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D1.1 Report on Stakeholders Framework & Database

A framework for the management of ports' stakeholders involved in the energy transition to green fuels and renewable energy

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Abbreviation / Acronym	Description
ETPs	Energy transition Projects
OPS	Onshore Power Supply
SEANERGY	Sustainability EducationAl programme for greeNEr fuels and enerGY on ports

Executive Summary

The purpose of this report is to provide an overview of stakeholders involved in the port energy transition. This report reviews and structures a framework to identify and present pathways on how to manage and prioritize the stakeholders involved in the ports' energy transition, i.e., the shift to green fuels and renewable energy. While the task that this report is based on only requires identifying relevant stakeholders and building a database of stakeholders (Task 1.1 SEANERGY's Stakeholders groups identification and framework set-up), the authors of this report not only identified the stakeholders but also adopted a methodology that presents an entire cycle for stakeholders' management. The methodology starts with identification, prioritization, visualization, engagement, and monitoring. This is called the stakeholder circle methodology, which can be utilized in stakeholders' management over a long project period. This cycle provides a holistic understanding of the stakeholders' needs, expectations, interests, power, legitimacy, proximity, and how to build a collaborative platform through the communication plans.

As regards the most crucial step (identification), the stakeholders were mapped and identified based on literature review and brainstorming sessions; then, SEANERGY partners contributed to building the stakeholders' list. In total, 22 stakeholder groups (both primary and secondary), including several subgroups that comprise many stakeholders. In addition, a database of these stakeholder groups and other vital characteristics are all structured in a repository, which is sent along with this report (currently in an excel sheet and later on will be uploaded to the website). A note of caution here is that while the stakeholders' list is very comprehensive and inclusive of all those who might fall in the stakeholder category for the port energy transition, each port should re-configure this list based on the port status and situation, which differ from one port to another and from one energy transition project to another.

The rest of the report offers suggestive pathways for stakeholder management, engagement, monitoring etc., which can be conducted after the ports adopt technologies, that is, to streamline the port's operation and avoid stakeholders' resistance and objections. In brief, this report is crucial because it provides valuable information, insights, and guidelines on identifying and managing stakeholders, with a holistic and non-exhaustive list of port

stakeholders that can be engaged before and during the port energy transition projects (ETPs).

1. Introduction & background

The EU Maritime transport accounts for approximately 13% of its transport GHG emissions. This puts maritime transport, ships and ports, under pressure to green their activities and transit to low and near zero emission port. This is also deemed a necessary step in order to achieve the EU ambitious goals, for example, the EU green deal and the ensuing climate law [1]. The green deal aims to achieve 55% reduction and net zero carbon by 2030 and 2050 respectively. In parallel, the Sustainable and Smart Mobility Strategy, flowing from the European Green Deal, puts achievement of zero-emission ports as top priority, i.e., to become "clean energy hubs for integrated electricity systems, hydrogen and other low carbon fuels, and testbeds for waste reuse and the circular economy". As a consequence, the EU commission proposed measures to incentivize the decarbonization of ports such as the deployment of renewable energy production, use of and low-carbon fuels for ship bunkering, including optimization of port calls and smart traffic management, among others.. Other specialized collaborative plans were also developed, e.g., PORTS 2030, which intended to explore the potential of energy transition solutions in ports. On this basis, port energy transition is not an option. Still, it is an inevitable process that ports need to go through.

The energy transition can be defined as changing the port status from high to a very low energy and efficient consumer using, inter alia, green fuel and renewable energy while reducing carbon emission to low and near zero. The transition is therefore dependent on various activities that entail i) installation of various technologies (e.g., onshore power supply (OPS), electrification and hybridization of equipment, smart and microgrids, renewable energy such as wind, wave, tide, photovoltaics, solar and geothermal energy generation), ii) operational measures (e.g., use of automated equipment, and yards, birth, and cranes scheduling, idling reduction and economical driving), and iii) the use of alternative and cleaner fuels for powering equipment (Liquefied Natural Gas (LNG), hydrogen, ammonia, methanol, ethanol, biodiesel) [2,3] In addition, the energy transition requires policy and management tools to facilitate implementation [4].

The transition is a very complex process that also needs revolutionary actions in the port management including other necessary steps, such as reskilling and upskilling labour, and capital and operational costs that may require subsidies or loans. For the success of any project, the energy transition in this case of this report, ports need to identify and manage relevant stakeholders, among other procedures. The stakeholders' management emerged as a field of study and practice owing to the industry's need to plan, control, and manage huge, complicated series of operations (projects), such as building hospitals, bridges, shipyards, and ports. According to the EU MSP (Marine Spatial Planning) Directive,

the management of maritime areas is complicated and involves multiple levels of authorities, sectors, and other stakeholders. To effectively promote sustainable development, stakeholders must be included in the drafting of maritime plans at an appropriate stage[1].

1.1 Purpose of the deliverable

This report introduces the stakeholders framework for the management of ports' stakeholders involved in the energy transition to green fuels and renewable energy., In addition, this report results in building a repository database (the excel sheet) that comprises twenty-two stakeholder groups and subgroups. The stakeholders are discussed in this report and clustered with a complete picture in the stakeholder repository. The mapping and identification of stakeholders are essential for ports engaging in the energy transition. The identification is an important step that ports should take as some stakeholders may intervene or even negatively affect the energy transition. Therefore, this report presented the stakeholder for the port to consider and also explained all the pathways required to manage the stakeholders before, during, and after the port energy transition. On the other hand, it also presents a list of stakeholders to be targeted in Energy project partners in further investigations.

1.2 Structure of the deliverable

While the executive summary was presented in the beginning of this report followed by the introduction and background of the relevancy of this report (the need to identify stakeholders), the rest of this report is divided into the following sections:

➢ Definition of stakeholders
➢ Why ports need to identify stakeholders
➢ Managing the stakeholders
➢ Stakeholders management through mapping and analysis (The five steps: identify, prioritize, visualize, engage, monitor)
➢ Conclusion and recommendation

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[1] https://maritime-spatial-planning.ec.europa.eu/faq/stakeholder-involvement

1.3 Relation to other project deliverables

This report is directly connected with Work Package one, i.e., Task 1.1 SEANERGY's Stakeholders groups identification and framework set-up, and Subtask 1.1.1 – Analysis of the needs, motivation, drivers and barriers of target SEANERGY' stakeholders

Communities. In addition, this report is related to Work package two, particularly, Task 2.1 Capturing target stakeholders' feedback on know-how limitations, and Subtask 2.1.1 Understanding and classifying know-how limitations. Importantly, this report also work as headmark for the Work Packages that will conduct workshops so that wide variety of stakeholders can be targeted and involved in the investigation of port energy transition.

2. Definition of stakeholders

Stakeholder management is a significant opportunity that enhances any project delivery, success, and performance. It is indeed an essential factor that needs to be considered in advance. In general, stakeholders are individuals, people, or organizations with a vested interest (have a stake) in a project and can mobilize resources to influence its result. The Project Management Institute (PMI) [5] defines stakeholders as individuals and organizations who actively participate in a project, and whose interests may be positively or negatively affected by project execution or successful project completion. The stakeholder theory identifies the stakeholders as any group or individual who can affect or are affected by the achievement of the organization's objective, i.e., without these groups' support, the organization ceases to exist [6]. Others described stakeholders similarly, but they arguably added non-governmental organizations, government officials, academics and other interested stakeholders as stakeholders that would likely involve in large projects [7]. Generally, stakeholders can be direct and indirect contributors to a project and thus include [8]:

- ➢ Project owner/client
- ➢ Senior managers/executives, facilities managers, project managers,
- ➢ Staff or employees,
- ➢ Purchasers, subcontractors, suppliers, and other process or service providers,
- ➢ Tenants, residents, community representatives, neighbors,
- ➢ Visitors, customers (potential and future), users, partners, or other interest groups,
- ➢ Design team members (if required)
- ➢ Others who may be engaged based on the project and standpoint of the organization to engage others in the project process

In this report (deliverable), we identify the stakeholders of the port energy transition project (ETPs) as the individuals, groups, organizations, who have interest, rights, or ownership on the ETPs. Thus, stakeholders may contribute to, be affected by *(benefit or loss)* the energy transition work (construction), and outcome (operations), taking into consideration that these stakeholders may accelerate or decelerate the ETP and thus influence the outcome.

