

DOI: 10.5281/zenodo.113225113

A REVIEW INTO RESIDENTS' SALIENCE AND PRAGMATIC EXPECTATIONS OF NORWEGIAN FLOATING OFFSHORE WIND FARMS DEVELOPMENT

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Received: 27/05/2025
Accepted: 27/08/2025

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ABSTRACT

This study investigates how people living near Norway's floating offshore wind farms judge legitimacy, notice who matters, and deal with tiredness from constant outreach. It asks what practical rules and shifting power among affected groups do to support green energy, while also weighing worries about over-consulting and policy demands for sustainability. An integrative literature review was carried out, pulling together ideas and data from strategic management, environmental science, behaviour studies, and choice research. Using a step-by-step screening process, the team mined Scopus and double-checked with Google Scholar to gather peer-reviewed papers, models, and real-world cases. Works were kept only if they met strict academic standards, spoke to the Norwegian sea space, and appeared in high-quality lists such as Scimago, ABDC, or Kanaltregisteret. Boolean strings then filtered results by theme, ensuring nothing vital was missed. The review shows the public now watches offshore wind projects closely, weighing practical factors such as jobs, local dialogue, and green trade-offs before giving support. Their sense of relevance hinges on proximity, power, and urgency, so engagement must match these cues to feel meaningful. Most striking is the rise of engagement fatigue, suggesting that repeated or half-hearted sessions quickly lose impact. Because this work relies solely on desk study of published literature, it draws no fresh survey or interview data and inevitably mirrors the depth and gaps of earlier studies. Even so, the overview lays a solid conceptual base that later researchers can test with hands-on fieldwork and use to build new governance models for renewable energy. Findings remind policy makers and project developers that chasing formal legitimacy must go hand in hand with genuine, workable plans for involving stakeholders. The Engagement Salience Model (ESM) offers a flexible, site-specific roadmap that scales up or down as needed, proving especially useful for new offshore energy schemes. By merging legitimacy theory and stakeholder salience, the review carves out fresh ground for floating offshore wind research, spotlighting Norway in particular. Its treatment of engagement fatigue, along with the scale-able ESM, advances both theory and day-to-day governance of sustainable-energy change.

KEYWORDS: Floating Offshore Wind Energy, Sustainability Development Goals, Legitimacy Theory, Pragmatic Legitimacy, Stakeholder Salience, and Stakeholder Engagement Fatigue.

1. INTRODUCTION

The globalisation of the offshore renewable energy (RE) industry has been advanced by substantial investment and research endeavours (Clark & DuPont, 2018; Weiss *et al.*, 2018). This industry is projected to emerge as a major contributor to global electricity generation, promoting ecological, societal, and economic values through clean energy production (Evans, 1976). In addition, it diminishes reliance on energy imports and nurtures the economy in maritime and remote territories (Clark & DuPont, 2018; Evans, 1976). Thanks to recent advances in technology, along with public policies and incentivisation supporting such developments (Weiss *et al.*, 2018), the sector is expanding into more remote offshore regions and conducting operations in more complex ocean settings (López *et al.*, 2015; Zheng *et al.*, 2018).

However, when coastal areas undergo increased industrialisation of energy infrastructures, the spatial landscapes and oceanic habitats are altered (Firestone *et al.*, 2015), which causes ecological and social strains (Abramic *et al.*, 2022; Van Berkel *et al.*, 2020). This has provoked increased attention to literature investigating how offshore industrialisation exacerbates rivalries over maritime space utilisations and contributes to probable conflicts with current end users and surrounding communities. In addition, increased attention is being given to joint ownership and justice in distribution issues, which impact the societal acceptance of such projects and are also considered crucial aspects in successfully expanding and governing offshore renewable technologies (Ponce Oliva *et al.*, 2024). As of 2018, the predominant reason for the failure or hindrance of infrastructure projects, as reported by global industry experts, is public opposition, which constitutes 25% of the third most significant cause (statista, 2024). In the RE context, Conflicts over land and opposition from community members are becoming more widely acknowledged as major obstacles to the prompt execution of clean energy projects and grid initiatives (World Economic Forum, 2023). When the public opposes a RE project, it usually results in more stringent regulations that make it more challenging to execute, while public acceptance, on the other hand, encourages less turbulent development with fewer restrictive conditions (NREL, 2024).

Despite the growing body of literature on community acceptance of offshore RE (Billing *et al.*, 2022; Cranmer *et al.*, 2020; Getor *et al.*, 2022; Skjølsvold *et al.*, 2024; Walker *et al.*, 2014), there is

limited research investigating public pragmatic expectations of this type of energy. According to Wüstenhagen *et al.* (2007), “residence acceptance behaviour” pertains to local stakeholders’ definitive approval of location decisions and RE initiatives, specifically from residents and local authorities. Like other aspects of community acceptance, examining stakeholders’ pragmatic expectations may impact the possibility of disputes emerging in large-scale energy projects, especially renewables. Such expectations can be impacted by the environmental, economic, and social outcomes of offshore RE developments (Boudet, 2019; Dehler-Holland *et al.*, 2021), particularly floating offshore wind energy (FOWE) development (Farr *et al.*, 2021; Nytte *et al.*, 2024). Thus, a deeper understanding is needed of residents’ perceptions and pragmatic expectations of offshore wind energy (OWE) (Boudet, 2019; Nytte *et al.*, 2024; Vasstrøm & Lysgård, 2024), as well as pragmatic expectations association with residents engagement frameworks (Klein *et al.*, 2020) and the impact on community acceptance behaviour and management decisions (Le Maitre *et al.*, 2024; Song *et al.*, 2024).

The absence of an in-depth understanding of the above-highlighted aspects can impose additional obstacles on the decision-maker processes in FOWE development. Maienza *et al.* (Maienza *et al.*, 2022) elucidated the negative consequences of this knowledge gap and how it increases the chances of insufficiency in engagement practices. Several studies of cross-regional OWE developments revealed how poor engagement can likely spark conflicts among stakeholders towards spatial interest (M. Lange & Cummins, 2021; Schupp *et al.*, 2021), thereby provoking a sense of illegitimacy and energy injustice (Jenkins *et al.*, 2016; Park *et al.*, 2024), which instigates prolonged public opposition towards WE projects (Borch *et al.*, 2020; Goldner, 2023; C.-K. Kim *et al.*, 2018; E.-S. Kim & Chung, 2019; Langer *et al.*, 2017; Park *et al.*, 2024; Vasstrøm & Lysgård, 2024; Walker *et al.*, 2014). Such opposition contributes to collective resistance, which evidently hampers the deployment and survival of WE projects in different regions, even suspending such initiatives (J.-H. Kim *et al.*, 2021; Sun *et al.*, 2012; Westerberg *et al.*, 2015).

