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Lise Desvallées, Xavier Arnauld de Sartre

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Titre – In the shadow of nuclear dependency: competing pathways and the social acceptance of offshore wind energy in France

First author

Lise Desvallées

Affiliation : Laboratoire Transitions Énergétiques et Environnementales (UMR TREE 6031), Université de Pau et des pays de l'Adour / E2S UPPA, CNRS. Avenue du Doyen Poplawski – PAU, 64000, France.

lise.desvallees@univ-pau.fr

ORCID : <https://orcid.org/0000-0001-7756-1250>

Second author

Xavier Arnauld de Sartre

Affiliation :

- CNRS
- Laboratoire Transitions Énergétiques et Environnementales (UMR TREE 6031), Université de Pau et des pays de l'Adour / E2S UPPA, CNRS. Avenue du Doyen Poplawski – PAU, 64000, France.

xavier.arnauld@univ-pau.fr

ORCID : <https://orcid.org/0000-0002-2805-0064>

Abstract

Opposition to offshore wind energy can cause major delays in the deployment of this technology, possibly compromising ambitious national strategies for increasing the generation of electricity to meet the net zero emissions target. However, shifting the perspective to the technology in full – from manufacturing to siting – can shed light on competing pathways where opposition coexists with acceptance, and provides a fuller understanding of place-based dependency dynamics. To apply this research agenda, this article presents a case study of France, where the first offshore wind farm is yet to be launched in 2025, in the midst of a growing controversy over the local impacts of the technology. However, France has also become a major manufacturing site for turbine and nacelle manufacturing, accounting for one-third of European industrial capacity. We use insights from social acceptance studies to offer an explanation for these contradictory paths.

We study the role of scale in the social conflicts over offshore wind, showing the influence of wider place-based dependencies in the incentives hindrances to legitimacy for this technology. On the one side, local opponents to offshore wind farms deny their legitimacy on the grounds of their inadequacy within the inherited and centralized French energy system dominated by nuclear energy. Meanwhile, the development of manufacturing of offshore wind components is not questioned, and even benefits from a large support from local stakeholders. We then question the limits of current and future public engagement schemes in the context of a national energy system dominated by nuclear power.

Introduction

The question of how social conflicts limit the deployment of renewable energy technologies (RET) has become a critical area, especially in light of alarming climate change scenarios, where fossil resources are expected to be substituted by mature renewable energy systems. A literature focusing on social acceptance issues has emerged to understand these conflicts, with internal debates on the directions that should be followed. According to Batel [1], after demonstrating the limits of the so-called NIMBY (“Not In My Back Yard”) explanations of opposition to RET, and after having privileged an approach that seeks to understand these oppositions in order to overcome them, a ‘third wave’ of social acceptance studies strives to unpack the meanings and inputs of social conflicts. This research dynamic increasingly engages social acceptance with the large socio-political and economic system in the deployment and promotion of these technologies and their associated infrastructure [2], with a particular focus on injustices and inequalities brought about by renewable energy technologies. Offshore wind projects hold a particular place in this line of research. On the one hand, they are a crucial element of energy policies for many countries, and offer a significant future pathway toward low carbon globally [3]. On the other, the siting of OFFSHORE WIND projects generates repeated controversies, posing a significant challenge to their development [4,5].

These struggles, viewed as inevitable in the literature, involve social and spatial justice issues: for many people, offshore wind developments are considered illegitimate [6], and studies have shown how the perception of procedural justice is central to understanding public responses [7] [8]. Other studies have demonstrated how space and attachment to landscapes influence such responses, theorizing the concept of “place-technology fit” to frame the struggles against offshore wind developments [9] [10] and to understand how place and spatial patterns matter for community acceptance [11]. Consistent with such research, Batel and Devine Wright have called for more rigorous comparisons between general and specific beliefs across multiple spatial scales [12], showing how the perceived “place-technology fit” on a local scale also depends on the perceived consistency between local developments and the wider national spatial organization. Indeed, specific national contexts are crucial to understanding public concerns over energy security issues [13]. Such accounts mirror conceptualizations of scale as gradients of political power imbued with unequal political legitimacy (i.e., the combination of trust in political actors at different levels of policy-making, the belief in the primacy of one level over another, and the effective organization of reality [14]).

When looking at the way the debates around RETs are scalarly structured, this paper highlights how the perception of legitimacy is the result of the combination of an implicit hierarchy of scale and a reference to inherited energy systems: their opponents acknowledge certain scales, in particular the national one, as having the force of evidence, naturalizing the past, and ultimately conferring on this scale the ability to say what is legitimate.

This is especially true in France, a centralized country where the national scale is both where energy systems are organized, and that which confers, ultimately, legitimacy to a project. This is apparent in the strong position of nuclear power in France, where the State has built a central energy system based on a limited number of large power-generation plants, with a ratio of production capacity to space consumption unmatched by offshore wind facilities, even though these are centralized and remote. Because they extend into multiple new geographical settings previously unaffected by energy production activities – once confined to a handful of nuclear plants – the sites of offshore wind developments challenge the legitimacy of the national scale, without gaining support from the local scale (municipalities, *départements* and *régions*) whose authority over energy systems remains limited by a “firmly-established” centralized model [15]. In this article, we argue that opponents of offshore wind build their actions and discourse on this inherited historical reality in order to prevent the deployment of the technology, effectively delaying the completion of the first wind farms well into the 2020s.