3. Why ports need to identify stakeholders

The expectations and views of the stakeholders involved have a significant impact on the success or failure of a project, and failure to balance or address their concerns has resulted in the failure of numerous projects [9] [10]. Involving stakeholders in early planning and subsequently incorporating them with the organization work (project) aids in avoiding and resolving arising stakeholder-related

issues. For example, there are problems, conflicts, and controversies among stakeholders which hinder and obstruct the progress, implementation process, and achievement of projects [11], which consequently result in delays, cost overruns, discontent and dissatisfaction, and other claims [12]. Ignoring and not involving stakeholders influence the project budget, schedules, and relationships with stakeholders [12]. Stakeholders' expectations should be met to ensure a streamlined running of the project [9], while considering that stakeholders are dynamic, i.e. stakeholders' perspectives, expectation, and level of satisfaction differs throughout the project life cycle [13]. Therefore, managing the port energy transition stakeholders is a vital skill that is required in every port.

4. Managing the port's stakeholders

Ports ETP involves a wide variety of stakeholders; some may have contradictory interests that may cause conflict during the life cycle of the project. Therefore, managing stakeholders is essential. Stakeholders' management aims to achieve the anticipated outcome and effective implementation while averting needless controversies and conflicts with stakeholders [14]. Four strategic stakeholder management objectives were identified, including formalized stakeholder analysis, strengthening stakeholder relationships, sustaining stakeholder commitment, and increasing stakeholder satisfaction [15].

When stakeholders who likely affect, or are affected by the energy transition process, managing and engaging them is indispensable, particularly at the inception stage, including the design stage [8], which consequently leads to identifying their needs and potential, and avoiding failure of acknowledging their concerns at early stage [6]. Owing to their being dynamic, as opposed to static, managing stakeholders and their influence should be conducted during life cycle of the ETP, i.e., the planning, implementation/execution and completion of the project [16]. Managing the stakeholders through the life cycle of the port ETP avoids the wrong assumption about the stakeholders' requirements and expectations. In addition, it exhibits that the managing body (port) is sensitive and responsive to the local needs and conditions, reduces problems of protest and delays in planning and execution and reduces cost and conflicts that may worsen to litigation and claims [17] [16]. A case in point, **delays occurred in the** planning and implementation of significant projects such as the construction of London Heathrow Airport Terminal 5 and the Ilisu Dam in the Kurdish region of Turkey [17].

In the case of port management for stakeholders, ports need to recognize that stakeholders' influence, interest, and needs may change over time. Stakeholders that are essential to the success of the ETP in

one part/stage may not be required in other later parts/stages of the ETP. For example, the designers are crucial when planning, but they are not highly important in building and construction or procurement. This means that the stakeholders' importance and needs change over the ETP life cycle. Stakeholders' interests may also change over time; the same is true regarding their support. For example, they shift focus to something else, or they may find the project did not meet their expectations. Change in stakeholders' interest over time is identified as a significant concern, and thus, management of such change is identified as a critical success factor. Change of stakeholders influence is the same [18], including their salience attributes change (power, legitimacy, urgency) which require appropriate management as the work progress [19]. In fact, the influence of stakeholders on one another and their relationships may also change over time, including the rise of conflicts among them. Thus, this should be considered, appropriately managed, and even resolved if possible [6].

To manage stakeholders, there is a need to identify them, perform analysis in the planning stages, and continue engaging and managing them over the life cycle of the port ETP. Notably, it should be borne in mind that managing stakeholders has become challenging due to the rise of powerful external stakeholders as a result of evolving institutionalisms and rights through tightening regulations and environmental activisms [17], in addition to industries shift to concessions (such as port and terminal operators). Thus, investments in energy transition projects would be scrutinized to ensure a return on investment. When stakeholders' needs cannot be met, or conflict cannot be balanced; incentives, trade-off and the institution of a no blame culture can be used to mitigate the situation [6]. The following section presents theoretical and practical pathways to manage stakeholders.

5. Stakeholders' management through mapping and analysis

One way to identify the stakeholders is through stakeholder mapping. Mapping aims to generate a relevant list of stakeholders, which helps identify their essential characteristics and provides information that supports organizations (the project managing team) in implementing effective stakeholder management [20]. Various approaches for mapping, identification, prioritization, and analysis are fragmented and lack connectivity.

One holistic process to identify and manage stakeholders is through **the Stakeholder Circle®** methodology, a proactive tool comprising a five-step approach [21]. *Table 1* below present and briefly explain these five steps. The tool includes most of the earlier techniques used by stakeholder management theorists, researchers, and even organizations. The tool leads to appropriate

categorization and mapping of stakeholders, which poses the way to target the *right* stakeholders at the *right* time, with the right level of engagement, information and communication [20]. The *stakeholder circle* tool was examined in some case studies, e.g. [22] [23], suggesting it is a powerful tool for stakeholder analysis and management.

Table 1: Stakeholders' management cycle

Steps	Title	Purpose	Role in this deliverable
Step 1	Identify the stakeholders	Identify relevant stakeholders that play roles in a project	Providing a non-exhaustive list of stakeholders
Step 2	Prioritize the stakeholders	Map the stakeholders' influence on the project	Presenting different ways to prioritize stakeholders
Step 3	Visualize the stakeholders	Display and chart the existing and potential stakeholder community based on their capability to affect the project's success or failure	Presenting different ways to visualize stakeholders
Step 4	Engage the stakeholders	Development of proper engagement strategy and communication plan to warrant that the needs and expectations of significant and key stakeholders are known and accomplished	Presenting different ways to engage and communicate with stakeholders
Step 5	Monitor the outcome	Monitor the effectiveness of communication with stakeholders	Presenting ways to monitor stakeholders

In the following subsections, the stakeholder management cycle in **Table 1** is utilized to identify and present pathways to manage the port stakeholders engaged with the port's energy transition project (renewable energy and green fuel). Using these steps is a necessary process for any port, given the diversity of the stakeholders.

5.1 Step one: Identify

Identifying project stakeholders at the beginning (initiation) of any project is fundamental for the project's success. Thoroughly identifying and listing stakeholders is a critical success factor for their management [24]. Four steps should be taken to identify and map the stakeholders correctly. The result of this step is essential for the second step of the stakeholder management cycle (prioritization of stakeholders).

First, a stakeholders list needs to be built, which consists of individuals and groups who can impact the project or be impacted by the port ETP project. This process requires a team [20] that has a background in construction and technological projects and is aware of the power structure of the port

(governance) and its politics. Preferably, the team consists of five members, the port manager, and the project manager. It is recommended that the team remains constant over the entire period of the project. Development of the list has been simply achieved by literature review, e.g., [25], supplemented by a brainstorming session held at the World Maritime University (WMU)[2]. Subsequently, the list is circulated among professional individuals and organizations contributing to the SEANERGY project to maintain a broad view and accuracy of the list. **Table 2** below exhibits the stakeholders in groups and subgroups (agencies and participants).

Second, as exhibited in **Table 2**, port stakeholders can be classified into two categories according to their contractual relationship [17] with the port ETP. First are internal stakeholders who are in legal contract with the port ETP. The internal is further broken into supply and demand. The demand reflects what matters stakeholders require from the ETP. In contrast, supply reflects what needs to be provided (supplies) by stakeholders to the port ETP. Second, external stakeholders have rights and interests in the ETP, although they don't have legal contracts with port ETP, which is further broken into private and public.

Third, as exhibited in **Table 2**, stakeholders can be classified as well to their proximity to the port ETP. That is, primary/direct or secondary/indirect [8]. The stakeholders engaged in decision-making and operation of the ETP are primary. In contrast, those that don't have a direct relationship and operating remotely from the ETP are secondary.

