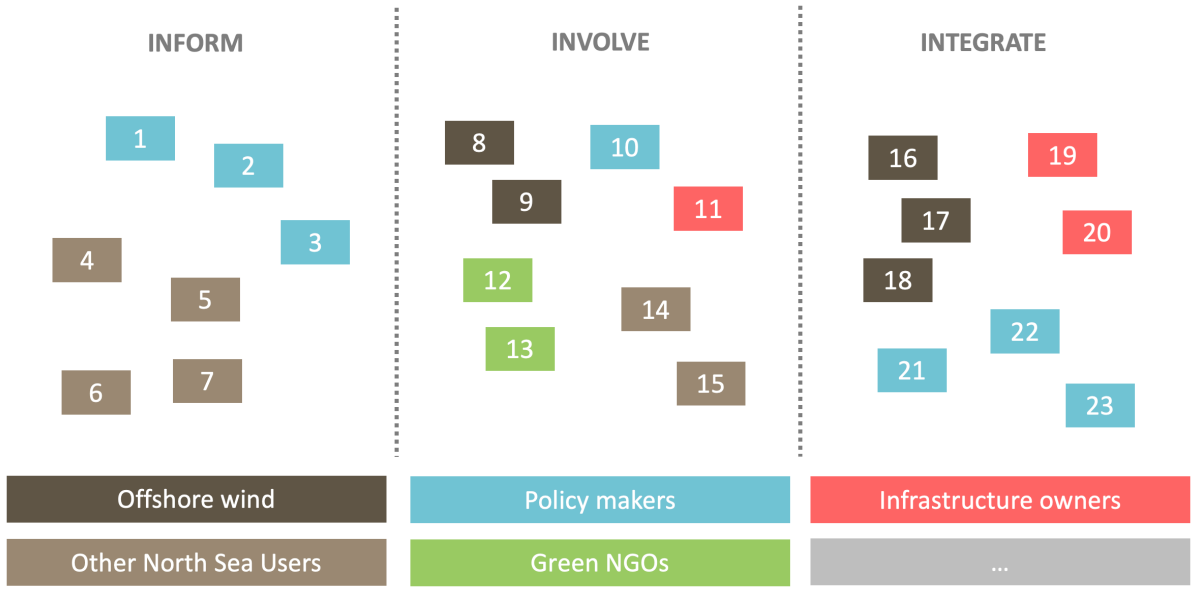

Figure 7 - Categorization of stakeholders based on the desired level of engagement. The numbers in the figure correspond to different stakeholders within the stakeholder groups relevant to the project.