Indeed, in 2023, the contribution from offshore wind farms is almost non-existent in a national electricity mix dominated by nuclear power, in spite of the country's natural resources and the adoption of such energies being a transition imperative for the domestic electricity market. The struggles of the early 2000s have delayed the installation of nine fixed and four floating projects along the French coast by 2025 (See Map 1), putting France far behind both its British and German neighbours and its own energy transition targets. Furthermore, future developments are highly contested, compromising the goal of installing 1 gigawatt additional capacity per year until 2030. However, the industrial development of offshore wind is not limited to siting projects: in spite of these struggles, strong national and regional supporting choices have secured the establishment of major windmill-component manufacturers in two regional industrial clusters, which in 2022 represent one-third of Europe's industrial capacity.

This paper adopts an approach focusing on the value of social conflict [16] to explore the contestation and support of offshore wind in France as the expression of valuable normative appraisals. On the one side, these appraisals highlight place-attachment dynamics and the justice issues of institutionalised public-engagement procedures held at a small scale [17,18]. On the other, they help in setting the technology against the background of the wider national and international energy system, and question the possibility of accommodating debates on the energy futures of the nation and their consonance with place-based identities and founding narratives [19].

The French case study, both highly conflictual and illustrating opposition between scales and technology choices embedded in the past, allows us to make three contributions. First, we will provide an integrated assessment of the offshore wind industry, encompassing both its setting and the industrial production of its components. Secondly, we will show that these divergent trajectories mirror central identity and place-based narratives at various scales, resulting in different geographies of offshore wind projects in different ways. Thirdly, we question the limits of current and future public engagement schemes against a background of strong national place-based dependencies.

The remainder of the article is structured as follows. The next section draws on existing work on social acceptance to set out an approach and analytical framework for understanding and analysing discourses and actions addressing the development of offshore wind, thereby grounding the methodology (section 3). The main body of the paper (sections 4 and 5) draws on empirical fieldwork, as well as press and public debate analyses, and is given over to the inscription of the French offshore wind sector's development in the wider political economic context, and to the scalar structure of the various discourse and discourse coalitions through which the technology has been politicised, with an emphasis on the (dis)alignments between local, national and regional scales. Section 6 draws out critical reflections on the interactions between path dependency and social acceptance dynamics. The conclusion sums up the arguments, sheds light on their limits and suggests some issues for further research.

2. The values of social conflicts

In order to trace and account for the relations between social conflict and the framing of technology, we have developed a conceptual framework based on recent work from social-acceptance literature centred on the power relations that shape renewable energy technologies. These accounts, identified as a 'third wave' of social-acceptance studies [1], follow authors such as Patrick Devine-Wright, Claire Hagget and Maarten Wolsink, who have departed from criticism to the Not-In-My-Back-Yard explanation for local oppositions and offered a reconceptualisation of opposition as place-protective actions [20,21,3] motivated by concerns over distributive justice and the negative impacts of RET [22,23]. They have also defined 'public engagement' as encompassing divergent forms such as information, consultation and participation, differentiated by the flow of information and its significance in decision-making processes [17]. The 'third wave' of accounts

explore these dynamics of social conflict by focusing on participation as a form of engagement and questioning the deliberative turn in the planning of RET developments. They challenge the framing of social conflicts as problems to be solved by policy-makers, developers, and academic research alike, instead offering to frame them as both inevitable and central to policy-making and project developments.

Both Cuppen [16] and Pesch [18] state that conflicts are and will be a given in the decentralisation of energy systems relying on technologies with significant spatial impacts, with struggles over the fair distribution of benefits and burdens, and tensions between different understandings of the concepts of 'sustainability' and 'transition'. Along with Solman [5], they highlight three limits of invited stakeholder participation – policy-makers' dominant response in policy and planning – in accommodating diverse points of view and 'normative appraisals' in decision-making over energy. First, due to the highly technical issues of project development, such exercises can fail to substantially involve stakeholders in the design of the projects [24]. Secondly, the legislated nature of participation procedures entails selection of the public: invitations might be limited to nearby residents, to the exclusion of stakeholders outside public areas [25], and interventions may also be formatted around an 'ideal' speech situation somewhat detached from real-world settings [16]. Thirdly – and connected with the first limit – as public-engagement procedures commonly take place in the planning stages, the technical design stage remains the domain of experts, with little inclusion of social-science accounts in the modelling which is central to the planning of large offshore wind farms [26].

These limits help to explain the 'overflowing' [27] of invited-participation arenas by stakeholders sharing alternative value claims, triggered by a perceived lack of attention to particular concerns diverging from those of developers and planners. This approach to social conflict sheds light on the informal trajectories of assessment that are embedded in the public discourse, defying the formal trajectories embedded in a legal system that is structurally incapable of anticipating all new emerging values [18]. This focus on the dynamics of social conflict also highlights the reverse 'back-flowing' process, whereby new issues are included in the formal assessments.

Research has shown how the perception of justice can play a central role in these informal assessments [16,18], recognising how social conflicts highlight the public values, social actors and competing visions of energy futures that have been underrepresented in formal arenas. Such approaches advocate for addressing social conflict as a form of 'self-organized participation' and recommend constructively dealing with it rather than trying to avoid it in policy and planning.

A second insight of the 'third wave' of social acceptance studies is that of viewing social conflict as rippling across multiple scales and times. Research on energy systems highlights how they are governed by different scales, how arenas of political action are embedded in national systems of meaning [2] and, thus, how social conflicts over RET are responses to the ways in which these technologies are spatially constituted, governed and narrated. Nevertheless, the concept of scale was highly debated in geography during the 2000s [28], and these debates led to consider scales resulting from the combination of three dimensions: an observational dimension (the level at which one considers the reality of the situation), an organisational one (how the reality is organized) and the interpretation made of this combination of reality and viewpoint (what one considers a good scale) [14]. Ragan and Kull consider recognizing the interpretive moment as crucial to producing scale. These assessments may explain the cumulative dynamics of legitimacy gains.