Fourth, it is recommended that ports identify two aspects of the port's relationship with stakeholders (mutuality), i) how important each stakeholder is to the port ETP, i.e., what is their stake, and ii) what is their expectation from the ETP success or failure. The first aspect, the importance of stakeholders to the success or failure of the port ETP, is related to their potential role as a source of funds, materials, personnel, and policies, in addition to the impacts of their actions and inactions. **Table 3** provides six categories (the stake), which can be used when analyzing and defining stakeholders, i.e. interest, rights, ownership, knowledge, impact or influence, and contribution [20]. The stakes can be one of these categories. They can be used, if there is a doubt, to decide if an individual or organization is a stakeholder. **Table 4** illustrates the required role and interests of the stakeholder groups. In terms of the other feature, expectations of, or requirements from, the stakeholders, it commonly seeks to identify personal or organizational gains via the success or failure of the project, e.g., enhanced power,

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[2] On December 1st, four port and shipping management and energy academics were engaged with the session, that is to, verify and cluster the groups and sub groups.

monetary and financial gains, enhanced reputation. To further augment the latter step, stakeholders can be investigated via different interviews or surveys.

Table 2: list of ports energy transition stakeholders and their relationship and proximity

	Stakeholders' groups	Subgroups (agencies/participants)	Contractual relationship	Proximity
1	**Port managing body**	Public authority, Board of directors, port authority, port operating companies	Internal/demand	Primary
2	**Shareholders**	Public or private organizations, firms holding an equity share in the port	Internal/demand	Primary
3	**Port services providers**	Pilots, mooring and towage operators, customs, waste management, the coast guard, bunkering barge operators, carbon traders, carbon absorption promoters	Internal/demand	Primary
4	**Concessionaires**	Terminal operators, warehouses, depots, industrial areas, logistics platforms, malls, and commercial areas	Internal/demand	Primary
5	**Maritime authority**	Maritime authorities, commissions or administration, touristic cruise authorities	External/public	Primary
6	**Carriers**	Shipping lines (containers) and tramp operators and owners, inland waterway (ILW), RoRo, Cruise ships, passenger ships, Ropax,	Internal/demand	Primary
7	**Employees and trade unions**	People working in the port authority and companies, labor pools, and port-related firms, such as forwarders, ship agents, and customs brokers	Internal/demand	Secondary
8	**Port users**	Freight forwarders, ship agents, brokers, road haulers, railway companies, and logistics providers	Internal/demand	Primary
9	**Passengers**	People using port facilities for commuting, travel (ferries), and tourism (cruising and yachting)	External/public	Secondary
10	**The financial community**	Banks, insurance companies, stock exchange, credit institutions, and investors, ministry of finance, public funds (EU Horizon, EU-industry partnership)	Internal/demand	Primary
11	**Local community and societal groups of interest**	People and individuals affected by port energy transition projects, city residents, port tenants, None Governmental Organizations (NGOs), tourism-related business associations in islands	External/public	Secondary
12	**Regulators Local**	City, municipality, local courts, police, fire services, local emergency services, and environment, health, food, and agricultural authorities	External/public	Primary
13	**Regulators national**	Government agencies (Judiciary, transport, environment, mobility, planning, maritime ministries)	External/public	Primary
14	**Regulators regional**	Eu commission	External/public	Primary
15	**Regulators international**	International Maritime Organization (IMO),	External/public	Secondary

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		World Customs Organization (WCO) World Trade Organization (WTO) United Nations Conference on International Trade Law (UNCITRAL) United Nations Conference on Trade and Development (UNCTAD)		
16	**International organizations and trade associations**	International Association of Ports and Harbors (IAPH), World port Sustainability Program (WPSP), Classification societies, auditors, certification enterprises, European Sea Ports Organization (ESPO), Federation of European Private Port Companies and Terminals, Worldwide Industrial & Marine Association, carbon registries, innovation hubs	External/public	Secondary
17	**Media**	Press, online and social media, TV, Radio, Newspapers	External/Private	Secondary
18	**Research and education**	Universities, training institutions, tertiary education	External/private	Secondary
19	**Technology Developers and Manufacturers**	Manufacturers, equipment suppliers/maintenance such as material suppliers, hardware and software manufacturers, shipyards, energy management system developers, engines manufacturers, naval engineering companies, renewable energy companies (installation and production), other local industries	Internal/supply	Primary
20	**Energy providers**	Utilities, offshore, national, and international grids operators, bunkering companies, fuel producers,	Internal/supply	Primary
21	**Energy transition facilitators and third parties**	Designers, Architects, Contractors, Construction workers, port project managers, project teams, consultants , other service providers	Internal/supply	Primary
22	**Consumers**	The general public, industrial sectors	External/public	Secondary

Table 3: The stakeholders' stakes

Stakes	Definition/ remarks	Examples of stakeholders [a]
Interest	A person or group of persons is affected by a decision related to the ETP work or its outcomes	Concessionaires, Port users, Consumers
Rights	Legal rights be treated in a certain way, such as *O*ccupational Health and Safety	Employees and trade unions, Passengers
	Moral rights to have a particular right protected such as *h*eritage protection activists and Environmentalists	Local community and societal groups of interest
Ownership	A circumstance when a person or group of persons has a legal title to an asset or a property	Port managing body, Shareholders, Concessionaires
Knowledge	Specialist knowledge or organizational knowledge	Technology Developers and Manufacturers, Energy providers, Energy, and technology adoption projects personnel
Impact or influence	Impacted by the work or its outcomes	Port services providers, Concessionaires, Carriers
	Impact (or influence) on the work or its outcomes	Regulators Local, Regulators national, Regulators regional, Local community, and societal groups of interest
Contribution	Supply of resources such as manpower, employees, material, technologies, research	Research and education, Technology Developers and Manufacturers, Energy providers, Energy, and technology adoption, and projects personnel
	Allocation of funding	The financial community
	Advocacy for objectives or work success	Shareholders, Regulators Local, Regulators national
	A buffer between organization and work teams or the performance of the work such as observers, regulators, auditors	Energy and technology adoption and projects personnel, International organizations and trade associations

Source: [20]

[a] because of the stakeholders varying characteristics and their being dynamic over the ETP cycle, the result of such classifications, including the examples in this table, would d be different from one port to another.

Table 4: Stakeholders' expected role and interest in the port energy transition (ETP)

	Stakeholders' groups	Expected role (take from excel sheet)
1	Port managing body	Conduct environmental impact assessments (EIA), and societal impact assessments including safety and security, to understand the implications of ETP on the natural environment and society. Ensure effective and economical use of resources (profitability). Provide financial support. Inclusion of green solutions in revamping projects of present technologies and assets. Support regulatory and operational gaps related to green solutions and their application to green projects. Provide incentives and share information. Create and manage the Stakeholders collaboration scheme
2	Shareholders	Investment and promotion in projects to support renewable energy and green fuel use in ports
3	Port services providers	Support the identification of any logistical and operational difficulties due to the installation of new technologies and new energy production plants. Adapt their practices to new technologies implemented in the ports. Reduce their own carbon footprint by transitioning from fossil fuels
4	Concessionaires	Be involved in the new energy transition project and encourage reporting any economic/technical and logistical problems. Cooperate to reduce their own carbon footprint, host clean energy units in buildings, and co-invest with port managing companies or authorities. Reduce their own carbon footprint by transitioning from fossil fuels
5	Maritime authority	Green licensing. Promotion of innovative project development that makes ports greener. In case of regulatory gaps, simplify procedures to enable the carrying out of the green and energy transition.
6	Carriers	Be involved in the use of new technologies and new fuels and report any economic/technical and logistical problems. Adapt ships and crew to new port procedures and infrastructure. Reduce carbon footprint in ports through the use of low carbon options (e.g. alternative fuels and onshore power supply)
7	Employees and trade unions	Be involved in the use of new technologies and new fuels and report any economic/technical and logistical problems. Train, reskill, and upskill labor to run the new green and energy technologies. Ensure occupational health and safety of employees, and protect their rights
8	Port users	Be involved in the new project and encourage to report any economic/technical and logistical problems. Provide feedback on how proposed actions affect user experience. Reduce their own carbon footprint by transitioning from fossil fuels
9	Passengers	Inform them about the port transition to greener and energy efficiency and the CO2 abated therein. Inform them about the value of selecting greener transport. Ask for feedback on how proposed actions affect user experience. Ensure that the ETP that their amenity and safety are not compromised