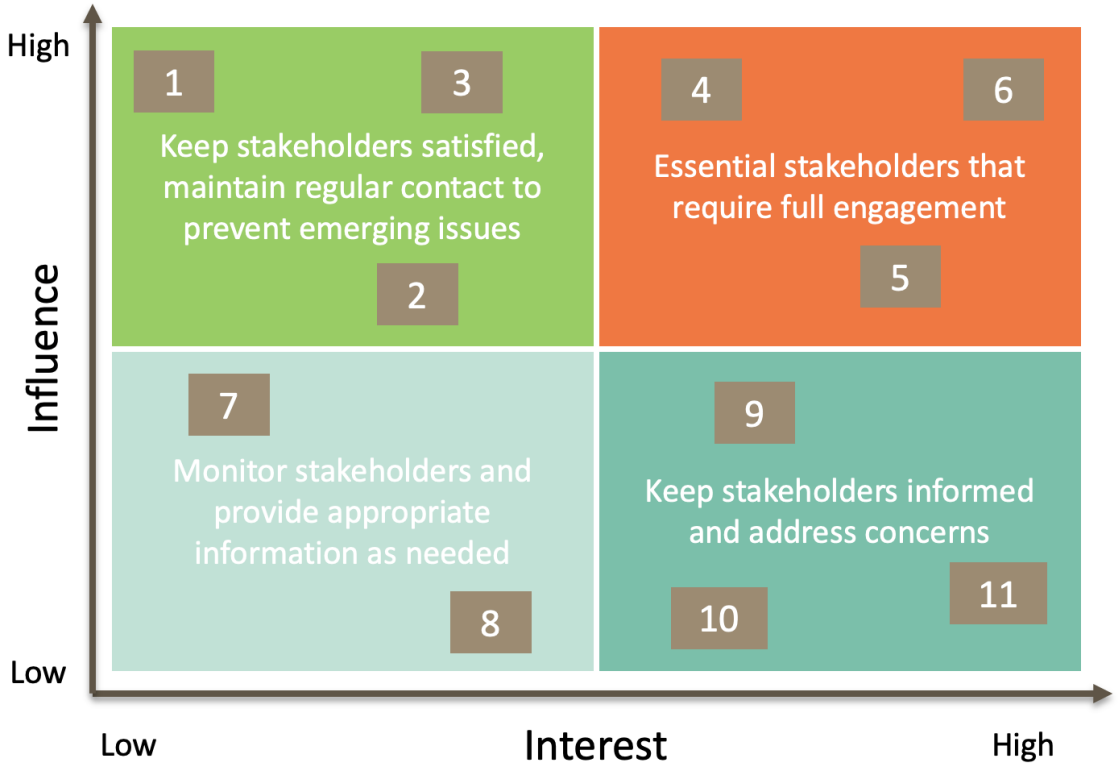

Figure 8 Stakeholder matrix based on level of influence and interest. The numbers in the figure correspond to different stakeholders.

1.4 Stakeholder approach

Based on the stakeholder engagement goals and analysis of stakeholders' perspectives, develop a stakeholder approach.

Depending on the level of interest, influence, concerns about certain topics and/or levels of engagement, define an approach for each stakeholder(group). What are key messages and appropriate communication tools? Which actions are necessary to set up a good relationship with the stakeholder(group), address concerns and manage potential challenges? Stakeholders with high levels of interest or influence require more attention and regular updates. An example of the design of a stakeholder approach is given in table 1.

	Stakeholder group
Stakeholders	What are the specific stakeholder organisations within this group? Do they need to be divided into sub-groups with different levels of engagement, issues, etc.?
Goals	What are the specific goals you want to reach with this stakeholder group? Examples are: • Sufficient understanding of their main issues and expectations • Input from these stakeholders into the project • A move from negative attitudes towards neutral or positive perspectives
Level of engagement	What levels of engagement are suitable? E.g. inform, involve, integrate.
Issues	What are the main issues of this stakeholder group?
Communication	What are key messages and appropriate communication tools?
Actions	What actions are necessary? Examples are: • Contact certain organisations • Bilateral meetings • Workshops • Additional research • Communicate study results • Adaptations in the project to address issues These actions can further be defined and concretised in a communication and activity plan.

Table 1 Example for the design of a stakeholder approach. Fill out this table for all relevant stakeholder groups in your project.

Keegan (2021) lists success factors for a stakeholder engagement plan, these elements are summarized below and can be used in developing a stakeholder approach:

- **Information**. Use the right communication networks and identify hard-to-reach groups to ensure inclusive consultation.
- **Timing of information**. The timing, format, and level of detail in information are important for clarity and success of stakeholder engagement. E.g. wrongly timed participation reaches fewer people.
- **Local Government Coordination**. Coordinating a stakeholder engagement plan with local municipalities enhances efficiency and effectiveness.
- **Degrees of engagement**. Consider varying levels and methods of engagement at different stages of the process to ensure effective participation.
- **Community structures**. Consider community structures, the area's geography, the economic climate, and the current concerns of local populations.
- **Local Intermediaries**. Consult local intermediary organizations to help understand the area's diverse interests and identify additional community organizations.

- **Stakeholder Liaisons**. Establish a clear point of contact for liaising with the public and stakeholders.
- **Independent Facilitator**. Consider whether an independent facilitator or intermediary is needed for statutory stakeholders.

1.5 Communication and activity plan

Work out the details in a communication and activity plan.