The national scale remains important in all three dimensions [29]. Indeed, Malone [19] demonstrates how governments have connected emerging technologies with structuring national narratives, which has been a decisive driver for their success in national contexts such as nuclear energy in the US or biomass in Sweden. These accounts point to the weight of non-economic factors in the adoption of a technology, the importance of how it is woven into a country's view of itself and why citizens should support new policies. From the social acceptance point of view,

focusing on positive narratives also means moving the focus away from research on acceptance to research on other responses, such as support [30,31].

Furthermore, as underlined by J. Szarka [32–34], referring to the work of Hajer [35], such narratives do not exist by themselves. They are endorsed by coalitions creating story lines justifying concerted actions and public policy, coalescing into symbolic struggles influencing the development of controversies, and whose discursive and organisational articulations have to be explored. Based on the example of wind energy, these accounts highlight the dynamics of discourse coalitions and their struggles to define the energy debate and its societal place. They stress the role of coalitions (both pro- and anti-wind development, as well as nature-conservation associations) in creating story lines justifying concerted actions and public policy which coalesce in symbolic struggles influencing the development of controversies.

As shown by Bridge et al. [2], these symbolic struggles stand to gain from being approached in the context of the spatial embeddedness of incumbent energy systems. Here, the concepts of ‘niche’ and ‘incumbency’ developed by multi-level transitions theory are reinterpreted as the sunk costs of capital investment and the place-based cultures of production and consumption. Following these accounts, we can explore how the degree to which incumbent energy-production technologies are ‘built into’ the economic, material and cultural aspects of energy systems can shape social conflicts over RET technology and development.

We can apply the resulting analytical framework to those social conflicts over offshore wind where self-organized participation overflows formal debates, asking how they can be shaped by – and in turn transform – (dis)connections between emerging RET technologies and established elements of political sociocultural national narratives.

3. Methodology

This analysis employs a recent dataset from a research project on the French offshore wind industry, which has so far attracted little academic interest, with notable exceptions mainly focused on maritime spatial-planning issues [36,37]. In order to better grasp informal normative appraisals criticising offshore wind development and their embeddedness in national narratives, we followed the methodology advocated by Cuppen [16] which relies on discourse analysis rather than representativeness in statistical terms. This method entailed a systematic press review of offshore wind development in France and examination of the detailed reports of public debates held for each of the projects. These analyses led to the identification of eleven key advocates and opponents, with whom interviews were then conducted.

The press analysis targeted articles in the Europress database that included the French translation for offshore wind: *éolien en mer*. This resulted in over 4521 articles published in French daily newspapers from 2002 to June 2020, with metadata including publication year and type of newspaper : national, regional or specialising in economics or politics. This selection demonstrated a growing interest in the subject in the 2020s, reaching 500 articles per year in 2019 and 2020, 80% of them published by regional newspapers such as *Ouest France* and *Paris-Normandie* (see Annex 1).

We combined three approaches: lexicometric, content analysis and reading of the papers. For the lexicometric analysis, we used Iramuteq software to study the statistical distribution of significant words in the articles [38]. We used a hierarchical classification analysis designed to differentiate between different levels of partition of the press articles in order to identify five clusters of articles with contrasting profiles (see Annex 2). The content analysis involved two stages. The first one built on the clusters’ most representative articles – i.e., written with the most significant words characterizing a cluster – in order to associate these significant words with structuring narratives on offshore wind development. The ten most representative articles of each of the five clusters were read, and we identified and coded the recurrent narratives opposing and in favor of offshore

wind developments (see Annex 3)¹. In the second step of the lexicometric analysis, we counted each interview given across all 4521 press articles, identified the corresponding narrative, and filed them according to the type of interviewee: industrialists, regulators, civil society spokespersons (see Annex 4). This allowed us to measure the level of audience given to each of the narratives by the French press.

Secondly, we conducted a thorough review of the databases compiled by the National Commission for Public Debates (CNDP), a body charged with ensuring public engagement in the development of projects impacting the environment such as offshore wind farms. This database makes up a rich corpus, with ‘actors’ notebooks’ and contributions whereby stakeholders such as industries, local authorities and NGOs can express their opinions on particular offshore wind developments. The database also includes reports on the process and outcomes of the nine public-engagement steps starting in 2014 and completed in June 2020.

Based on these analyses, we identified three sets of narratives on offshore wind developments – supportive, critical and cautious – and conducted semi-structured interviews with corresponding stakeholders identified in the press and in the public debates. The ten interviews began with an open-ended question on the general perception of offshore wind and its contribution to the national energy transition, followed by questions on the strategy elaborated to implement this vision.

To approach critical narratives, we conducted five interviews with spokespersons for local collectives in opposition to wind farms, such as *Free Horizon* and *No offshore on the horizon*, each of whom was engaged in a conflict with a planned farm (OP 1 to 5). Their discourses were then compared with most widely-sold books criticising offshore wind, written by opponents of the industry.

A second set of interviews was conducted with stakeholders promoting offshore wind, mostly active on a national scale. Two spokespersons from large industry associations, advocating respectively for RET technologies and for offshore wind at the national scale, were interviewed (IND 1 and 2). In order to complete these interventions with an industrial stakeholder, we interviewed the head of offshore wind development at Total Energies, which is currently the largest offshore wind developer in France (IND 3).

Finally, we conducted interviews with stakeholders sharing a weary stance on offshore wind, whose support appeared to depend on the specific characteristics of the projects and their impact on local marine life and activities: a spokesperson from the regional fisheries committee of the Loire department (MAR 1), and another from the largest national federation of national environmental NGOs, *France nature environnement* (MAR 2).