This review will investigate residents’ perceptions of pragmatic legitimacy and determine what elements influence this legitimacy in Norwegian FOWE development and how this can impact FOWE management decisions. Furthermore, this study will assess the relationship between pragmatic legitimacy and the frequency of resident

engagement in shaping proponent behaviours towards FOWE development in their states. This study will nevertheless address the possible adverse side of floating offshore wind developers' engagement with residents and the potential for fatigue due to participation frequency, and accordingly propose a theoretical extended matrix and a novel engagement scale model that integrate existing theories and can inform industry managerial recommendations for promoting pragmatic legitimacy among residents during FOWE development, with consideration for the potential for engagement fatigue. Based on this, **this review seeks to address aforementioned gaps through the subsequent research questions**

RQ1: Can the environmental and social trade-offs of floating offshore wind energy developments be balanced against the value they bring?

RQ2: In what sense do past interactions with offshore and onshore wind energy infrastructure shape Norwegian perspectives on floating offshore wind energy developments site locations?

RQ3: Can the pragmatic legitimacy perceived by residents influence development decisions related to FOWE farms in Norway?

RQ4: Do the variations in residents' stakeholder salience and attributes impact the development of FOWE?

2. METHODOLOGY

This study employs an integrative literature review methodology to synthesise developing theories and empirical findings regarding residents' perspectives on pragmatic legitimacy, stakeholder salience, and engagement fatigue within the context of FOWE developments in the Norwegian region. The methodology adhered to a stringent multi-phase process aimed at confirming academic authenticity, relevance, and disciplinary profundity. The review thus depended on an in-depth investigation of manuscripts with peer review, theoretical models, and case studies from prominent journals (Sekaran & Bougie, 2013). This included themes within the fields of strategic management, environmental science, decision-making science, and behavioural science. The databases examined included Scopus, supplemented by searches on Google Scholar for literature with significant citations.

Search review data collection strategy comprised a combined Boolean operator reach keys

"floating offshore wind energy", "floating offshore wind farms", "floating offshore wind power", "offshore wind", "onshore wind", "stakeholder engagement", "stakeholder participation", "stakeholder involvement", "community engagement", "stakeholder salience", "stakeholder salience dynamics", "engagement frequency", "stakeholder proximity", "salience framework", "salience model", "stakeholder theory", "legitimacy theory", "pragmatic legitimacy", "Norway", "acceptance", "acceptability behaviour", "residents' perceptions", "social impact", "environmental impact", "economic impact", "engagement fatigue", "renewables", and "renewable energy acceptance".

2.1. Eligibility Inclusion Criteria

To guarantee high theoretical and contextual applicability, **studies were comprised based on the following eligibility measures**

- Academic sources including articles, review papers, and empirical studies from (Q1-ranked journals as per Scimago Journal Rank), A* journals (as per the Australian Business Deans Council (ABDC), and those classified as level 2 or 1 (as per the Norwegian Register for Scientific Journals, Series, and Publishers, "Kanalregisteret"). (See Appendix table 1 and table 2)
- Non-academic sources (Government of Norway – Regjeringen.no, NREL, IRENA, WFO Global, UNEP, Statista, NASA Climate Data, WeForum, Ørsted, ORE Catapult, CBS News, and Portwind).
- Contextual and geographical alignment with Norwegian, Scandinavian, Nordic regions or comparable European, American and Asian offshore renewable energy environments.

3. LITERATURE REVIEW

3.1. How it All Started

Recently, Renewable Energy (RE) has gained widespread attention, and its conception was agreed upon in various academic and non-academic applications (Harjanne & Korhonen, 2019). The Intergovernmental Panel on Climate Change (IPCC-WGIII, 2007) describes RE as power derived from natural processes that do not emit carbon emissions, such as offshore and onshore wind, solar-photovoltaics, geothermal heat, hydropower (e.g., waves and tides), and biomass. The roots of RE exploration can be traced back millennia to ancient civilisations (Belessiotis & Delyannis, 2000; Sørensen, 1991). Before fossil fuels became possible on a large

scale during the industrial and urbanisation revolution (Poumanyong & Kaneko, 2010; Q. Wang *et al.*, 2020), there were no alternatives to RE (Sørensen, 1991).

As over the years, economic growth, urbanisation, foreign direct investment, technological advancement, rise in population, industrial and daily human-related activities, climate change all have elevated energy production, turning into double-edged swords! On one hand, it markedly improved the communities' living standards, while conversely, this progress has been paralleled by an escalation of greenhouse gas (GHG) emissions (Poumanyong & Kaneko, 2010; Q. Wang *et al.*, 2020), elevated atmospheric CO₂ by 50% since the industrial era three centuries ago, as it has now hit 150% of its levels in the 18th century (NASA, 2024). This in addition to the energy, solid and water waste (Y.-C. Chen, 2018; Sheng *et al.*, 2020), and acoustic pollution increase (S. Chen *et al.*, 2024; Te Velde *et al.*, 2024). All of which have had devastating outcomes ranging from human health issues to extreme weather occurrences and fatalities. Consequently, the maturing of such threats has nudged for the adoption of RE along with other fundamental measures, which have been identified as a vital strategy towards achieving carbon neutrality and preserving natural resources (Adebayo & Ullah, 2024; Hernández Soto, 2024; Pata *et al.*, 2023; Sharif *et al.*, 2023; Xing *et al.*, 2024). As of 2023, about 13% of the world's electricity accounts for RE, reaching 20.8 terawatts (20,800 TWh) (IEA, 2024).