Further refine and detail the stakeholder approach in a communication and activity plan. To prepare a communication and activity plan, the following steps can be taken:

- **Formulate communication goals**. Formulate goals that align with the overall goals for stakeholder engagement and define what is to be achieved with communication. Depending on the level of engagement (e.g., inform, involve, integrate), goals can range from sending information to more far-reaching cooperation.
- **Define the target group**. Define the target groups based on the stakeholder groups already defined earlier.
- **Key messages and activities**. Further elaborate on key messages and activities that match with the target group and the specific level of engagement. Specify the channels to be used (e.g., workshops, meetings, reports). Consider how stakeholders can give their input. What activities and facilities are needed for this (e.g., workshops, co-creation sessions or online participation platforms). Define how it will be ensured that stakeholder input is effectively addressed, and how stakeholders will be kept engaged and informed throughout the project. What kind of information thereby is delivered to each stakeholder group?
- **Plan with (communication) activities**. Link goals, target groups, key messages and activities to available resources in a specific communication and activity planning. Again, consider the defined level of engagement of the different stakeholders. Specify the frequency of activities and communication. Link activities to your project plan and timeline. What are important project milestones and when are main events planned? A table or timeline showing different activities can provide a clear summary. Figure 9 provides an example of such a timeline.

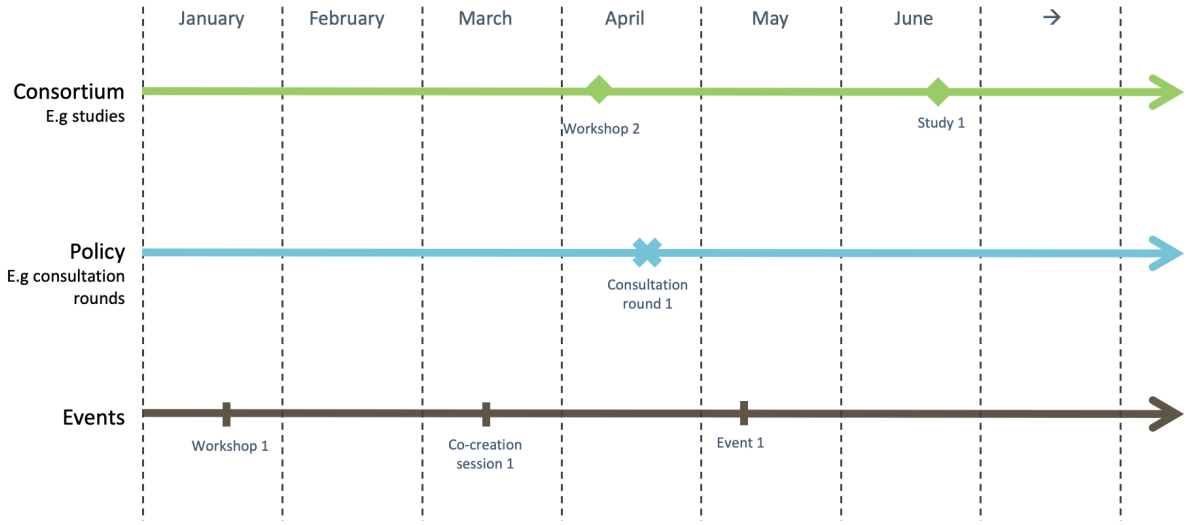

Figure 9 Example of a timeline with different activities relevant to certain project.

1.6 Evaluate and adjust

Evaluate and adjust the effectiveness of the stakeholder approach.

Especially in long-term projects, stakeholder perspectives may change over time. Regularly, at least at each project stage, assess the effectiveness of the stakeholder approach and adjust the stakeholder engagement strategy as needed. Monitor the stakeholder engagement goals previously formulated.

2 Main stakeholder groups

The following sections summarize dominant perspectives and list main interests, needs and concerns for the most common stakeholder groups in offshore system integration on the North Sea (North Sea Energy, 2021). These are provided as starting points for a project specific stakeholder engagement strategy.

2.1 Oil and gas operators

Oil and gas operators are adapting to the changing energy landscape, with a focus on reusing existing infrastructure and developing new, lower-carbon technologies, while seeking to maximise the use of remaining oil and gas reserves within the frameworks of climate agreements.