4. The narratives of French offshore wind rescaling

The French energy system is organised around nuclear energy, which represents 80% of the energy mix, followed by hydroelectricity (15%) and renewable energies (less than 5%). The system is organised on a national scale, with a centralisation of production in eighteen plants and distribution through a high density of electric lines. Renewable energy technology has raised a debate on the structure of this system, with many actors arguing in favour of its decentralisation and increased territorial subsidiarity.

This mirrors the French political structure, where decision-making is more concentrated at the national scale than in other European countries [39], energy being no exception [40]. But recently,

¹ For example, the narrative of offshore wind manufactures as drivers for the French industry appears 62 times in this corpus of the 50 most representative articles, before the narrative of offshore wind contributing to reach emissions reduction targets (14 times).

the politics of mitigation and adaptation to climate change have opened, like in other countries [41,42], new spaces for local actors, located at a regional or local level, who are encouraged to define their own energy strategy [43] – following the ways defined at a national scale [44]. Nevertheless, the reality and depth of such transformations, in particular regarding the energy system, are still debated [45,46].

This debate is also present among social actors, with conflicting visions and arguments on the future of the French energy system. Taking inspiration from Bridge et al. [2] and Malone [19], we focus here on the embeddedness of offshore wind systems in dynamic systems of meaning, arguing that they are structured by four narratives summarised in Table 1, and three cycles summarised in Table 2.

One of these narratives, *combating climate change* (LN1), can be a critical source of legitimacy for governments and incumbent industries [32] but also opponents who consider it not in line with the structure of the French energy mix (DLN1). Indeed, nuclear energy is the incumbent electricity production system in France, supplying over 70% of the national consumption while contributing to the low carbon content of French electricity².

A second narrative, *creating economic value*, emphasises the positive impacts of the offshore wind industry, such as job creation and revitalising ageing industrial hubs, with a focus on local industrial networks (LN2). These positive externalities are contested by opponents (DNL2), who incriminate the low maintenance needs of farms after their initial construction phase. A third *cost reduction* narrative highlights the cost efficiency of the technology as large-scale projects and efficiency gains tend to lower the price of the electricity produced. It is met with arguments criticising its reliance on public subsidies such as feed-in tariffs with impacts on consumers' bills (DLN3).

But while it overlaps with narratives discussed in other research on social acceptance [3,30], we argue that the specificity of the French case is that three important criticisms are not being met with corresponding legitimising narratives. One of these counter-narratives, on the *negative impacts on coastal landscapes and activities*, is a potent driver of opposition to public engagement processes (DLN4). The impacts on the high real-estate value of the French coastline and on the tourist industry driving its economy, along with powerful fishermen's associations capable of influencing the design of the projects [36], are central arguments leveraging opposition to offshore wind projects in all of the reports from the nine public debates held in 2021. Adding to this is the counter-narrative on *flawed, undemocratic engagement processes*, which criticises the perceived over-representation of industry interests in the organisation of public enquiries and the deliberate rejection of local residents' concerns and suggestions (DLN5).

Another of these unmet counter narratives, and a growing concern amid the energy crisis unfolding in the 2020s, concerns the *security of the supply* for the national energy system (DNL6). With 3% of the supply planned for 2028, and delayed wind farm completion, offshore wind has a marginal relevance to French electricity production when compared to the contribution of nuclear power. Furthermore, the historic launch of the French nuclear energy program in the 1970s as a response to the first oil crisis – the world's largest-ever commissioning, with 58 new reactors – has firmly established the connection between technology and national identity, embracing the electronuclear program as a synonym for both technological prowess and national glory³ [48]. Furthermore, virulent anti-wind story lines have been advanced by a steady stream of opinion pieces criticising the wind industry [49–52] and promoting nuclear energy as an alternative. Some of the most prominent authors in this discourse coalition, who are dedicated to promoting the incumbent

² With 60g CO₂/kWh, the French electricity generation has the second lowest gas emission intensity of the EU, behind Sweden. The intensity is calculated as the ration of CO₂ emissions from public electricity production and gross electricity production [47]

³ Glory is here used as a translation for *radiance*, which also means “radiation” in French.

nuclear regime, are given tribunes in political debates [53], national media [54] and comic books by established and influential authors and publishers [55].