3.2. From Wind Energy (WE) to Floating Offshore Wind Energy (FOWE) Developments

Wind energy (WE), in particular, has a long, noteworthy history, and has been vastly exploited throughout the Mediterranean region for the past five thousand years (Kaldellis & Zafirakis, 2011; Kranzberg & Singer, 1960). There is also evidence that less advanced wind technology, notably windmills, was used in India about 2500 years ago (Lambton, 1969). Sometime around 200 BC, WE evolved further, with the advancement of vertical-axis windmills within the Persian–Afghan borders, and later, between 1300–1875 AD, horizontal-axis windmills gained popularity in the Netherlands and the Mediterranean region (Fleming & Probert, 1984; Musgrove, 2010). In the US, WE systems underwent a revolutionary breakthrough during the 19th century, and in 1888, the first 12 kW low-speed and high-solidity wind turbine was installed in Cleveland, Ohio. Towards the late stages of WWI,

Denmark embraced this innovation and widely adopted 25 kW wind turbines (Kaldellis & Zafirakis, 2011).

Modern WE generation consists of onshore and offshore wind turbine farms, corresponding to terrestrial and sea variations in winds (Li *et al.*, 2020). OWE, as described by Pérez-Collazo *et al.* (2015), is the electricity derived from wind in maritime environments, including waves, tides, coastal currents, sea surface temperature variations, and salinity gradients. OWE turbines are installed on the seabed, with structural foundations such as jackets, monopiles, or gravity. They are generally deployed in shallow waters that do not exceed 60 metres in depth. These turbines transform wind energy into mechanical force and produce electricity, which can then be injected into electric power lines, including battery-charging circuits, household systems, extensive utility grids, and isolated networks (Manwell *et al.*, 2009). OWE, and specifically FOWE, is the primary focus of this review study.

Importantly, only a few decades have passed since these revolutionary technologies were introduced. In 1991, the Vindeby OWE in Denmark was the first offshore wind farm in the world to establish a grid connection (Feng & Shen, 2017). OWE has increased over the years, with worldwide offshore wind power capacity reaching 72,663 MW in 2023 (Statista, 2024a). Thus, although OWE remains an emerging field, it has undergone noteworthy developments in a short time. Thanks to technological innovations and financial expertise, OWE growth has accelerated, notably through the expansion of turbine sizes, dramatically lowering electricity costs (Shields *et al.*, 2021) and thereby cutting capital expenses (Beiter *et al.*, 2023).

The progress of the OWE industry developments has not stopped there; it has continued to expand. FOWE turbines can be moored and anchored at depths of approximately 1000 metres (Farr *et al.*, 2021), facilitating broader geographical reach and accessing areas with more consistent and elevated wind conditions than fixed-bottom turbines.

The core raw materials utilised in constructing FOWE substructures are concrete and steel, as the towers and turbines are primarily derived from fixed-bottom OWE, albeit with minor changes (IRENA, 2024). To optimise the turbines' durability in storms, FOWE systems feature a novel co-designed control system for both the structure of the tower and the platform (Efthimiou & Mehta, 2022). A mooring system strengthens the structural stability and guarantees that the foundation remains

anchored to a specified on-site point of reference. This is attained by transferring the generated stresses from the foundation to the seabed utilising mooring lines (known as tendons) with an anchor (IRENA, 2024). FOWE cablings are engineered to remain resilient to saltwater while maintaining elasticity under significant fatigue loads, allowing them to withstand the shifting motions of the floating substructure resulting from waves, wind, and currents (IRENA, 2024).

In contrast to fixed-bottom OWE, FOWT's six degrees of freedom in platform movement leads to heightened vulnerability to wind and wave forces, thereby compromising these platforms' stability. Thus, particular attention has been placed on the stability of the substructure (the foundation supporting the turbine) and the control mechanism (which regulates movement and operation) (Grant et al., 2023).

There are four prominent archetypes of FOWE substructures (Chuang et al., 2021; IRENA, 2024). The first is the spar-buoy platform, which is characterised by its massive cylindrical form and significant draught depth, which offer stability by positioning the buoyancy core beyond the centre of mass while maintaining a denser bottom section and a lighter upper portion. The second is the semi-submersible platform, which consists of three to five vertical columns interconnected by submerged pontoons for buoyancy applications, delivering gravitational stabilisation and hydrostatic steadiness. The third type is the tension-leg, known for its lightweight platform, which requires less ocean space and thus has an alleviated footprint, as it contains an underwater buoyant frame and a taut-leg anchoring mechanism (vertical tendons) to augment buoyancy and stabilisation. Finally, barges are ring-shaped structures featuring a central pool (known as the moon pool). These utilise extensive, loaded water plane surfaces and evenly spread buoyancy, which helps mitigate wave forces and decreases the motion of the floater.

3.3. Values Created and Trade-offs

Offshore wind technologies provide substantial value. One of the main benefits is the potential to deliver carbon-free electricity on a considerable scale, significantly contributing to minimising carbon dioxide emissions and mitigating climate change (Glasson et al., 2022). The Walney Extension in the Irish Sea is one of the largest offshore wind farms worldwide. This mega project conducts enough clean energy to power nearly 600,000 homes (Ørsted, 2017). By 2050, worldwide WE, in

conjunction with electrification, could make up for more than 25% of overall CO₂ reductions, decreasing emissions by around 6.3 gigatonnes yearly (IRENA, 2019) and helping to achieve affordable and clean energy as per sustainable development goal 7 (UNDP, 2018).

The creation of jobs in the OWE supply chain and operational domain is another fundamental benefit (Allan & Ross, 2019; Dinh & McKeogh, 2019). As fossil fuel industries gradually shrink, the ongoing expansion of OWE projects can provide employment opportunities, particularly for personnel skilled in construction, engineering, operation, and maintenance. These workers can thus retain their livelihoods/careers by transitioning to the growing RE field in roles that correspond to their expertise (Swilling, 2019). In 2023, the worldwide WE market employed 1.46 million individuals (Statista, 2024b), and in 2020, the OWE sector alone hired 22,000 workers in maintenance and operation, with forecasts signifying a rise to 177,000 jobs by the year 2030 (Statista, 2023).

OWE further benefits the economy via energy import avoidance, which reduces the need to import energy from other nations (Ghorbani Pashakolaie et al., 2024). In other words, it comprises benefits across the "energy trilemma," such as lowering the need for importing oil, gas, and coal, which enhances the equity and security of national energy (Ortega-Izquierdo & Del Río, 2016; Sovacool, 2013). In addition, it can contribute to long-term energy affordability and improve the balance of payments by mitigating the effects of fluctuating prices in inconsistent fossil fuel markets (Adom et al., 2021; Zhao et al., 2022) and eliminating the likelihood of energy supply disruption (IEA, 2019).