Oil and gas operators see a continued role for themselves in the energy system as producers of natural gas and oil. They emphasize CCS and hydrogen production as key transition technologies for emission reduction. Operators that are active in the North Sea region actively seek possibilities to repurpose existing infrastructure for these new functions. Some operators are exploring new business models to leverage their assets and expertise more broadly.

Key interests

- Continued business model and favourable investment climate.
- Production and sale of oil and gas.
- Extended license to operate with a continued role in the energy transition.
- Cost management and strategic planning of decommissioning projects.

Needs

- Measures to (cost-effectively) reduce the environmental impact of oil and gas production.
- Investment climate and public support for continued exploration and production of natural gas in the North Sea.
- Repurposing options for gas infrastructure, to allow the development of CCS and offshore hydrogen.
- Public/government support for reuse of infrastructure for CCS and hydrogen, incl. measures to allow for 'bridging the gap' between the end of gas production and new activities.

Concerns

- Industry reputation – lack of trust & loss of license to operate.
- The business case for CCS & blue hydrogen – dependent on government policy (subsidies, taxes, ETS CO_2-price).
- Existing offshore infrastructure reduces the costs of developing new fields. Removal of this infrastructure increases costs, thus decreasing the feasibility of new developments.
- Mismatch of the timing of reuse-developments and decommissioning.
- Room for reuse of assets within the current legal framework.

- Spatial conflicts between (prospective) oil and gas activities and spatial claims by other users.

More information

- https://www.nexstep.nl/wp-content/uploads/2024/06/NEXSTEP-Re-use-Decommissioning-report-2024.pdf

2.2 Offshore wind

The offshore wind sector continues to develop with ambitious targets, but increasingly faces cost, infrastructure and regulatory challenges.

Renewable electricity is the primary product of the wind sector. In their view, proper integration of renewable sources and as much direct electrification as possible, supplemented by green hydrogen and energy storage, offers the most effective way forward and the only long-term solution.

Key interests

- Favourable long-term investment climate.
- Designation of sufficient and favourable areas for wind farm development (weather and seabed conditions, distance to shore, connection with users).
- Efficient use of infrastructure for the cost-effective integration of large-scale offshore wind. This includes interconnectivity between countries to improve grid stability.
- Stable and predictable electricity demand at good and stable prices.

Needs

- Government incentivization of (flexible) electrification of industrial energy demand.
- Flexible (industrial) electricity demand that can match the production patterns of offshore wind or energy storage.
- Synchronized investment decisions and long-term contracts for electrification and wind.
- Opportunities for transforming (excess) wind power into green hydrogen.
- Clear government policy about future wind areas and conditions.
- Timely availability of energy infrastructure.
- Development of technologies for storing excess wind power (e.g., hydrogen, Power2X and battery storage).
- Research into and development of improved regulations for combined use, incl. nature restoration, in wind farms.

Concerns

- The limited business case for future offshore wind development.
- Investment risks due to future electricity prices and government policy.
- Locations further offshore will raise costs, unless they are developed over time with nearer to shore 'stepping stones' and/or offshore transformation into molecules.
- Additional demands raising the costs of offshore wind.
- Limitations of the current legal framework, and the pace at which these can be overcome.
- Negative cumulative ecological impacts of offshore wind, which may undermine public support and (over time) create legal barriers for further expansion.

More information

- https://windeurope.org/wp-content/uploads/files/about-wind/reports/WindEurope-Our-Energy-Our-Future.pdf
- https://nedzero.nl/nl/
- https://windenergie-nieuws.nl
- https://windeurope.org

2.3 Infrastructure owners

Infrastructure owners are focusing on system integration, cost-effective use of assets and developing new technologies to facilitate the energy transition, while at the same time facing planning, regulatory and spatial constraints challenges.

The Transmission System Operators (TSOs) are responsible for the infrastructure needed for the energy system. Given large investments and long development periods, they stress its pivotal role in the transition and its potential to become a bottleneck. The challenges of the energy transition revolve primarily around building an infrastructure system that can handle large amounts of (variable) renewable electricity generation. The development of a hydrogen network could contribute to meeting these challenges, but other forms of energy storage and more flexible demand are also seen as potential solutions.