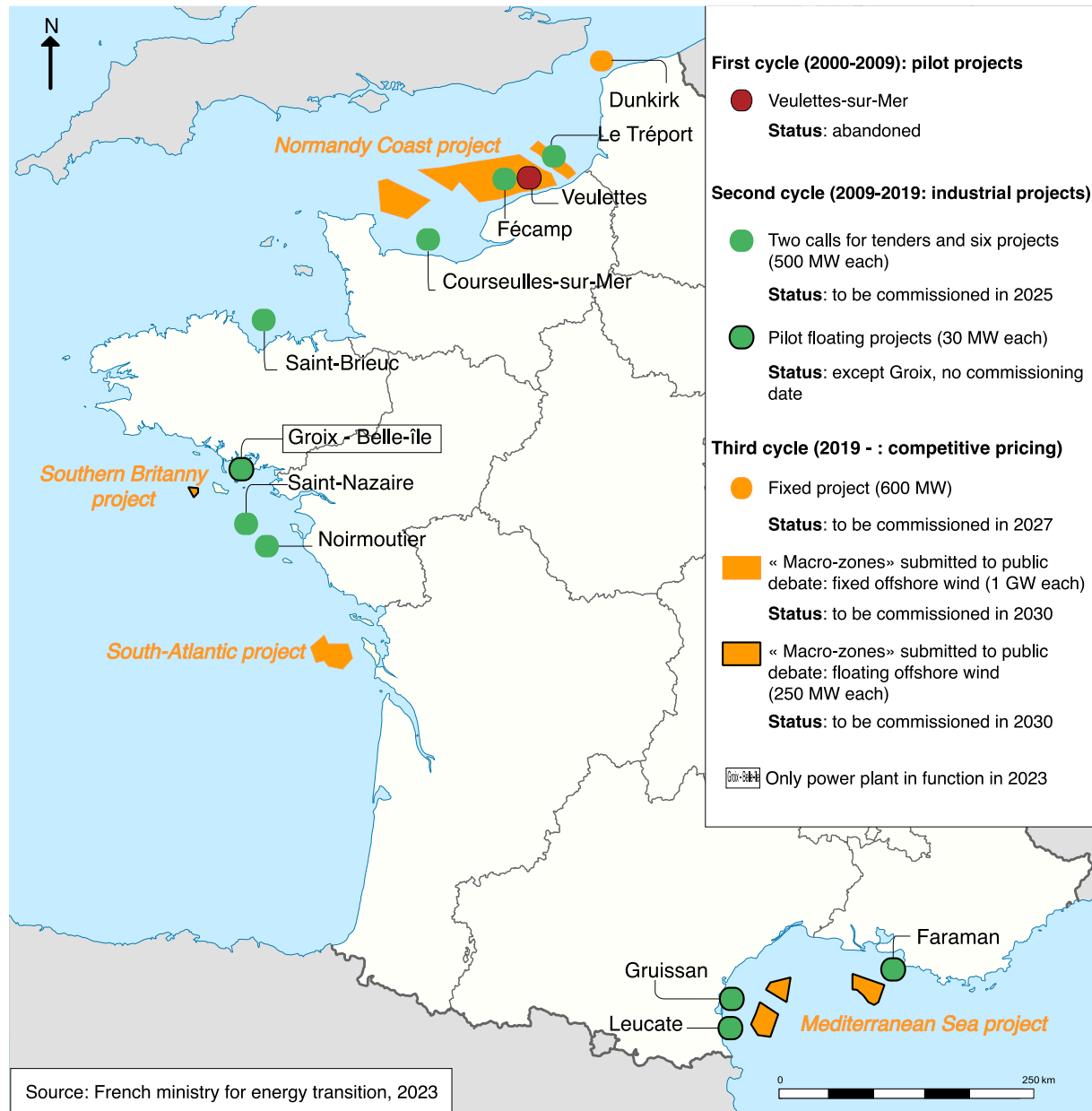
Table 1 – Summary of offshore wind (OFW) narratives

Narratives legitimising OFW	Narratives delegitimising OFW
LN1 – OFW is a mature technology capable of meeting climate-change mitigation targets.	DLN1 – OFW is redundant in the French electricity mix dominated by low-carbon nuclear power.
LN2 – OFW generates economic value and creates local jobs and activities.	DLN2 – OFW economic impact and job creation are lower than advertised by developers and projects undermine local tourism and fishing industries
LN3 – OFW reduces costs for final consumers.	DLN3 – OFW is a high-cost technology unaffordable for consumers.
	DLN4 – OFW damages marine landscapes and environments
	DLN5 – OFW is developed in an authoritarian manner with ineffective public engagement.
	DLN6 – OFW does not grant energy security.

These narratives play out in three policy cycles, whose outcomes are illustrated in Map 1, showing how the deployment of offshore wind is an unsettled project that is ongoing and contested.

The first cycle begins in the early 2000s. This period covers the first attempt by regional and local authorities in Brittany and Normandy to take the lead in offshore wind development. A research centre, cross-sectoral meetings and a local call for tenders were planned, driven by the narrative that offshore wind would be an answer to a grid connection deficit on the peninsula and would make the Brittany region more energy-independent. This attempt was halted by the launch of a national call for tenders in 2005, in a state-driven process suspending the regional leadership over spatial planning and decision-making and establishing procedures for public engagement entrusted to the national commission for public debate (CNDP). Here, we use the concept of public engagement as defined by Devine-Wright [17], because the CNDP supervises a range of forms of engagement, from one-sided communication (leaflets, websites) to consultation (public meetings) without dialogue and participation involving two-way exchanges (public dialogues).

Map 1 – the three cycles of offshore wind policy in France and the completion of the farms in 2023



In this attempt to reassert the authority of the State in offshore wind development, the policy support scheme elaborated for onshore wind development in the early 2000s was replicated in a pilot project [33]. Offshore wind was supported by a ‘dual system’ combining feed-in tariffs with calls to tender. The national authorities chose the Veulettes-sur-Mer wind farm, off the Normandy coast, to install a small-scale 105 MW pilot project with 21 wind turbines, designed to establish a reproducible procedure for the development of the technology in France. The winning consortium was led by the French subsidiary of the German company Enertrag, which was keen to experiment with the Multibrid 5000 technology already installed in the Borkum wind farm [56]. Despite this political and technological support, the project faced three major setbacks that brought it to a standstill from 2009 onwards. One was caused by flaws in the marine spatial planning regulations: the inadequacies of the legal framework governing uses of the public maritime domain caused conflicts between onshore and offshore administrations and between developers and fishermen’s groups. The second was the high level of subsidy, with a generous feed-in tariff of €100/MWh criticised by the national energy regulation commission [57]. The third setback was caused by legal

challenges against the project filed by local residents and associations, leading to the suspension and ultimate cancellation of the project. Hence, in this first cycle, the debates on offshore wind are dominated by counter-narratives over the cost of the technology (DNL3), as well as the emergence of a counter-narrative on the *negative impacts on coastal landscapes and activities*, a potent driver of opposition in public engagement processes (DLN4).