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10	**The financial community**	Development of investment to support future energy and green technology investment projects. Return on investment.
11	**Local community and societal groups of interest**	Acceptance of new technologies. Be informed about the value of the energy transition projects and encourage their involvement to report arising issues, e.g., Economic, technical, social, environmental, and logistical problems. Ensure that the ETP does not affect their amenity and the environment.
12	**Regulators Local**	Implementation at the local level of the national regulations and proposal of initiatives "bottom-up" for the promotion of innovative solutions for the ports' energy transition (decarbonization). Green licensing. Ensuring that ETP complies with national/international rules and regulations
13	**Regulators national**	Transposition of the European directives and indications, and emanation of laws and incentives in order to support the development and the construction of new plants and technologies to make ports greener and decarbonized. Ensuring that ETP complies with national/international rules and regulations
14	**Regulators regional**	Promotion of green solutions development for ports through research projects and guidelines. Stimulation of the countries to promote green fuel use and integrate renewable energy sources inside the ports. Ensuring that ETP complies with national/international rules and regulations
15	**Regulators international**	Introduce decarbonization of ports and energy transition into their activities. Identify the potential regulatory gaps and solutions to overcome them
16	**International organizations and trade associations**	Support, coordinate, and collaborate with ports for the proper conduct of port energy transition (decarbonization). Conduct seminars and workshops to exchange experience and technology transfer among world ports
17	**Media**	Focus on the opportunities linked to the energy transition of individual ports and the benefits and changes in the environmental and socioeconomic context. Promote best practices and green branding of ports
18	**Research and education**	Increase research and dissemination of port energy transition technologies, and provide solid technical, economic, and social knowledge. Feasibility studies about the technologies, Development of knowledge, training, demonstration, and testing of available decarbonization technologies
19	**Technology Developers and Manufacturers**	Ensure successful procurement and supply of materials. Support the ports that want to include green technologies and fuels through tailor-made technical solutions. Implementation of own solutions in order to overcome the potential obstacles in the project planning and building phases. Test and validate innovative solutions for decarbonisation from concept to a commercial stage
20	**Energy providers**	Ensure successful procurement and supply of materials. Support to the development of new infrastructure to promote the integration of renewable energy and the use of green Fuels. Secure electrification of ports, and upgrade local grids.

21	**Energy and technology adoption and projects managers, including consultants**	Ensure successful procurement and supply of materials. Carry out their respective duties professionally. Ensure safe, efficient, and successful implementation of the energy transition technologies during the project. Communicate with stakeholders, update stakeholders' profiles
22	**Consumers**	Indirectly influence their logistics service providers to use green port services than other ports with higher footprint (not yet green). Normal and regular transactions

5.2 Step Two: Prioritize

The port can utilize the following three approaches to prioritize (designate importance) stakeholders in the ETPs, which is based on the perceived power of the stakeholders.

5.2.1. Approach 1: stakeholders' salience attributes (power, proximity, and urgency)

Building on the preliminary list of identified stakeholders and classifications, the stakeholder circle methodology provided a system to rate and rank stakeholders based on their relative importance throughout the project period, which is based on three dimensions. The first dimension is the **power** of stakeholders (either alone or operating as a group) to kill the ETP. Which indicates stakeholders' capacity of having influence actions [19]. Second is the **proximity**, how close (closeness) the stakeholder is associated (association) to the day-to-day running of the ETP. i.e., how they are prepared to fulfill their own outcome in the ETP either through direct involvement or remote operation and third is **urgency**, which refers to the degree to which stakeholders' claims necessitate urgent attention [19]. As seen in **Table 5** below, stakeholders' power (capacity) and proximity (closeness) are measured from 1 to 4. The urgency is measured by the importance (value) and action, from 1 to 5. The value is the importance of the work to the stakeholders, and the actions is the likelihood that the stakeholders will take positive or negative actions to influence the project work and its outcome. The final result can be accumulated to give a priority index about the stakeholders' salience. The stakeholders are then rated according to their 'index' (the greater the index value, the higher the priority) to get a list of stakeholders in ascending order of importance. Port managers should pay attention to and respond to the claims of stakeholders that they perceive to have more salience. Importantly, stakeholders express their salience following different strategies (stakeholders shaping strategies), which were classified by [26] into direct withholding strategy, indirect withholding strategy, resource building strategy, coalition building strategy, conflict escalation strategy, creditability building strategy, communication strategy, and direct action strategy. These strategies are explained in **Table 6**.

Table 5: Stakeholders' salience attributes and rating and ranking

Attributes	Rating and ranking
Power	(1) The stakeholder has a relatively **low level** of power (i.e., cannot generally cause much change)
	(2) The stakeholder has **a significant** informal **capacity** to cause change (e.g., a supplier with input to design or unions with respect to working conditions)
	(3) The stakeholder has **some capacity** to formally instruct change (i.e., the key element is a formal right to be consulted or a right to approve elements of the design or works)
	(4) The stakeholder has a **high capacity** to formally instruct change (i.e., can have the activity stopped)
Proximity	(1) The stakeholder is **relatively remote** from the project and does not have direct involvement with the project processes (e.g., shareholders)
	(2) This stakeholder is **detached from** the project but has regular contact with, or input to, its processes (e.g., maritime authorities, city)
	(3) The stakeholder is **routinely working** on the project (e.g., part-time members of the project team and external suppliers)
	(4) The stakeholder is **directly working** on the project (e.g., full-time team members and contractors working as a part of the team)
Urgency (Importance & and action)	**Importance**
	(1) The ETP's importance to this stakeholder is **very low**
	(2) The ETP's importance to this stakeholder **is low**
	(3) The ETP's importance to this stakeholder **is medium**
	(4) The ETP's importance to this stakeholder **is high**
	(5) The ETP's importance to this stakeholder **is very high**
	Action
	(1) The stakeholder is **unlikely** to attempt to influence the project
	(2) The stakeholder **has** the potential to attempt to influence the project
	(3) The stakeholder **may be prepared** to make an effort to influence the project
	(4) The stakeholder is **likely** to make a significant effort to influence the project
	(5) The stakeholder **will go to almost** any length to influence the project

Source: [21]

Table 6: Classification of stakeholder salience shaping strategies in projects

Type of stakeholder strategy	Description
Direct withholding strategy	Stakeholders restrict the project's access to critical resources, which the stakeholder controls to increase their perceived power
Indirect withholding strategy	Stakeholders influence the project's access to resources that the specific stakeholder does not directly control to increase their perceived power
Resource building strategy	Stakeholders acquire and recruit critical and capable resources to their group to increase their perceived power
Coalition building strategy	Stakeholders build alliances with other project stakeholders to increase their perceived power or legitimacy
Conflict escalation strategy	Stakeholders attempt to escalate the conflict beyond initial project-related causes (e.g., political). Through this process, the

	project may become an arena for non-project-related battles. This may introduce a new institutional environment in which stakeholders' claims are perceived as more legitimate
Credibility building strategy	Stakeholders increase their perceived legitimacy by acquiring credible and capable resources, for example, capable individuals with good reputations or networks
Communication strategy	Stakeholders use different types of media to communicate and increase the perceived legitimacy and urgency of their claims
Direct action strategy	Stakeholders organize protests, road blockades, etc., to increase the perceived urgency of stakeholder claims

Source: [26]

In a similar approach, the previous attributes (power, urgency) were utilized in addition to legitimacy, that is, to widen the analysis and prioritization [19], [23]. Legitimacy was used instead of proximity. Which means how valid the stakeholders' claims (perceived validity of claims), or how much risk is born by the stakeholders that could be beneficial or harmful to the project [19]. Overall, these attributes that the stakeholders possess are considered determinants to their relationship with and the ability to enforce claims on the ETP, which enable stakeholders to rely on and use control resources, acquire attention and thus influence the ETP.