However, While OWE has many benefits, it also poses, significant challenges for the environment and residents. Factors such as farms and substation installation, seabed foundations, commissioning, operation, and maintenance (C et al., 2021), including decommissioning acoustics and vibration (R et al., 2022), proliferated subsea cables and augmented electromagnetic field emissions (Van Berkel et al., 2020), end-of-life blade disposal of composites that lack sustainable waste/recycling solution (Lichtenegger et al., 2020), direct/indirect harm to the atmosphere, marine ecosystems, and aerial and benthic species (L. Wang et al., 2024). In addition, massive offshore wind turbines can impact the natural landscape (Gkeka-Serpetsidaki et al., 2022). Another challenge is that mass OWE farm space is exposed to collision hazards from passing commercial ships or infield-service vessels (Moulas

et al., 2017). Furthermore, OWE can cause aquatic bird displacement from breeding habitat alteration or changed flight routes or mortality caused by turbines' blades (Croll et al., 2022; Furness et al., 2013) (see Figure-1).

Despite OWE's growing market, it suffers from limited job offerings (Aldieri et al., 2019). Its workforce operates in notoriously demanding, stressful, hazardous, and harsh conditions (Nielsen et al., 2013; Parkes, 1998), as OWE farms are strategically situated in isolated maritime zones and thus exposed to storms, freezing winds, and cold saltwater wave spray. These factors can severely impact human capabilities and physical health

(Olsen, 2024) and can lead to fatalities from injuries (D. Mitchell et al., 2022) and hypothermia from heat loss (Deacon et al., 2010; Olsen, 2024), necessitating extensive safety/self-recovery training (ORE Catapult, 2014) (see Figure 1). Furthermore, Mette et al. (2018) underscored potential mental health implications associated with OWE occupations, as such work comprises on-call duties and excessive workloads, including, for example, night shifts or 14 consecutive working days, which contribute to substantial fatigue and deteriorated sleep quality resulting from consistent noise and platform vibrations.

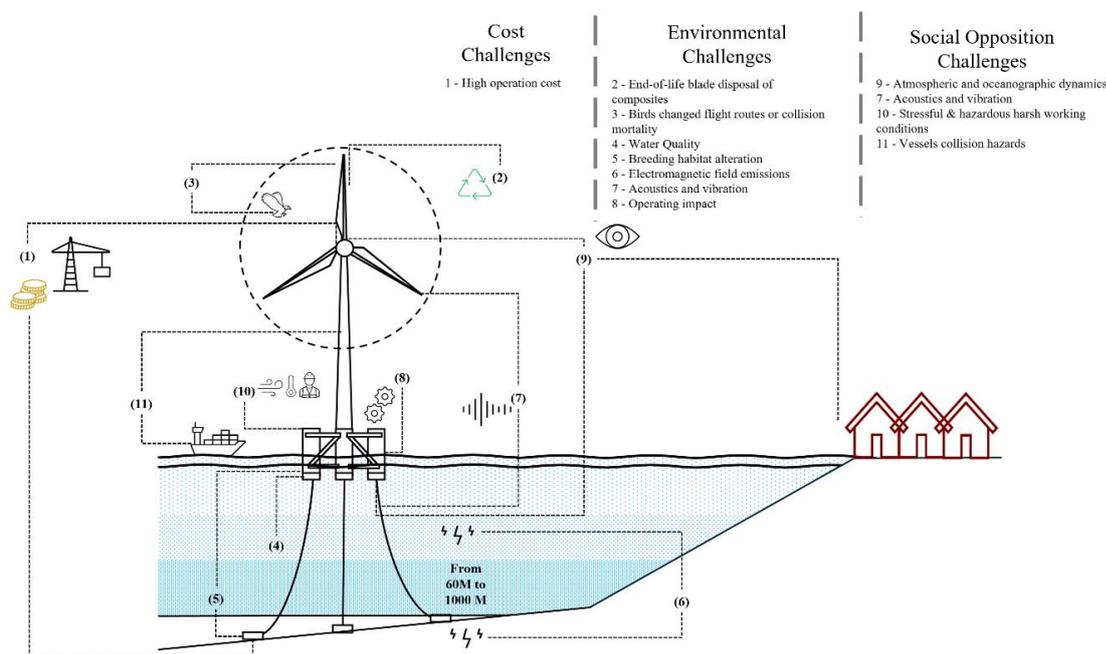


Figure 1: Challenges Emerging from FOWE Developments.

3.4. FOWE Developments Implications Impact on Residents' Behaviour

Attitudes toward FOWE are usually shaped by past experiences and exposure, proximity, and familiarity of benefits and similar technologies people holds, such as OWE and offshore oil platforms (Nytte et al., 2024). While distinct in its floating characteristics, FOWE exhibits technological similarities with fixed-bottom OWE, especially in turbine design (IRENA, 2024). OWE impacts both the environment and the workforce; thus, large-scale offshore developments also impact the ecosystem, marine, and human residents. Many residents are emotionally attached to specific locations (Kaltenborn et al., 2023), and several studies have highlighted concerns related to acoustic disturbances (Firestone et al., 2015) and the

visual intrusion of OWE, which some see as not fitting the landscape, especially around houses and cottages. Indeed, in some circumstances, these visuals have caused a reduction in housing prices (Betakova et al., 2015; Chang, 2015; Virtanen et al., 2022). Similarly, the presence of OWE farms in close proximity to nationally noteworthy UNESCO World Heritage sites is perceived as damaging and disruptive to the landscape's aesthetic harmony (Virtanen et al., 2022). Such alterations in the landscape further affect recreational boating and boaters, diminishing the appeal of the farms (Dalton et al., 2020).