Table 2 – the three cycles of the French OFW development

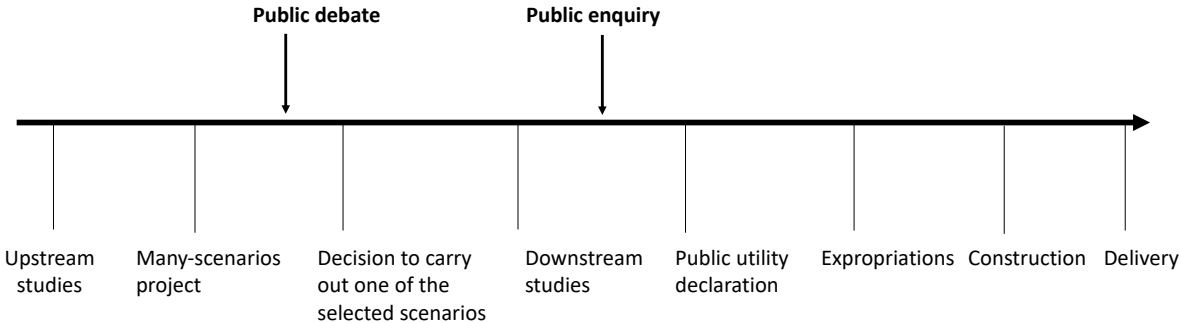
	First cycle (2000-2009): pilot projects	Second cycle (2009-2019): national industrial development	Third cycle (2019 -): competitive pricing
Installed power	Pilot project of 105 MW Abandoned	Calls for tenders in 2011 (3000 MW) and 2013 (700 MW)	Fixed: calls for tenders in 2019 (600 MW), 2020 (1000 MW), 2021 (1000 MW), 2022 (500-1000 MW) Floating: calls for tender in 2019 (100 MW), 2021 (250 MW), 2022 (500 MW)
Chosen sites	Veulettes-sur-Mer	Fécamp, Courseulles-sur-Mer, Saint-Brieuc, Saint-Nazaire, Le Tréport, Île d'Yeu and Île de Noirmoutier	Fixed: Dunkirk, Oléron, Site to be defined in the Eastern Channel and South Atlantic Floating: five sites on the Atlantic coast, one on the Mediterranean
Feed-in tariff	€100/MWh	€200/MWh renegotiated to €150/MWh in 2018	Fixed: initial targets between €70/MWh and €50/MWh, winning consortium in Dunkirk offering €45/MWh Floating: between €240/MWh and €120/MWh
Developers	Developers: Enertrag	GDF Suez, EDF	Fixed: EDF renewables, Enbridge Floating: Eiffage, Bouygues
Turbine technology		(1) Areva, Alstom, Siemens, DONG energy (2) Siemens, General Electrics	Fixed: Siemens, General Electrics Floating: Ideol
Installed power and targets	In 2009: 0 MW	In 2019: 2 MW Target: reach 6 GW in 2023 (Grenelle de la Mer in 2009)	Initial target for 2023 delayed to 2025: 2 GW Target: reach 10 GW in 2030 (Multiannual energy program in 2019)
Dominant narratives	DNL 3 DNL 4 – emergence	LN 2 All delegitimising narratives – strengthened	LN1, LN 3, LN2 All delegitimising narratives – strengthened

The second cycle started in 2009, as offshore wind development gained policy momentum as a potential driver for national industrial development (LN2). Political action was led by the head of the French government, with then-president Nicolas Sarkozy stating the goal of ‘establishing a national, high-investment-return industrial sector to build these means of production and anticipate exports’ [58], thus attempting to frame offshore wind as a new element of the nation’s technological prowess. In this second cycle, the government-led deployment cycle, two calls for tenders were issued in 2011 and 2013 for a total of seven offshore wind farms representing 3700 MW of installed power. Two French-led consortiums accordingly responded to the generous feed-in tariffs of the first calls for tenders, and commissioned French multinational companies involved in the nuclear fuel cycle: Areva and Alstom. These manufacturers rapidly sold their turbine production business to foreign firms, Siemens and General Electrics, but the manufacturing activity remained in France and prompted the structuration of three local industrial clusters, in Saint-Nazaire, Cherbourg and Le Havre. At the beginning of the 2020s, these clusters concentrated one third of the European industrial capacity, with offshore wind therefore gaining the steady support of regional stakeholders.

However, the pace of offshore wind farms did not match this growth in industrial production, because the seven wind farms faced systematic contestations in the form of legal challenges by local resident associations. These actors succeeded in creating a network of local nodes, sharing information and arguments across the whole delegitimising spectrum and framing legal recourses that added seven to nine years to the completion of all of France’s offshore wind farms – now due by 2025 – by which time the planned turbine technology and feed-in tariffs had become obsolete due to fast-evolving innovations [59].

To reduce the risk for developers, for whom the average nine-year gap between calls for tenders and court decisions was creating damaging uncertainty, the legislation was revised. The 2015 Energy Transition Act introduced greater flexibility to allow developers to adapt their designs to market trends offering lower energy prices [60]. This case of ‘back-flowing’, as an adaptation of the legal framework, was followed by a law restructuring the public engagement procedure [61], moving the public step upstream: to identifying a particular site in a large ‘macro zone’ identified as favourable for offshore wind, rather than carrying public engagement procedures on the basis of a finalised project [62]. This new procedure was launched experimentally in 2020, in order to identify a consensual site in a 10 000 km² area off the Normandy coast through a public debate, before the development of the project [63].

Figure 1 – evolution of the public engagement procedures for OFW in France



The third cycle was initiated by the third call for tenders in Dunkirk in 2019, which gave priority to cost-effectiveness as a criterion for project selection. The competing bids highlighted efficiency gains, prompting industry representatives and associations to forecast the decline of public subsidies with the advent of competitive market prices [64], strengthening the LN1 and LN3 narrative. The impacts of the Dunkirk bids have been far-reaching and have led to a rescaling of national offshore wind goals in the Multiannual Energy Program, which guides the implementation of the 2015 National Energy Transition Act, from 0.7 GW each year on the French coasts until 2030 to 1 GW per year in 2019 (National Assembly, 2019). They have also strengthened the LN2 narrative among regional stakeholders interested in securing the industrial production of local industrial clusters.