5.2.2. Approach 2: Power, interest, and predictability

This approach is an important pathway to judge stakeholders based on three aspects, i) the likelihood that stakeholders enforce their expectations on the project (predictability), ii) if stakeholders have the means to do so (power), and iii) the likely impact of stakeholders expectation on the project on the future (interest) [27].Accordingly, two matrices were introduced, i.e., the power/predictability matrix **(Fig. 1)**, and the power/interest matrix (**Fig. 2**).
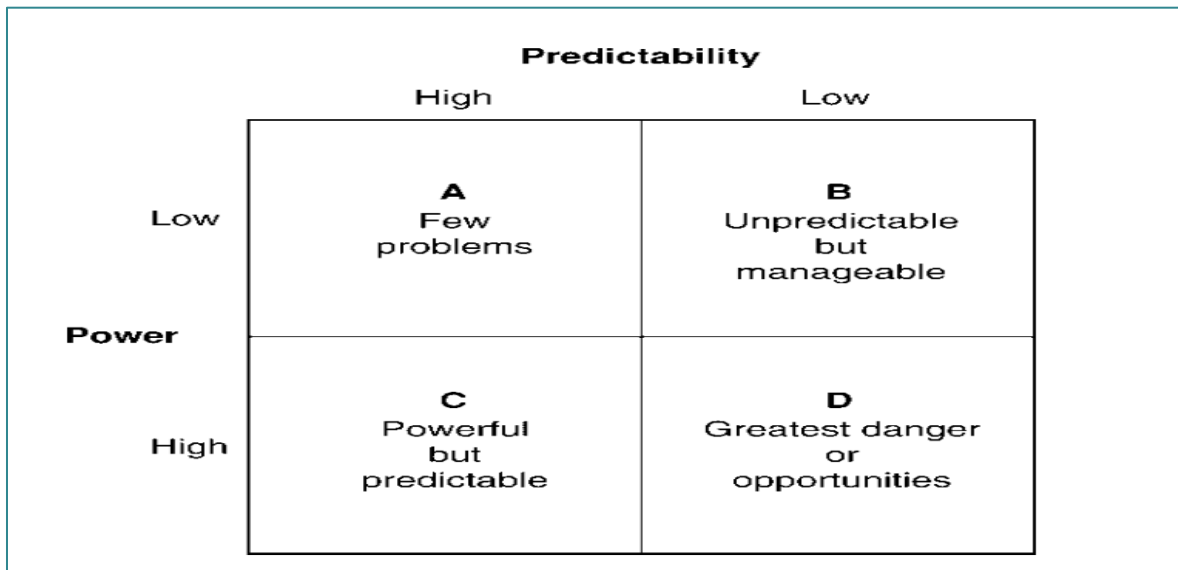
Figure 1: Power/predictability matrix
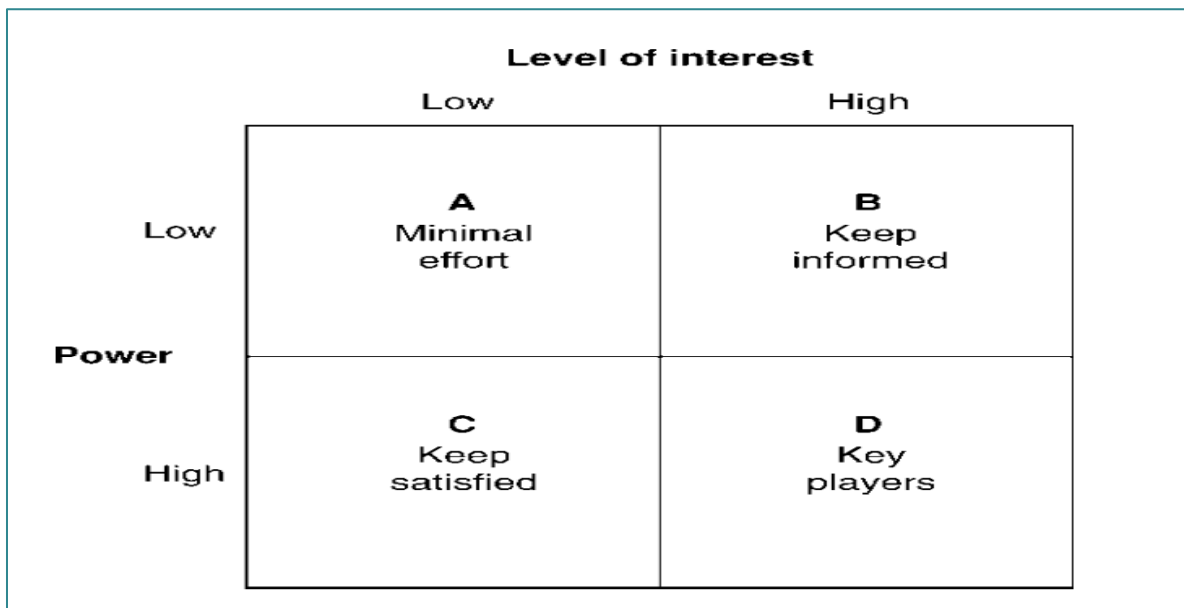*Source:* [27]

Figure 2: Power/interest matrix
Source: [27]

In the power/predictability matrix **(Fig. 1)**, zone A stakeholders are highly predictable with low power thus presenting fewer problems, e.g. passengers. Stakeholders in zone B are unpredictable with less power. Thus, they are easily manageable, e.g., local community and societal groups of interest. Stakeholders in zone C are highly powerful and predictable. Thus, they have a conservative and constraining influence on the project, which is not a problem that requires intensive management, e.g., carriers. Stakeholders in zone D are the most difficult to manage because they are powerful but unpredictable, thus presenting great danger, e.g., energy providers. However, they can be subject to

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persuasion and cooperation contrary to zone C and may offer opportunities. It is recommended to make a decision in favor of zone C to overcome the resistance of zone D. Despite that zone A and B stakeholders have less power, the project management (port) should not ignore them. They need to be supported as this may influence other stakeholders. This matrix is essential to assess the scale of problems the port ETP would face.

Concerning the power/interest matrix **(Fig. 2)**, this matrix is important as it shows the power of the stakeholders and their level of interest in the ETP, which indicates the types of relationships that need to be established and maintained over the period of the ETP. In zone A, stakeholders have little interest in the project activities and little power to influence the project, e.g., consumers. Zone B stakeholders have a high level of interest but little power. Thus, they need to be informed of major decisions with proper communication, e.g., port users (truck, railways). Stakeholders in zone B and C pose different but equally significant problems. As such, they need to be kept informed (B), e.g., media, and satisfied (C), e.g., port services providers. They also need to be monitored and controlled as their interest is still low as long as they are satisfied; however, due to their high power, they may easily increase their interest and move to zone D as key players. Zone D are key players that need proper communication and management, e.g., finance community, maritime authority, and managing body. Overall, powerful stakeholders must be monitored proactively, and their impact managed. Notably, mapping both matrices may change over time and will be greatly influenced by the stage the project (the ETP) has reached [27].

5.2.3. Approach 3: Stakeholders' attitude

Stakeholders' attitude, how they behave and express their concerns, was categorized by research [6] into observed behavior, cooperative potentials, and competitive threats. Knowledge about the stakeholders' attitude to the project facilitates the engagement process and communications plans, aside from giving the stakeholders preliminary priority. One way to classify stakeholders' attitude is to classify them as **proponents or opponents** to the project [28]. Similarly, they can also be classified into **supportive, neutral or anti** to the project [26]. A case in point, stakeholders' **resistance and licensing power** can be exercised against ports energy transition, for example, when installing electrolysis plants, and building large LNG/H2 hubs bunkering facilities. These are often discouraged due to Health & Safety considerations. Permit issues also arise, particularly if ports are in urban areas. Classification

of attitudes is crucial for port policy and decision-makers to allocate and mobilize resources to transform neutral opponents and anti-stakeholders into supportive ones.