Moura Carneiro et al. (2013) underscored how possible accidents can occur on OWE farms which can result in human injury, fatality, or property damage due to fire, transportation issues, icing, or

structural and blade failures, such as the collapse or detachment of components. Other studies have identified potential conflicts related to OWE, for example, the utilisation of marine space alongside activities (Zhang et al., 2017) such as maritime transportation, fishing, and coastal tourism (Abramic et al., 2022; Song et al., 2024; Spijkerboer et al., 2020; Westerberg et al., 2013). Such situations raise concerns regarding procedural justice among developers and other stakeholders associated with the aforementioned activities, who often feel overlooked and disengaged from the project's progress (Park et al., 2024). Any adverse impacts can provoke opposition from residents and fishermen (Iwata et al., 2023); failing to engage and achieve a mutual understanding with these key players regarding the benefits of OWE may spark further resistance towards its expansion (Langer et al., 2017; Walker et al., 2014).

3.5. FOWE Developments in the Norwegian Spatial and Community Contexts

Norway is a renowned maritime nation. The country has one of the most extended coastlines, which is shaped by vast fjords and islands. On average, the majority of waters surpass 60 metres in depth (Nytte et al., 2024), and coastal area wind speeds can reach 30m/s (108km/h) in extreme conditions (PortWind, 2025). In Norway, the maritime sector accounts for nearly 70% of the nation's export earnings (Government of Norway, 2021), positioning itself at the forefront of varied offshore industries, including aquafarming, wind energy, offshore drilling, shipping, and carbon storage, and serves as a hub for advanced testing facilities such as the METCentre, which conducts research and development for FOWE. It thus makes an optimal environment for groundbreaking FOWE developments, such as the Hywind Tampen project in the Norwegian North Sea, where the constant ambient wind speed is about 10 m/s, providing a favourable setting for efficient WE power generation (Tenggren et al., 2020).

Norwegians, as a community, are characterised by their deep-rooted values and appreciation for maritime heritage. However, they show mixed attitudes towards RE proposals, particularly in relation to the advancement of FOWE. Empirical studies on Norwegian WE have found that community attitudes towards such technologies, whether favourable or opposing, are shaped by numerous interrelated aspects, including the attributes and spatial proximity of the project (Lutzeyer et al., 2018); residents' prior experience

with and exposure to WE turbines (Ladenburg, 2009; Nytte et al., 2024), perceptions of value creation (Linnerud et al., 2022), and emotional attachment to a location (Kaltenborn et al., 2023); public engagement initiatives (Nytte et al., 2024), green energy justice, and equitable treatment of local interests (Eikeland et al., 2023; Mósesdóttir, 2024; Saglie et al., 2020). Less positive attitudes towards FOWE are likely influenced by unfavourable experiences with onshore wind infrastructure (Cranmer et al., 2020; Hevia-Koch & Ladenburg, 2019; Ladenburg, 2009). The majority of Norwegians prefer to relocate WE projects to more remote sites (Linnerud et al., 2022).

3.6. Theoretical Framework

3.6.1. Pragmatic Legitimacy Perceived by the Residents and the Role of Stakeholder Engagement

This study's theoretical foundation is grounded in the legitimacy theory, more explicitly contextualised in the pragmatic legitimacy, where legitimacy is defined as an entity's actions that are perceived generally as appropriate and acceptable according to the societal framework of beliefs, values, meanings and rules of a given society (Ginzel et al., 1992; Neilsen & Rao, 1987; Suchman, 1995). Pragmatic legitimacy is the active evaluation of the anticipated value that a corporation will deliver to its key stakeholders, which involves direct interactions and exchanges between corporations and stakeholders (Suchman, 1995). The evaluation of anticipated value can vary from stakeholder to stakeholder, as well as based on geographic location, as opposition or acceptance for a particular initiative/project can emerge based on its benefits.

Rohe and Chlebna (2020) examined wind energy installations, highlighting a split in perception, where farms' decision-makers expectation for the project is to bring financial benefits and economic growth to their communities, while some residents view these installations projects as illegitimate and unfair practises, in which these companies primarily optimise their own payoffs, and conversely, others, including some people from other locations or local and international entities who are deemed beneficiaries of such initiatives, may display a more supportive evaluation.

Demonstrating its practical benefits, such as carbon-free electricity, employment creation, and economic output, is crucial in the WE sector to gain acceptance, legitimacy, and trust. MacKinnon et al. (2022) clarified this notion in their study on the

Hywind floating wind power project, elucidating how it gradually received practical acceptance through various phases. The project, in the initial stages, showed that it was capable of standing independently against the oil and gas industry; its success both domestic and overseas further solidified its acceptance (MacKinnon *et al.*, 2022). The study further revealed that Hywind Scotland's project's successful execution gained international recognition. This global success concurrently led to foreign legitimacy's reintegration into Norway, reinforcing their domestic acceptance of FOWE technology adoption (MacKinnon *et al.*, 2022).

Chlebna and Mattes (2020) highlighted how WE in Oldenburg earned greater pragmatic legitimacy through interaction and influence, notably through building trusting relationships among local actors. Conflicts were rectified early through these networks, without state interference. These findings draw attention to the criticality of acquiring pragmatic legitimacy for WE project through community participation, transparency, and the validation of different stakeholders' environmental, social, and economic values.

3.6.2. *The Conception of Engagement*

Freeman (2010 p. 53) defined stakeholders as "any group or individual who can affect or is affected by the achievement of an organization's purpose". In this context, the concept of engaging stakeholders has been theorised from many vantage points and across various studies. Sloan (2009) broadly described the concept of stakeholder engagement as a method of incorporating individuals and groups impacted by or able to impact the actions of a business. More narrowly, Phillips (1997) asserted that stakeholder engagement implies proactive involvement from people or organisations in a mutually advantageous system, which qualifies them as key stakeholders and grants them privileges beyond what can be given to non-stakeholders. Building on this, Greenwood (2007) defined stakeholder engagement as a strategic process by a corporation that encourages taking steps to meaningfully involve key parties in its day-to-day decisions.

This study draws on Greenwood's definition of stakeholder engagement, as its methodical and process-orientated nature coincides with the research aims and will thus facilitate a systematic assessment of public participation. Systematising the engagement through a carefully structured process will strengthen the probability of identifying and addressing the interests of all

affected stakeholders in a more purposeful and strategic manner, while also providing a more organised route for analysing the common values firms are willing to maintain (Franklin, 2020). Clayton (2014) underscored five fundamental steps of the engagement process 1) distinguishing stakeholders from the non-stakeholders, 2) analysing stakeholders and mapping them based on their level of influence (i.e., whether they are opponents or proponents), 3) planning the engagement campaigns, 4) executing, and 5) monitoring and controlling.