Key interests

- Stable, secure and affordable energy supply.
- Timely and cost-effective infrastructure investments.
- Decarbonization of the energy system in line with obligations from the national Climate Agreement and EU climate and renewables targets.

Needs

- Efficient use and planning of infrastructure (e.g., through integrated planning, combined use for generation and international connectivity and use of hubs).
- TenneT: integrating the offshore and onshore grid (including the match between offshore production and onshore demand).
- Long-term planning and certainty to take timely, justifiable investment decisions.
- Identification of 'no-regret infrastructure', steady development of infrastructure over time and Standardisation of infrastructure.
- International coordination and interconnectivity.
- Evaluating the potential for reuse of existing gas infrastructure as a means of reducing costs and speeding up the transition.

Concerns

- Legal constraints and policy dependence. Slow decision-making hindering timely investments.
- Long periods needed for developing infrastructure, especially due to permit procedures.
- Uncertainty in industrial users' future energy choices.
- The unclear weighting of ecological and techno-economic impacts and achievement of climate goals.
- The shifting importance of energy carriers: increasing electrification, phase-out of natural gas.
- TenneT: the temporal match between power generation and use.
- Spatial constraints for renewable energy infrastructure (renewable energy production, electricity grid, electrolysers, etc.).

More information

- https://www.gasunie.nl/en/expertise/energy-system/infrastructure-outlook-2050
- https://www.gasunie.nl/nieuws/nederland-en-denemarken-verkennen-samen-mogelijkheden-voor-offshore-energiehub

2.4 Logistics and service

Logistics and service organisations are adapting to rapid developments in the offshore wind sector, focusing on innovation, efficiency and maintaining their competitive position in a growing but also challenging market.

In general, these stakeholders do not hold strong views on system integration of their own. Instead, they work for a variety of stakeholders and are often capable of serving as a bridge between these stakeholders and their perspectives.

Key interests

- New business opportunities: offshore wind construction, maintenance and decommissioning.
- International competitiveness
- Clarity on construction and decommissioning task and timing
- Safe working conditions in all weather

Maritime logistics and services are an important sector to the Netherlands, which have a strong international position in this field.

Needs

- The steady development of wind over time, to ensure a continuous workflow and income.
- Clarity on maximum structure size, planning and timing of new wind farm projects
- Investment in innovation and training to meet the demands of future wind farms.
- New financing solutions and innovation grants to spread investment risks and encourage capital injections.

Concerns

- Increasing competition from countries with lower labour costs and less stringent regulations, threatening the sector's global position.
- Uncertainty about the characteristics (e.g. size) of future wind turbines and the accompanying requirements for ships and installation technologies.
- Vulnerabilities due to reliance on specific suppliers or materials.
- A growing shortage of skilled workers and technicians needed to support innovation and growth in the industry.
- Complex and time-consuming regulations that hinder innovation, investment, and operational efficiency.
- Sustainability challenges: the difficulty of transitioning to sustainable practices while meeting stricter social and environmental standards.

More information

- https://www.rijksoverheid.nl/documenten/rapporten/2023/10/26/sectoragenda-mmi
- https://www.gasunie.nl/nieuws/noordzeekanaalgebied-biedt-potentieel-voor-co2-infrastructuur

2.5 Demand-side industry

The demand-side industry aims to be future-proof and sustainable, within the boundaries of the energy system and economic possibilities. The offshore energy system has a crucial role in this, although there are concerns about maintaining international competitiveness due to high energy transition costs.

For energy-intensive process industries, complying with climate transition targets means a transition towards sustainable processes. This involves both an energy transition and a

resource transition. In both transitions, they need to mind their competitiveness and limit long-term investment risks.

These transitions are driving short term CCS and mid-term electrification and alternative energy sourcing, together with shifting from fossil to renewable feedstocks, for which renewable energy and Hydrogen are key.