However, in spite of a renewed legislative framework and a growing dynamic during the third cycle, future offshore wind projects could also face major setbacks. Indeed, during the public debate on the Normandy coast in 2020, the national debate agency has qualified the general tone of the debate as ‘defiant’ and taking place in a ‘critical context’, thwarting attempts to reach a consensus on a particular site in the macro zone. Of particular importance is the fact that vast portions of this macro zone, up to 65%, are concerned by regulatory exclusions for military and commercial routes [63].

Comparing these two decades French offshore wind development with other European trajectories highlights the absence of overarching legitimacy narratives, such as in Scottish offshore wind development, where the technology has merged with a national self-affirmation project [66].

Demobilising story lines from anti-wind protesters have dominated the debate, stressing the ‘intermittency and unreliability’ of wind power, its ‘insufficient contribution to reducing GHG emissions’, its ‘dependence on public subsidies’, and its ‘damaging impact on the environment’ [32], but have not succeeded in cancelling planned developments or downscaling the national offshore wind goals.

In order to unpack the making of this ‘unproductive outcome’, characterised by a lengthy juridical battle where neither the parties in conflict nor society in general stands to gain from the outcome [67], we now turn to an analysis of the making of a social conflict against the background of the spatial embeddedness of the larger energy system.

5. Three scales of offshore wind deployment dynamics

These cycles and narratives, we argue, can only be fully understood with a systematic analysis of the interaction between the stakeholders’ narratives and strategies on offshore wind on the one hand, and the spatial embeddedness of nuclear energy in the nation’s distinctive energy regime on the other. The following table frames the narratives for and against offshore wind in a matrix that articulates the scales of the discourse coalitions with the attitudes of the pro- and anti-actors, providing insights on the interaction between the deployment of offshore wind and the spatial embeddedness of the dominant nuclear energy regime.

Table 3 – Scale and attitudes of offshore wind (OFW) narratives

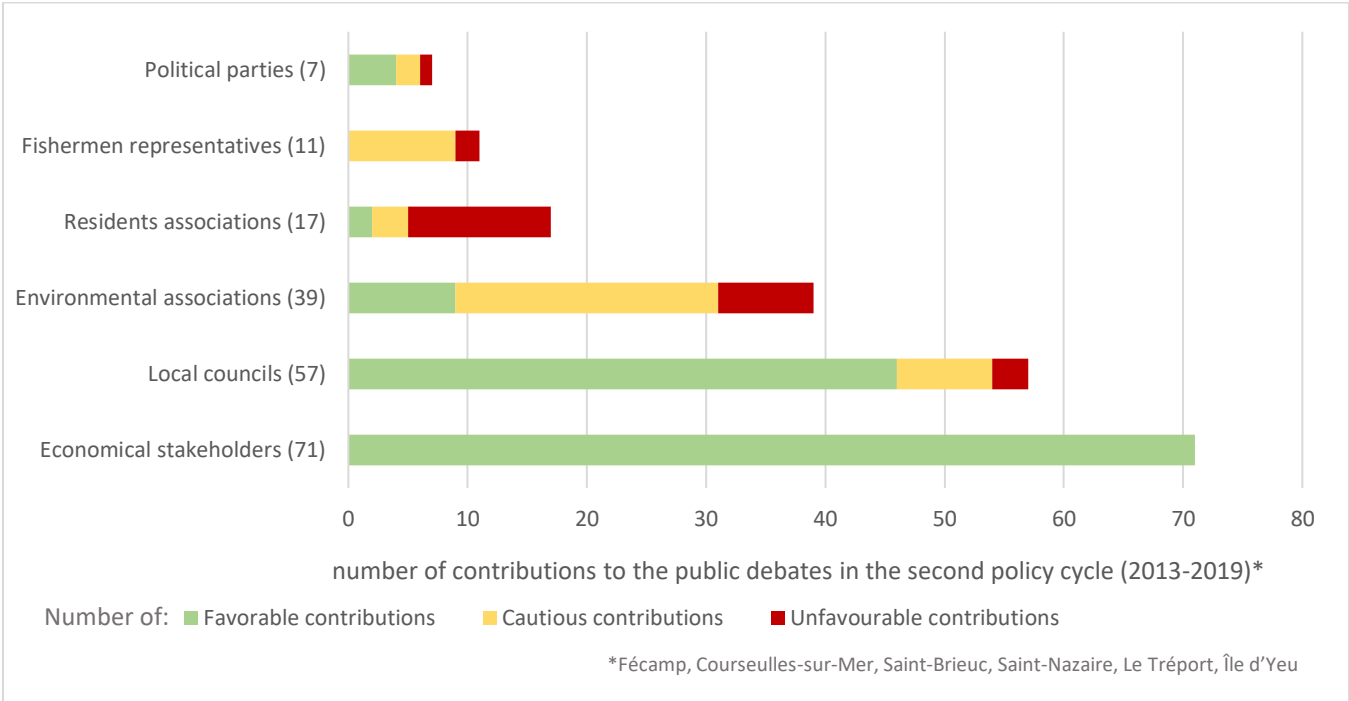
Discourse coalitions	Narratives by discourse coalitions	Spatial embeddedness of the dominant energy system	Impacts on deployment dynamics
Local scale	Local opposed collectives DLN 1 to DNL 6	Pervasive nuclear legacy	Network of local oppositions fuelled by the nuclear path dependency Delayed OFW projects reinforce the bet on nuclear energy
Regional scale	Industries and representative regional stakeholders LN2	Following regional industrial pathways	Regional industrial development of OFW Lobby for national policy revision
National / global	Pro-wind coalitions LN 1 and LN3	Pervasive nuclear legacy	Limited incentive for OFW in policy beyond regional industrial development