It is worth emphasising that in sectors that are deemed young and characterised by high technological complexity – such as FOWE – conflict among key players and groups is anticipated. Stakeholders' behaviours towards corporate initiatives in such environments fluctuates with perceived values and externalities; thus, achieving consensus can be problematic (Banerjee & Bonnefous, 2011). For this reason, it is crucial for decision-makers to carefully analyse, map, and cluster stakeholders with consideration for the various attributes and factors associated with the individuals involved and impacted by a project to construct a comprehensive analysis.

Building on this concept, this study adopts Mitchell's (1997) model of stakeholder salience, which emphasizes the extent to which managers give priority and attention to competing stakeholder claims. It considers the identification of multiple attributes of key stakeholders, such as power, urgency, and legitimacy, irrespective of the outcomes. According to Dahl (1957) and Pfeffer (1981), the attribute of power implies a single social actor or group exerting force by coercing another to engage in acts they would not have performed autonomously. Power can be divided into utilitarian or monetary, normative based on social authority, and coercive and power of force (Etzioni, 1964). Meanwhile, urgency, as reasoned by Mitroff (1983), is the critical nature or serious perception of a situation that might be flagged as a risk, mandating instantaneous action. Legitimacy has been described by Suchman (1995) and Weber (1947) as the belief that an institution's judgements are acceptable or appropriate within a framework of social norms and values, which can be subcategorised into pragmatic, moral, and cognitive.

While new attributes have been suggested over the decades for this study's context and due to the unique nature of FOWE developments, the attributes of proximity and frequency of contact will be incorporated. Proximity, as explained by Bourne

and Walker (2008), is the extent of stakeholder spatial and relational engagement in a project, in addition to the closeness in concept, activity or "field" of operation (Bansal & Roth, 2000). The attribute of frequency corresponds to the consistency of a connection and the volume of recurrence of interactions with stakeholders (Ojala & Luoma-aho, 2008), including the degree to which personal direct or remote encounters occur.

The notion of engagement comprises more than merely a conventional or single interaction method with key players who may be affected by or affect a project. Instead, it includes hybrid engagement strategies that couple in-person dialogues (e.g., focus groups and direct consultation) with remote communication through digital channels (social media, virtual reality, gamified applications, simulations, etc.), ensuring more holistically integrated participation from individuals in varying conditions or proximity to the project.

3.6.3 Residents' Behavioural Dynamics in FOWE Developments

In strategic decision-making, corporate and project leaders must assess the scope of the attention they allocate to key players based on an analysis of the attributes associated with these individuals or groups and direct their focus towards those they consider the most salient. Mitchell et al. (1997) conceptualised this notion as encompassing three distinct classes of stakeholders. The lowest salience class of stakeholders are referred to as latent due to a latent association with the corporation (i.e., dormant, discretionary, or demanding) and possession of only one of the three attributes (power, urgency, or legitimacy). The second class, expectant, are moderately salient and possesses any two of the three attributes (dominant, discretionary, or dependent), leading to elevated responsiveness from the corporation. Definitive, highly salient stakeholders demonstrate the blend of all attributes. In this study theme, all five aforementioned attributes will be analysed and mapped (See figure 2).

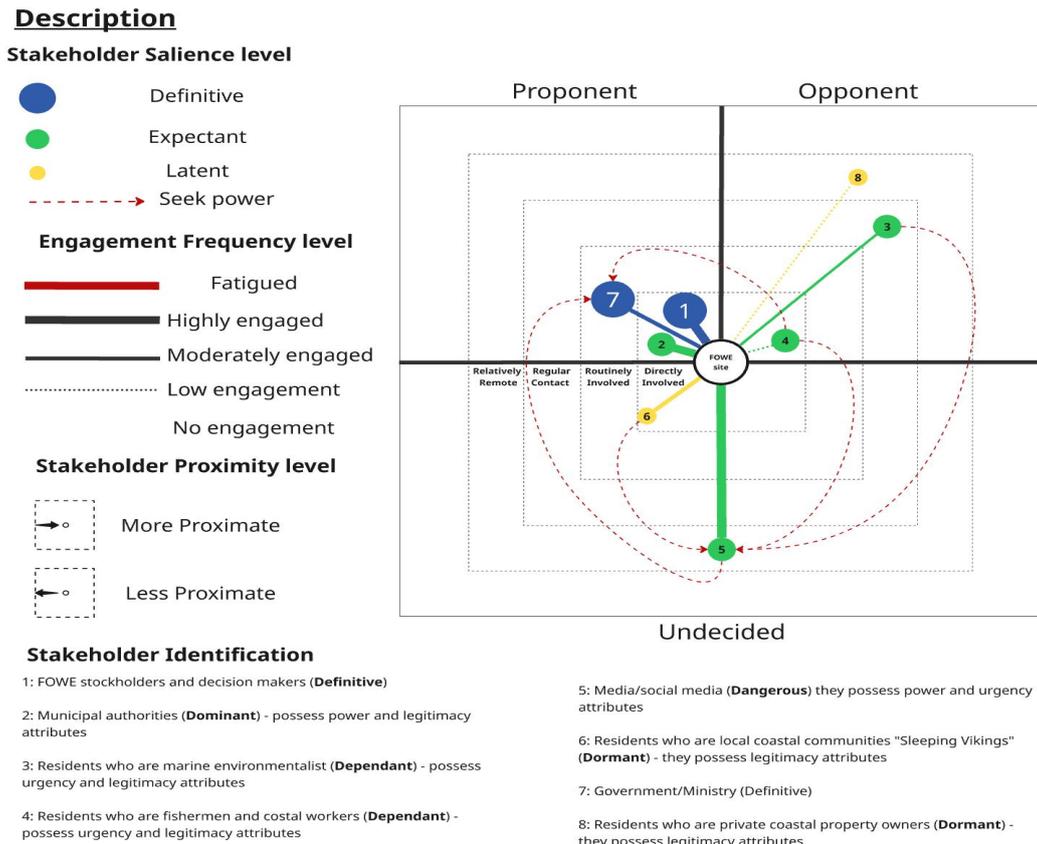


Figure 2: An Extension of Clayton's (2014) Stakeholder Matrix With the Integration of Five Salience Attributes.