Key interests

- (International) competitiveness - attractive investment climate.
- Investment security in relation to the availability and costs of energy carriers.
- Continued license to operate.

Needs

- Low and predictable prices for energy and resources.
- Sufficient, predictable and secure supplies of (carbon neutral) energy and resources.
- Clear long-term policy and investment security for energy transition, including offshore wind development.
- Cost-effective decarbonization options.
- Availability of sufficient and diverse infrastructure for decarbonization: electricity, hydrogen, CO_2, heat.

Concerns

- Regulations creating an internationally unlevel playing field, resulting in declining competitiveness and carbon leakage to other countries and companies.
- High costs of decarbonization.
- Future variation in (renewable) energy supply and prices.
- Uncertainty about future carbon prices.
- Connection fees and timely access to infrastructure.
- Public support for transition technologies (e.g., CCS, blue hydrogen, biomass).
- Slow, undecided and fickle policy decisions posing a barrier to timely investment decisions.
- Uncertainty about the future availability of infrastructure for and relative costs of different decarbonization options (direct electrification, hydrogen, CCS).
- The costs, reliability and availability of flexible production technologies.
- Potential mismatch between industry demand and North Sea energy system development.

More information

- https://ispt.eu/news/electrification-in-industry/
- https://www.portofrotterdam.com/sites/default/files/2021-05/in-drie-stappen-naar-een-duurzaam-industriecluster-rotterdam-moerdijk-in-2050.pdf
- https://www.portofrotterdam.com/sites/default/files/2021-06/waterstofvisie-havenbedrijf-rotterdam-mei-2020.pdf

2.6 Policy makers

Policy makers generally aim to balance spatial claims, environmental protection, and the energy transition while ensuring economic and social welfare. Recently (resource) security has been added as an important priority. Clear policies, innovation, and collaboration are essential to address challenges like investment risks, decision-making delays, and environmental impacts.

Dominant perspectives

Spatial. Balancing the interests and spatial claims of stakeholders within the environmental and ecological carrying capacity of the North Sea is a key task.

Nature. Protecting and improving the environmental and ecological status of the increasingly busy North Sea is an important challenge, especially due to international obligations.

Renewable electricity/carbon-neutral fuels. Advancing the energy transition with technology-agnostic instruments and incentives. The North Sea is a crucial area for achieving the climate goals and energy transition.

(Resource) security. Making sure that the provision of energy, food, scarce raw materials and other key resources is stable, sufficient and secure considering potential disruptions caused by geopolitical tensions.

Key interests

- A clean, affordable, and reliable energy system.
- General social and economic welfare.
- Achievement of policy goals and meeting (international) obligations.
- The politically acceptable weighting of different stakeholder interests.
- Public and stakeholder support for policies.
- Protecting and facilitating activities of national interest.
- Integration of stakeholder perspectives into a collective knowledge base.

2.7 Green NGOs

Green NGOs support climate change mitigation but also remain critical of developments on the North Sea, especially on the impact of all the different activities on nature and environment.

The natural system of the North Sea is not in a good state and under increasing pressure from human activities. To the green NGOs, protecting and restoring the natural system should have priority over other uses. Balancing local environmental impacts with climate change mitigation is a key challenge. At the same time, a 100 percent renewable energy system based on wind and solar and with much higher energy efficiency is desired.

Key interests

- Rapid reduction of greenhouse gas emissions and rapid transition to 100 percent renewable energy system.
- Conservation and restoration of biodiversity and ecosystems – minimized negative impact of human activities, thriving ecosystems.
- Reduced environmental footprint: limiting (energy) consumption and promoting circularity are key measures in the transition.
- Public support and local support for their initiatives and actions. For NGOs with members, their approval is also important.

Needs

- Reducing negative human impacts on the North Sea ecosystem.
- Increasing the amount and size of protected nature areas.
- Prioritizing the transition to a renewable / decarbonized energy system over other uses of the North Sea.
- Societal support for nature and the energy transition, amongst others by limiting (social) costs and spatial impact.
- Clarity about the environmental state of the North Sea and about ecological impacts and clear weighting of these impacts in decision-making.
- Innovative approaches to limiting the negative environmental impacts of offshore wind and combining it with nature restoration.