5.3 **Step three:** Visualize

After identification and prioritization of the stakeholders, the result of the stakeholders mapping and prioritization is converted into numbers indicating the level of their importance, which can be presented (visualized) in various forms, e.g., graphical or pictorial views supported by tabulations and/or sorted lists [20]. The graphical visualization is deemed effective, though. Visualization assists in understanding the stakeholder community and pave the way to selecting the right level of engagement and communication. As suggested by the *stakeholder circle,* visualization can be made of:

- Four **concentric circle** lines **(Fig 3a)** designate the distance of stakeholders from the project management (the port ETP, which is in the center) and their power. The closer the stakeholders to the project, the nearer it is drawn to center. Stakeholders' names need to be also indicated on the outer side.

- The **radial depth** of segments indicates the degree of power **(Fig 3b)**. For example, stakeholder number one has high power (4) and can thus influence and profoundly change the project outcome. In the contrary, stakeholder 3 has less power (2), thus having an informal capacity to make a change.

- **The size of the segment** and its relative area, measured on the outer circumference of the circle, shows the scale and the scope of influence **(Fig 3c)**. The larger it is, the more influential the stakeholder. The stakeholder with the highest level of influence is the one that has high priority and importance and is thus plotted in position one at 12:00 o'clock, followed by the next important stakeholders.
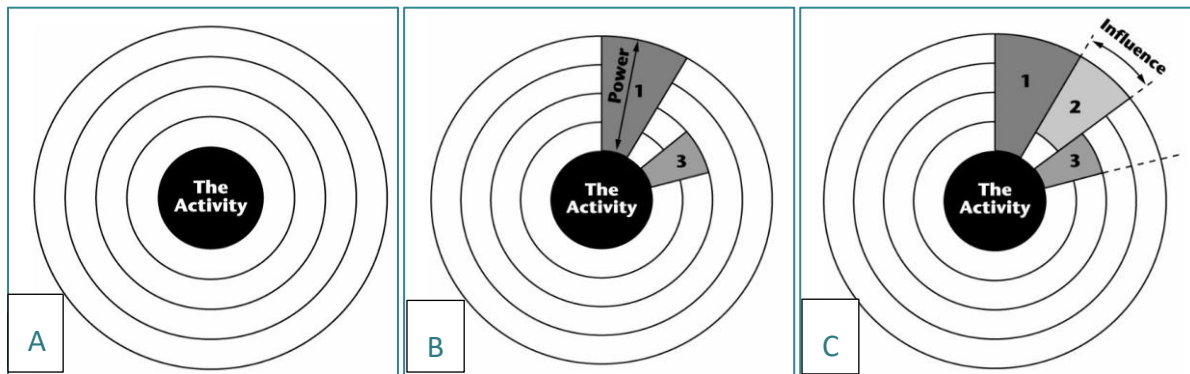
Figure 3 A, B, C: Visualisation of stakeholders
Source: [21]

The visualization is important because it is key to targeting the right stakeholders at the right time, using the right resources, and the right level of engagement during ETP life. It also facilitates further information gathering and designating proper communications.

5.4. Step Four: Engage

Stakeholders' engagement refers to engaging relevant stakeholders to achieve accepted outcomes [29]. The engage step is based on three pillars: i) identifying engagement tactics and approaches which are customized based on the demands and needs, and power and interest of the stakeholders who were identified and categorized in the preceding three processes, ii) evaluation of stakeholders engagement which builds profiles of stakeholders' engagement, including an engagement index, after data is collected, which leads to a focused communication plans for effective stakeholder engagement, and iii) building a communication plan to engage stakeholders.

5.4.1. Stakeholder engagement tactics and approaches

Stakeholders' identification may lead to hundreds of stakeholders that may have a stake in the port ETP. It is only possible to engage some of them as this is costly and time-consuming. There are different approaches to engaging stakeholders based on their influence [29], see **Fig. 4**. At the bottom of the pyramid is the pull communication which is used toward stakeholders with low influence and low interest as shown on the right to the pyramid. Consequently, fewer efforts are required, and more stakeholders can be included in this category. Attempts to engage such stakeholders in partnership would waste resources and time. On top of the pyramid lies the partnership approach, which should be used toward high influence and high interest stakeholders. Therefore, great efforts are required to

engage these stakeholders, but it should only engage fewer stakeholders. Collaboration and partnership would only be appropriate for key stakeholders who could benefit the port ETP. Conversely, considerable risk and issues arise if they are put in less engaging approaches. Therefore, appropriate stakeholders engagement approaches should be selected for different stakeholder groups. **Table 7** below describes all the engagement approaches that were exhibited in **Fig. 4.**
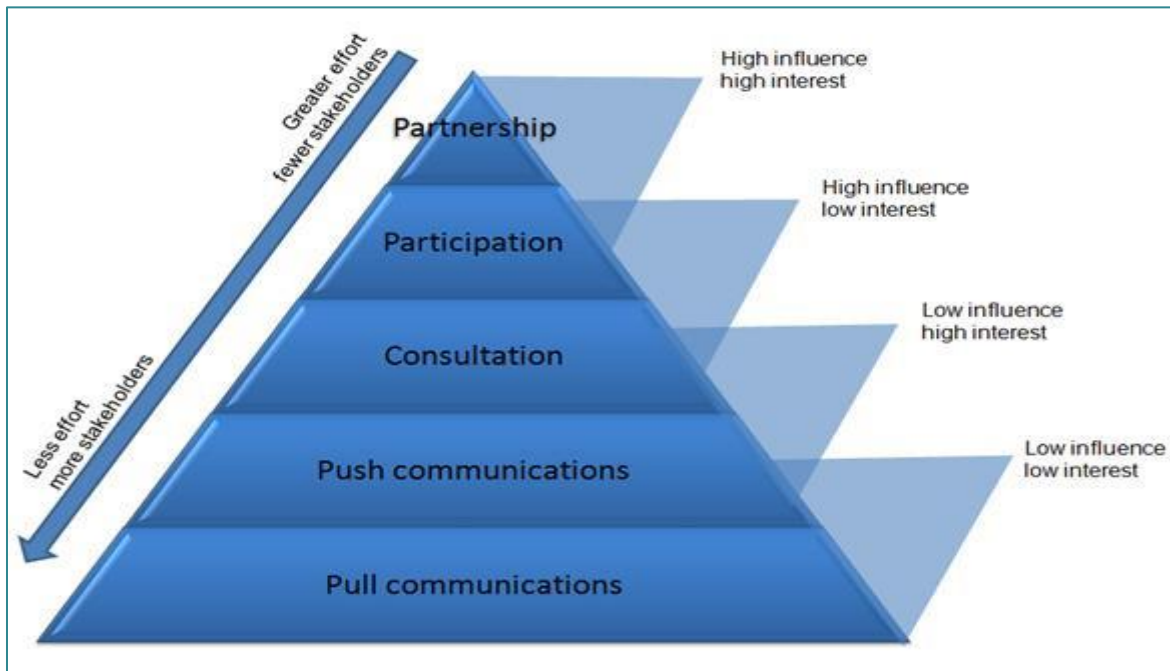

Figure 4: Approaches to engage the stakeholders and the relationship with their influence and interest

Source: [29]

Table 7: Stakeholders' engagement approaches

Engagement approach	Description
Partnership	Shared accountability and responsibility. Two-way engagement joint learning, decision making, and actions
Participation	Part of the team, engaged in delivering tasks or with responsibility for a particular area/activity. Two-way engagement within limits of responsibility
Consultation	Involved but not responsible and not necessarily able to influence outside consultation boundaries. Limited two-way engagement: organization asks questions, and stakeholders' answer.
Push communications	One-way engagement. Organization may broadcast information to all stakeholders or target particular stakeholder groups using various channels e.g., email, letters, webcasts, podcasts, videos, and leaflets.
Pull communications	One-way engagement. Information is made available stakeholders choose whether to engage with it

Source: [29]

In fact, engagement with stakeholders involved in the port ETPs starts from the inception stage, as highlighted earlier, and continues through the life cycle of the ETP. For example, the onshore power supply (OPS) is an important technology in reducing ships' carbon emissions in ports, including air pollutants. Definitely, not only ports are involved, but also many key stakeholders such as shipping and grid companies. OPS will only be of value if ships are interested and if it is technically feasible. Precisely, tram shipping that only visits ports for a few voyages in their life may not be interested, similarly is seasonal cruise ships.