During stakeholder analysis, decision-makers should consider that attributes related to

stakeholder salience levels and their behaviour towards corporate practices may change

unexpectedly due to various circumstances and implications throughout the project lifecycle. For example, a latent-level stakeholder may increase their salience position to expectant by obtaining a previously absent attribute and gaining influence from a more salient actor. They may then transition further from expectant to definitive status (R. K. Mitchell *et al.*, 1997). In many circumstances, when stakeholders assert their rights in contexts such as coalitions and political or environmental initiatives, they may use the power of coerciveness, which can escalate to violence (Glaser, 2012; R. K. Mitchell *et al.*, 1997), or resort to attracting media attention, thereby subjecting the corporative practises to significant negative exposure (Friedman, 2011).

Residents' behaviours are the reactions to certain initiatives of individuals situated within the zone where an endeavour takes place. These endeavours are FOWE projects, while residents are people who are physically present in a particular region for a fixed and continuous period as opposed to a temporary stay (McClellan, 1962). Behaviour, as described by Maze (2019), is the complex relationship between internally influencing acts and psychological processes and specific circumstances that drive people; this stands in contrast to attributing such acts exclusively to conscious decision-making.

Residents' attitudes towards FOWE, whether opposing or supportive, can influence a project's development and survival. Stakeholders who are against FOWE development are referred to as "FOWE-Opponents", while supporters are "FOWE-Proponents"; "Undecided" is used to refer to those who display no reaction or have yet to take a stance.

FOWE-Opponents are stakeholders, specifically residents, who present negative behaviour. It is likely that they consider the development of offshore wind farms illegitimate and unjust (Jenkins *et al.*, 2016). These opponents can extend into symbolic or coercive dimensions, thereby adding to their salience level. Thus, their enhanced salience can result in actions that may damage a project's reputation and ultimately jeopardise the entire development endeavour.

A concrete instance of stakeholder opponent behaviour emerged during the considerable expansion of WE along Norway's coastline between 2016–2019, which provoked collective stakeholder concerns related to landscape and wildlife preservation, particularly from residents, Sami communities, and environmental advocates. The gradual intensity of the resistance led to significant protest movements known as "Let Nature Live" and

"Headwind", both of which gained traction at national and territorial scales and resulted in the suspension of a new WE licence in 2019 (Vasstrøm & Lysgård, 2024). A similar act occurred at the New Jersey State House, where protestors gathered to urge an end to OWE construction because of marine mammal strandings. Although the movement initially lacked power, more than 500,000 signatures were collected, effectively tying the issue to pre-construction operations (Goldner, 2023). Such controversies can gain momentum in the media, which becomes as an avenue for opponents to voice their concerns. Borch *et al.* (2020) explained that digital engines have been a significant factor in shaping public viewpoint and opposition towards the Danish WE projects, leading to complications that have driven implementation setbacks despite evident support from the public.

FOWE-Proponents are individuals who advocate for offshore RE technologies and whose support is rooted in the perception of the ocean as a resource to be utilised (Bansal & Roth, 2000; Glaser, 2012; Ojala & Luoma-aho, 2008). FOWE-Proponents can effectively contribute in the FOWE development project success by expressing their support on social media, in public forums, and at community engagements, as well as by voting for proposals or political candidates that prioritise such developments. The Undecided group includes those who do not possess an explicit viewpoint about the nature of energy (Banerjee & Bonnefous, 2011). These stakeholders are akin to a sword that cuts both ways. Since their interpretation of the environmental, economic, social, and visual implications of OWE influences their behaviour with regard to its development, they may either turn against it (Iwata *et al.*, 2023; Langer *et al.*, 2017; Walker *et al.*, 2014) or, with a certain level of familiarisation, their opposing views can be minimised (Penneman *et al.*, 2023). Such comprehension can be shaped by engagement strategies (Dwyer & Bidwell, 2019) and the level of continues debate with project developers (Bush & Hoagland, 2016).

4. DISCUSSION, LIMITATIONS AND CONCLUSION

The existing literature on FOWE centres chiefly around investigating how residents' prior experiences with offshore and onshore wind turbine infrastructure influence their acceptability behaviour towards such developments (Ladenburg, 2009; Nytte *et al.*, 2024), particularly with regard to noise disturbances, visual interference, ecosystems

(Croll et al., 2022; Furness et al., 2013; Gkeka-Serpetsidaki et al., 2022; Moulas et al., 2017), ocean space utilisation (Zhang et al., 2017), and procedural and energy justice (Eikeland et al., 2023; Mósesdóttir, 2024; Saglie et al., 2020). Another focus is the role of stakeholder engagement in achieving pragmatic legitimacy, including how public approval can be strengthened through the cultivation of trust, transparency (Chlebna & Mattes, 2020; MacKinnon et al., 2022), and the validation of financial, societal, and environmental values for a local community (MacKinnon et al., 2022).

However, while existing studies have acknowledged the aforementioned influences, to the best of this author's knowledge, there is a considerable lack of in-depth qualitative research that investigates how Norwegian residents' perceptions of pragmatic legitimacy influence FOWE development actions in relation to corporate practises and to what extent these perceptions strategically inform decision-making processes around FOWE expansion. In this sense, future qualitative studies could investigate whether pragmatic legitimacy perceived by residents' influence development decisions related to FOWE farms in Norway.

While stakeholder salience models (R. K. Mitchell et al., 1997) and engagement frameworks (Greenwood, 2007), along with supplementary attributes such as proximity and frequency, have been utilized in renewable energy studies, there remains limited empirical evidence regarding the correlation between pragmatic legitimacy and how frequency of resident engagement influences acceptance behaviour towards certain projects (Aaltonen et al., 2024). Particularly underexplored is the negative aspect of engagement (Kujala et al., 2022) and whether increasing participation frequency with FOWE may lead to over-engagement fatigue. In addressing such gap, future and more in-depth research is crucial to investigate a correlation between pragmatic legitimacy and the frequency of engagement with residents in shaping their acceptability behaviour of FOWE.