Concerns

- The pace of the energy transition and climate change measures (too slow).
- The pace of marine ecosystem restoration efforts (too slow).
- Achieving (or surpassing) the ambitions of the Climate Agreement.
- The location of offshore wind farms in relation to protected areas and key ecosystem functions.
- The cumulative impact of large-scale offshore wind developments on marine ecosystems, birds & bats.
- Lock-in of continued fossil fuel use & production (CCS, platform electrification, reuse).
- An unfair transition, with taxpayers paying for the industry transition.
- Irreversible ecological impacts, e.g., due to the construction of an artificial island.
- Reuse being used as an excuse for leaving abandoned infrastructure offshore.

More information

- https://www.noordzee.nl/onze-doelen/
- https://bellona.org/about-bellona
- https://www.greenpeace.org/international/explore/
- https://www.birdlife.org/europe-and-central-asia/our-work/ocean/
- https://www.wwf.nl/wat-we-doen/waar-zijn-we-actief/nederland/noordzee/windenergie-op-de-noordzee
- https://natuurenmilieu.nl/project/groene-energie/

2.8 Fisheries

Maintaining access to fishing grounds and healthy fish stocks are essential for the future of the sector.

Fisheries experience increasing pressure from spatial claims from wind farms, nature conservation and high fuel costs. Ensuring access to fishing grounds and preserving healthy fish stocks are crucial for the sector's future. They recognize the need for sustainable fishing and are uncertain over the impact of energy projects.

Key interests

- Maintaining access to important fishing grounds, e.g., by ensuring continued access to areas in the North Sea.
- Continuity of operations, protection of future income, and compensation in case of restrictions.
- Clean and renewable propulsion technologies (e.g., through hydrogen, electrification or synthetic fuels).

Needs

- Access to valuable areas, incl. wind farms, compensation in case of restrictions, continuation of licences, research on effects of energy projects on fish stocks.

Concerns

- Increasing safety risks due to more intensive use of the North Sea.
- Spatial claims of wind farms and nature areas.
- Cumulative impact of Brexit, ban on pulse fishing and high fuel prices.
- Effects of energy systems like noise and electromagnetic fields on fish.
- Hindrance of bottom trawling by electric cables on the seabed.
- Changing distribution of fish (both in terms of species and spatial distribution) due to climate change. This complicates predictions about the locations of future important fishing grounds.

More information

- https://vistikhetmaar.nl/dossiers/ruimte-op-zee-wordt-krap/
- Arie Mol, Hans Van Oostenbrugge, and Niels Hintzen, Wind Op Zee. Bepaling van de Waarde van Geplande Windparkgebieden Voor de Visserij, 2019. https://doi.org/10.18174/469809.
- A. Mol et al., Vissen Bij Wisselend Tij, 2019. https://doi.org/10.18174/477776.
- https://www.visned.nl/thema/ruimtelijke-ordening

2.9 Other North Sea users

The North Sea is a complex and dynamic area with diverse interests and challenges. The increasing pressure on the North Sea requires good spatial planning and coordination between different activities.

Other North Sea users included here are military, shipping, sand and shell extraction, tourism and recreational activities and telecommunications.

Military

The North Sea is an important training area and route for military operations. Increasing geopolitical tensions create more military interests on the North Sea and therefore increase pressure on available space for nature and other users.
Interests. Space for carrying out constitutional duties and security of operations.
Needs. Suitable and sufficiently large exercise areas (free of obstacles and people, close enough to bases), energy innovations that offer operational improvements and surveillance of key energy infrastructure.
Concerns. Limitations of training grounds by wind farms, security of operations in a busier North Sea, the security dimension of energy (security of supply, strategic reserves, vulnerabilities).