On the contrary is the attitude of regular and frequent calls of liners, passengers' ships, or RoRos in short sea shipping. Engagement of stakeholders in advance and collaboration with them would facilitate the implementation of OPS and provide environmental, social, and economic benefits. Some ports may use OPS to ships in busy seasons but cooperate with other industries, such as land transport, to use the OPS in less busy seasons, thereby maintaining ROI and economic and environmental values. Operational risks of the OPS, i.e., weak electricity provision due to high load on the grid, need to involve other stakeholders (grid and renewable energy producer) to cooperate in providing streamlined services. In other words, grids will have to be extended and boosted due to extensive electrification in ports. While this involves the grid company (energy provider), investors may also help to facilitate finance.

Similarly, ports also engage citizens, communities, NGOs, for favoring port green energy transition and to highlight opportunities and risks in cities and beyond. Another issue is environmental, economic costs, which should be transparent and need to highlight energy transition consequences such as higher cost of goods and more municipal tax (as required financial support). This can be promoted through seminars, workshops, videos, social media campaigns, etc. Even the engagement of politicians and regulators at the national and international level (EU) would strategically coordinate and uniform efforts and thus minimize scattered and fragmented and non-uniform initiatives which may not last longer or provide the desired return. For example, guidelines to support interventions via proper standard Safety and Permitting rules and regulations can be initiated by the high-level policymakers in the EU union.

5.4.2. Evaluation of stakeholders' engagement

To facilitate the engagement process and profiles build-up, stakeholders need be classified in terms of their engagement level with the port ETP. One method that evaluates the engagement of stakeholders

is based on the stakeholder circle methodology [21], which is executed based on two criteria, i.e., stakeholder's supportiveness and receptiveness. As can be seen in **Table 8**, the stakeholders' supportiveness is evaluated by five-level scale (i.e., from committed (5) to antagonistic (1)). On the other hand, the stakeholder's receptiveness is evaluated by five-level scale (i.e., direct personal contact is encouraged (5) to completely uninterested (1)). Both criteria are rated based on messages and/or messengers sent to stakeholders. The response (either supportive or not, and how supportive is it to the port ETP objectives) and receptiveness (stakeholders receive and acknowledge and are willing (willingness) to receive messages from the port ETP) can be identified.

Table 8: criteria and rating levels for the stakeholders' supportiveness and responsiveness

Criteria	Rating levels
Supportiveness	(1) **Active opposition**: is outspoken about opposition to the work and may even act to promote failure or affect the success
	(2) **Passive opposition**: will make negative statements about the port ETP work but not do anything to affect its success or failure ETP
	(3) **Neutral**: is neither opposed nor supportive of port ETP
	(4) **Passive support**: supportive but not actively supportive of port ETP
	(5) **Active support**: provides positive support and advocacy for the port ETP work
Receptiveness	(1) **Completely uninterested**: emphatically refuses to receive information
	(2) **Not interested**: not prepared to receive information
	(3) **Ambivalent**: may agree to receive information
	(4) **Medium**: will agree to receive information
	(5) **High**: eager to receive information

Source:. [21]

The rating above in **Table 8** needs to be repeated until the optimal engagement position of the stakeholder is assessed. Stakeholders can then be positioned in one of four quadrant profiles (i.e., problems, possible, plodders and promoters), as shown in **Fig. 5** below. Based on the rating and the resultant engagement assessment, the engagement index for each stakeholder is the accumulative result.

The **problems** profile indicates those who oppose the project (low supportiveness) and don't want to communicate (low receptiveness). Their position can be improved through various communication tools. The **possibles** are those who oppose the project (low supportiveness) but are still responsive to communications (high receptiveness). To improve their support, the ports need to understand the reason for their opposition using effective communication channels. This could enhance their relationship with the ports and move them toward the supportiveness quartile.

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Regarding the **plodders**, they highly support the project, but their receptiveness is low. They communicate less. These are considered risky stakeholders, especially if they have financial and/or policy-making roles or provide resources. In addition, the low receptiveness indicates no reasonable relationship between them and the port. Therefore, they may become unsupportive later on. Ports must develop effective communication channels, preferably using other stakeholders, such as promoters, until their expectations are met. The **promoters**, on the other hand, are highly responsive and highly support the ETP. These are considered allied to the port and thus need to be maintained as they may have the power to influence other low-profile stakeholders. Therefore, Ports need to ensure that promoters' expectations are met and their needs are understood and achievable. Finally, suppose the rating of stakeholders is always in the middle and cannot be classified in one of the four quartiles; in that case, they are called the **neutrals** stakeholders. Considering the huge efforts that ports may exert to move stakeholders to promoters, it is recommended that fair efforts are exerted to move less important stakeholders to the neutral position (neutralise them).
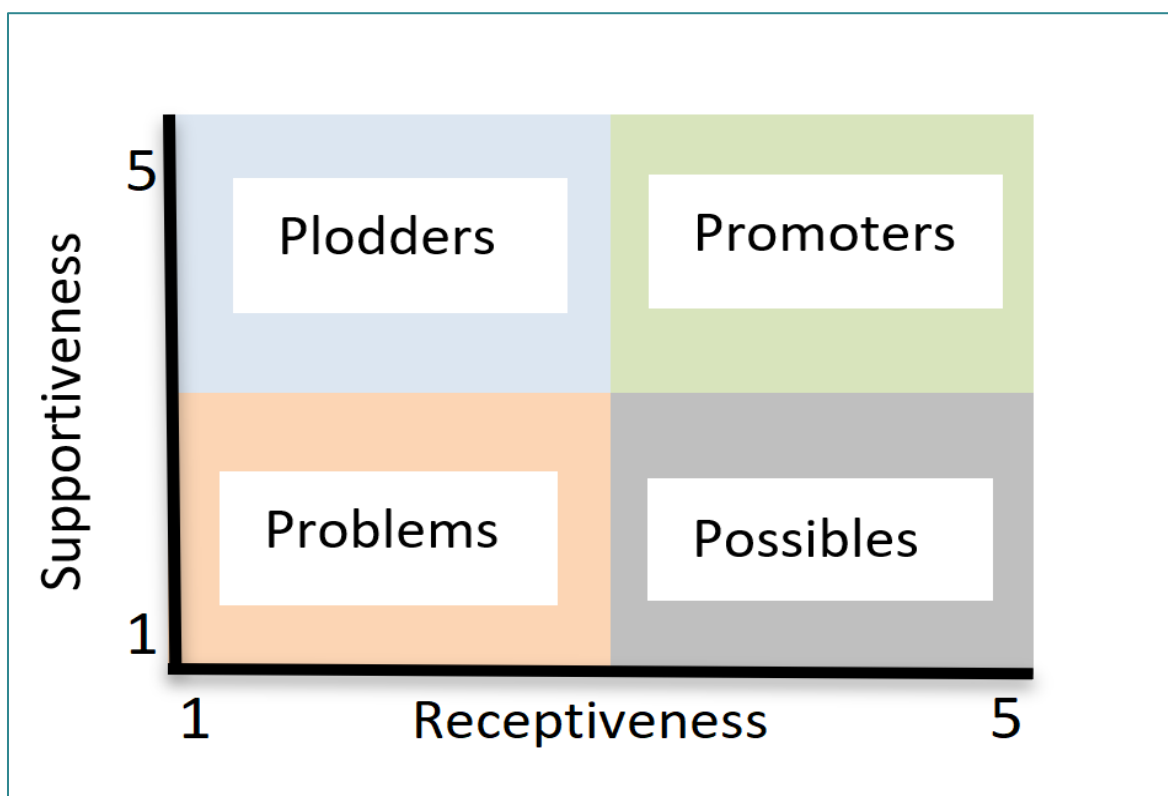