4.1. The Engagement Scale Model (ESM) as Strategy to Mitigate Adverse Dide of Engagement and the Potential for Fatigue due to Participation Frequency

In the course of massive construction developments such as FOWE, building stakeholder confidence in the project's value, particularly among residents who will be affected by the initiatives, necessitates transparency and justice. To achieve

this, corporate leaders often execute structured engagement strategies that enable more frequent integration of key players' voices into corporate practises and decision-making processes throughout the project's lifecycle. Limited or unjust involvement of community members and other potentially affected parties can lead to adverse results, exacerbate vulnerability and opposition from the public, and escalate the costs and time required to execute clean energies. Conversely, frequent involvement practises are susceptible to issues such as stakeholder disengagement or exhaustion, which occurs when involving the same group of stakeholders several times, whether directly, such as in a consultative or interview form (Buhmann et al., 2025), or remotely, such as via online avenues (Maloney et al., 2023), and increases the probability of stakeholder engagement fatigue (Dwyer & Bidwell, 2019; Gramberger et al., 2015), thereby resulting in a declining rate of response (Davidsdóttir et al., 2024).

To prevent fatigue and eliminate the possibility of declining response rates and unreliable data, which diminishes engagement efficacy (Buhmann, 2025), effective stakeholder engagement requires a strategic balance, tailoring participation frequency to distinct residence groups while ensuring it is meaningful (Kujala et al., 2022). This notion is especially true if stakeholders become overwhelmed by over-engagement frequency or view participation as performative rather than practical (Wickert & De Bakker, 2018). Overlooking these aspects increases the risks of disengagement and may provoke scepticism and opposition over time. Further research is needed to investigate the unintended consequences of excessive engagement frequency (whether unengaged, engaged, disengaged, or fatigued) across different resident groups of (FOWE-Opponents, Undecided, and FOWE-Proponents) and salience stances to optimise strategies for these various contexts (see Figure-3). A nuanced approach remains critical for fruitful and effective participation.

Study extends the stakeholder salience model by incorporating a "scale" element to the frequency attribute. Structured and systematic scale in the repetition of engagement activities helps to monitor and capture the patterns of damaging outcomes of stakeholder participation (Kujala et al., 2022). The model focused on the tipping point of over-engagement, highlighting the potential for fatigue, disengagement, and subsequent opposition. This stands in contrast to more optimistic theories related to stakeholder engagement, which assume that

legitimacy develops naturally (Greenwood, 2007); few emphasise the negative side (Aaltonen et al., 2024; Bosse & Phillips, 2016; Bundy et al., 2018; Harrison & Wicks, 2021; D. Lange et al., 2022; R. K. Mitchell et al., 2015; Schormair & Gilbert, 2021) without critically examining the potential for fatigue in the energy organisational context (See Figure 3).

Broadly, the SEM model (figure 3), further explored the critical connection between pragmatic legitimacy and stakeholder participation in FOWE developments, enhancing multidisciplinary literature in RE, strategic management, and social sciences. This model introduces an original perspective by systematically incorporating a scale element to the engagement frequency attribute of stakeholder analysis and mapping, exhibiting how various degrees of involvement affect residents' perceptions and behaviours towards large-scale RE

projects. This refined model will enrich current research on residents' acceptance of offshore energy infrastructure, transcending conventional engagement approaches to adopt a framework that is more dynamic and frequency responsive.

To this end, as a corporate decision, formulating a tailored model (e.g., ESM) promotes adaptability and flexibility by providing a structured framework that can be scaled across various socio-environmental circumstances, which is vital for the energy development projects and expansion landscape. This ensures the usefulness of relation to aspects of offshore wind generation that have differing degrees of public awareness while guaranteeing its applicability across similar environmental settings deemed suitable for such infrastructure.

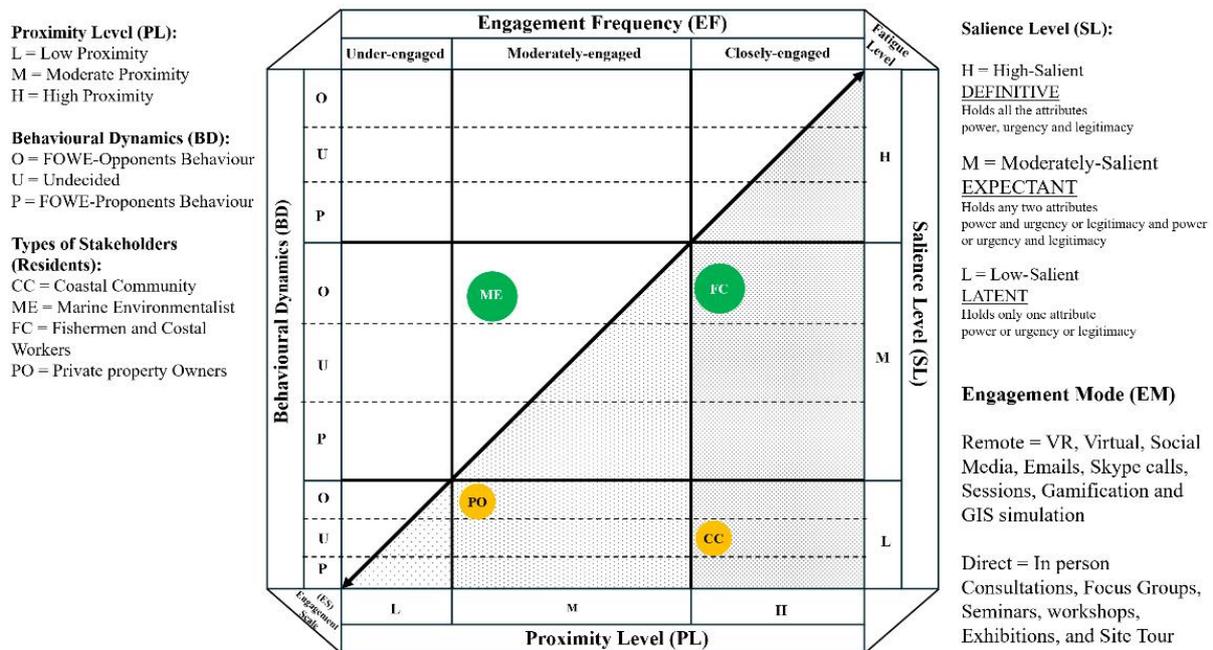


Figure 3: A Customised Residents Engagement Scale Model (ESM) as a Preventive Resolution against Over Engagement Fatigues.

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