Shipping

The North Sea is an important transport route with shipping activities continuing to grow, especially with the north-eastern (Arctic) passage becoming more accessible due to climate change. Safe and efficient passage is essential for the economic value of ports and onshore industries.
Interests. Safe and direct shipping lanes and anchorages, innovations for clean and renewable propulsion.
Needs. Fast, safe and direct (access to) shipping lanes and anchoring areas, investments for adapting ships for new fuels/electrification.
Concerns. Increasing safety risks due to more intensive use of the North Sea (such as collision risks), and the growth of shipping through the North Sea and future shipping routes to the Pacific via the north-eastern (Arctic) passage.

Sand and shell extraction

Sand and shell extraction is a growing industry as more sand is needed for construction and in particular for coastal protection in the wake of rising sea levels. Currently areas for sand and shell extraction are primarily in the coastal zone, but these areas need to be extended in order to fulfil projected future demands.
Interests. Access to sand and shells for construction, coastal protection and other uses. Protection of future income.
Needs. Areas with sufficient sand and shells. Continuation of permits.
Concerns. Impact of other activities (such as wind farms and nature conservation) on the access to areas suitable for sand and shell extraction.

Tourism and recreational activities

Interests. Maintaining the attractiveness of the coast and the North Sea for tourism and recreation.
Needs. Clean beaches and a healthy sea.
Concerns. Impact of wind farms on views from the coast, and the overall attractiveness of the North Sea.

Telecommunications

Interests. Space for new cables, access to existing ones for maintenance.
Needs. Space for new cables, access to existing cables for maintenance.
Concerns. Damage to cables by other activities (such as fishing and anchoring vessels).

More information

- https://www.clo.nl/indicatoren/nl006407-gebruiksfuncties-van-de-noordzee-2019

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Appendix A
Policy overview

As a starting point for a policy analysis, we provide an overview of relevant European and Dutch frameworks and regulations for North Sea Energy

Category/policy level	Europe	Netherlands
Spatial planning (integral in space)	MSFD (KRM), GNSBI	Programma Noordzee, Kavel besluiten
Energy system (integral in energy)	NSEC	EIPN, NPE, Programma Noordzee,
Infrastructure	TYNDP (ENTSO-E)	EIPN, VAWOZ, pVAWOZ
Carbon-neutral energy (production and storage)	NZIA (Net-zero industry act)	Routekaart wind op Zee,
Marine ecosystems	MSFD (KRM), Nature Restoration Regulation (Natura2000), GNSBI	Programma Noordzee,

Appendix B
Dataset stakeholder organisations

A dataset with North Sea stakeholder organisations is provided as a separate Excel file: NSE5_D2.1_AppendixB Stakeholder list.xlsx

For collaboration with partners in wind and hydrogen, the Inn2POWER Company Directory is an excellent online resource.

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In collaboration and appreciation to

Consortium members

TNO
Bureau Veritas
Total E&P Nederland
Shell Nederland
NAM
EBN
Nederlandse Gasunie
ONE-Dyas
DEME Dredging
Neptune Energy Netherlands (after ENI)
HINT Global
Noordgastransport
NOGAT
Peterson Offshore Group
Port of Den Helder
Port of Amsterdam
Groningen Seaports
Equinor Energy
ElementNL
Port of Rotterdam
SmartPort
Net Zero Technology Centre
Stichting Dutch Marine Energy Centre
BP Offshore Renewables
RWE Offshore Wind
Wintershall Carbon Management Solutions (WDCMS)
Arcadis Nederland
Van Oord Offshore
Norce Norwegian Research Center
H2Sea
Aquaventus
MSG Sustainable Strategies
Stichting New Energy Coalition
TU Eindhoven
Deltares
Taqa Energy
Subsea7

Sounding Board members

Bluespring (Dutch Energy from Water Association)
Energy Innovation NL – Topsector Energie
Branche Organisatie Zeehavens
ECHT regie in tranisitie
IRO – The Association of Dutch Suppliers in the Offshore Energy Industry
Jonge Klimaatbeweging
Ministerie Klimaat Groene Groei (KGG)
Nexstep
NLHydrogen
Noordzeeoverleg
De Nederlandse WindEnergie Associatie (NWEA)
Stichting Natuur & Milieu
Stichting De Noordzee
Tennet TSO

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