Figure 5: The four quartiles that represent the engagement level of stakeholders based on their responsiveness and receptiveness

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5.4.3. Communication

Communication means are essential for the previous pillars of engagement. In this regard, communication means encompass casual chats and discussions over coffee, emails, blogs, media, project websites, newsletters, signposts/flyers, and any other way of information transfer from the port to a stakeholder [21]. Various means of communication can be utilized by ports, see **Table 9** below, for initiating one of the engagement approaches or evaluating the engagement level of stakeholders. Of consideration, after the assessment of the current level of stakeholders' engagement, a communication plan should be developed by ports [21], which is important to maintain the relationships and support of stakeholders and signal willingness of cooperation. Maintaining good relationships with stakeholders builds trust, commitment, and loyalty and helps meet the stakeholders' expectations [18], [9]. The plan includes details of who, what, when, and how [20]. Therefore, an effective communication plan is essential to achieving stakeholder engagement and establishing solid, positive relations. Communicating with stakeholders properly and frequently is important to obtain feedback, eliminate different problems, manage stakeholders' demands, and avert or reduce conflicts that can be costly [20]. Overall, the communication plan should aim to maintain the excellent supportiveness and receptiveness level or even improve it while at the same time enhancing and improving the lower levels [21]. In this sense, ports need to maintain a manageable communication workload. And should therefore invest significant time and effort to identify the right stakeholder, the right messages, the right point of time, and the right communication means (messenger, medium). While ports need to maintain a proper level of communication with stakeholders, complex communications may be handled by top port management.

Table 9: Type of communication means

Communication Type	Examples
Audio/visual	Podcasts, video, webinars, video conferencing, teleconferencing
Face to face	Project meetings/briefings, answering individuals with specific questions, presentations to a wide audience, targeted presentations to particular groups
Online	Blogs, e.g., Blogger, WordPress, intranet/internet, email, forums, communities, and online groups, e.g., Google groups or LinkedIn groups, online collaboration area/workspace e.g., eRooms or Quick Place, social media, e.g., Facebook, Twitter, Google +
Printed materials	Magazines, newsletters, leaflets, memos, letters, display boards

Source: [29]

5.5. Step five: monitoring

Monitoring is essential to keep current information about the stakeholders, which also allows the stakeholders to be re-assessed, re-prioritized and re-developed [20]. Monitoring observes the stakeholder's perceptions, expectations and requirements, which change over time due to their being subject to change, or unsuccessful engagement strategy [21], though sometimes stakeholders don't change and their attributes remain constant. Monitoring revives the feedback mechanism and provides early warning signs when issues arise in stakeholders' management. Therefore, a review can be conducted regularly (ideally at a maximum interval of three months), or in response to an arising or unplanned issue [21]. The review assesses if previous communications succeeded or not.

Concerning port ETP, monitoring and reviewing results can provide the port with an update on the status of the stakeholders, evaluate if previous communication strategies were efficient or not, and accordingly provides correction actions if required. Key performance indicators (KPIs) can be used to enhance the monitoring process. Once each stakeholder is reassessed, and their profiles are updated, the variance is spotted and also compared to the optimal status (target), or alternatively, a comparison between the old and new engagement index can be made. Of course, if the monitoring indicates that communications with stakeholders were effective and their attitudes were positive, the communication plan can be maintained; otherwise, it has to be changed or updated. It is worth noting that the review must take into consideration the whole environment surrounding ETP to make sure that the changes in stakeholders' profile resulted from communication plan effectiveness and not external circumstances.

6. Conclusion and recommendation

This report is important because it provided valuable information, insights, and guidelines on how to identify and manage stakeholders, which resulted in a holistic and non-exhaustive list of port stakeholders that can be engaged during the port energy transition projects (ETPs). The report discussed the applicability of the stakeholder circle method from the port perspective, i.e., the five steps (identify, prioritize, visualize, engage, and monitor). This cycle provides a holistic understanding of the stakeholders' needs, expectations, interests, power, legitimacy, proximity, and how to build a collaborative platform through the communication plans.

Mapping and understanding the stakeholder and being sensitive and responsive to them minimizes the use of their abusive powers, strengthens cooperation, and facilitates successful energy transition (planning, execution and construction, and operation). Mapping of stakeholders engaged in ports ETP is therefore required to be a transparent and dynamic process that verifies and builds understanding of stakeholders. Visualization of stakeholders and monitoring the effectiveness of communication and the status of stakeholders in terms of responsiveness to support the ETP and receptiveness to communications complement the whole stakeholders' management process. Ports that follow the framework of stakeholders' management would save time and costs during the planning, execution, and implementation of energy transition projects.

The whole process explained in this report increases the awareness of ports on the involvement and management of stakeholders, which builds understanding of all aspects related to stakeholders. It is worth noting that stakeholders are dynamics, i.e. they change, their power and interest change, and even their role change over the life cycle of the port ETP. The steps mentioned above, the stakeholders' management cycle – identification, prioritization, engagement, and communication plans – should not be a one-time event. It may become necessary to repeat these steps totally (proactive or reactive repetition), or repeat some parts while taking into consideration new changes due to the dynamics of the stakeholders. As such, this ultimately updates the stakeholders 'profiles. A complete and current view of the updated stakeholders' profile helps make the right decisions, for the right stakeholder, at the right time. As mentioned earlier, stakeholders might be individuals, groups, or organizations. The individuals, therefore, can be vital as they may represent a key group or organization. Weighing the importance of stakeholders is therefore important.

Based on the analysis conducted in this report, several implications and recommendations are gleaned and thus deemed important for ports to consider, which are as follows:

➢ It is important to include all stakeholders involved in the ETP life cycle, i.e., inception planning, design, procurement, execution and construction, completion, and operation. The stakeholders' management should be dynamic and continue during the whole life cycle of ETP, so stakeholders are managed during any time of the project.

➢ Communication with stakeholders and engaging them to discuss ETP issues build a proper platform for further cooperation, collaboration and coordination (The 3Cs). In fact, engaging

the stakeholders not only helps in understanding their needs and interests but also in listening to their expectations. A collaborative approach is, therefore, always encouraged, considering the representation of relevant stakeholders so data gathered would be rich and complete, working as input for further steps.

➢ The use of many approaches was identified in some steps; however, it becomes confusing if all the approaches are used at once. Only key ones that suit the port stakeholders' profile should be considered.

➢ As stakeholders' identification and management are valuable to ports, it is also beneficial for the stakeholders in that their rights and participation in decision-making are ensured. While ports engage the stakeholders and consider their interests, they should consider the ETP survival in terms of environmental and economic benefits, i.e., no compromise but a trade-off can be utilized.

➢ Managing stakeholders need to be conducted by expert and skillful team, considering it requires effort, experience, communication, monitoring, and review so the ETP can navigate calmly and successfully. It is better if the team does not change over the project period.

➢ Typically, the methods used to gather information and data about stakeholders tend to be subjective if it is only based on none stakeholder views, i.e. persons that are not real stakeholders such as port personal or managers assessment. Similarly, subjectivity increase when inconsistent approaches are used, which influence the results, for example, sending different questions to stakeholders and changing stakeholder management teams. Interviews with stakeholders, and surveys would minimize the subjective assumptions.

➢ Many stakeholders can be identified. In this report, 21 groups of stakeholders, including up to a hundred stakeholders, were deemed primary or secondary. It is, therefore important for ports to limit the number of stakeholders involved to those that are key (either primary or secondary) based on the prioritization and engagement steps results. Otherwise, the stakeholders' list may become exhaustive to manage and time-consuming.

➢ Port policy makers, e.g., port authorities, including the government, need to support the stakeholder management process and augment it with policies, regulations, and directions.

➢ Ports need to dedicate funds to support the stakeholder management process considering the efforts required and the team needed.

➢ The identified stakeholders are relevant not only to the energy transition but also to other ports sustainability or construction projects

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