5.1 At the local scale – the importance of critical discourse coalitions

While by no means do they encompass all the dynamics at play in French coastal communities, we choose to focus on the collectives composed of residents opposing offshore wind projects both because they are the most active discourse coalition on a local scale and because they form the backbone of the opposition to offshore wind in France. Their prominent critical stance is illustrated by Figure 2, summarising the tone of the contributions of six groups of stakeholders invited during

the public debates – the first step of the public engagement process – for each of the OFW developments of the second policy cycle. Following the CNDP procedure, each invitee has submitted a redacted point of view, which has been filed by the local CNDP commissions as ‘favourable’, ‘cautious’ or ‘unfavourable’. All of the offshore wind projects were met with the creation of a new association by local residents, whose accounts in the public debates are dominated by normative appraisals that are critical of OFW planning and design, as opposed to mostly favourable accounts from local councils, cautious points of view issued by fishermen’s groups, and environmental associations demanding safeguards against the impact of the projects on marine life rather than rejecting or embracing the projects⁴. The local residents’s associations appear to be disconnected from the institutional landscape, with few or no affiliations to environmental or energy NGOs on a local or national scale. They are part of the “umbrella” organisations created in the beginning of the 2000s, such as *Winds of Wrath*⁵, but the structure of these collectives is horizontal, with no hierarchy between them [32].

Figure 2 – CNDP typology of the stakeholders’ contributions to the French public debates on offshore wind (2013-2019)



The exhaustive reading of resident associations’ contributions shows how they articulate a series of critiques. An initial critique deals with the uncertainty over the negative impacts of offshore wind on coastal landscapes and activities (DLN4), which are not compensated for by job creation (DLN2); these criticisms are a potent driver of opposition in the public engagement processes (DNL5). This category combines environmental, aesthetic and economic arguments with a strong mistrust of impact assessments issued by developers and public authorities. Environmental concerns over the impact of offshore wind farms on marine and birdlife are raised systematically, but are seldom developed because of the collectives’ lack of specialisation on conservation issues. A stronger focus is placed on the perceived impacts on landscapes, with contributions questioning the accuracy of photomontages presented during the public debates. Indeed, the wind farms are

⁴ The case of fishermen’s representatives deserves additional precision here, as their efforts to intervene during the scenario-establishment phase, before public debates, in order to negotiate the design of the farms in favour of their activities, has been documented by [36].

⁵ In 2004, J. Szarka referenced *Vents de colère*, which in 2022 is still a major federation of local collectives opposed to both onshore and offshore wind in France.

located on parts of the French coast bearing strong aesthetic and patrimonial value. Such is the case of the Courseulles project, visible from the Normandy landings sites, which has prompted a 2020 petition from the association 'Free Horizon' criticising its 'evident visual nuisance', and claiming that the project would impede its chances of receiving the Unesco World Heritage Site designation [68]. Real-estate concerns are also a recurring theme, and the public debate organisers report that the warnings issued by the collectives opposed translated into the concerns of second-home owners[69]. These storylines largely overlap the issues identified in the social acceptance literature [70,22]. They also illustrate the strength of conservative values attached to French coastal landscapes perceived as industrialised, and constitute significant challenges for offshore wind supporters to initiate place-technology fitting dynamics.

A larger critique concerns the technology itself, showing the limits of invited-participation arenas in accommodating the societal debate over the form and function of the wider energy transition [5]. Indeed, regardless of its siting, offshore wind is perceived as an inadequate solution for the French energy regime, due both to its price (DNL3) and to the structure of the national energy mix (DNL1). 'This ruinous project rests on public subsidies and rises in consumers' bills, with ill-designed subsidising schemes', states the *Vent Debout* association [71], exposing a perceived collusion between industry conglomerates and the French state at the expense of electricity consumers. Furthermore, because climate-change mitigation is a critical source of legitimacy (LN1), the notion of offshore wind as a green technology has to be met with systematic counterclaims, one of them being the intermittency of its energy production, which 'will force France to use gas or fuel oil power plants to compensate for less windy periods' [72]. Underlying this storyline is the notion that a path to a low-carbon electricity mix can be achieved by the French nuclear industry, which covers 70% of the national electricity production.

The second step of the public engagement procedures held by the CNDP is characterised by increased tensions. Following public debates – with relatively low stakes – public enquiries led to the validation of an official declaration that the projects are of public interest, thereby justifying expropriation procedures (see Figure 1). These enquiries are held after the planning stages, and well after the technical design stage of the project, when major decisions on the developer, the technology and the localisation of the project have been made. It is during this step that self-organised opposed collectives, perceiving an overrepresentation of industry interests in the organisation of public enquiries and a deliberate rejection of local residents' concerns and suggestions, organise collective actions that effectively overflow the legislated arena built by the CNDP. On the one side, they disseminate discursive and reglementary tools to help other collectives in appealing against wind farms, first to regional administrative courts, then to the Council of State, and ultimately to the European Commission if each of the legal challenges is rejected by the judicial authorities (see Annexe 2). On the other, they build their own debate arenas in both the media and the public space by organising counter-meetings welcoming anti-wind experts and demonstrations during the public enquiries. The diffusion of delegitimising narratives by these informal assessments can partly explain the confrontational engagement process surrounding the siting of the 2020 project in the eastern part of the Channel (see Annexe 2), as offshore wind energy becomes too contested for established invited, institutionalised and fixed participation procedures.

The success of these informal assessments endures in spite of the adaptations brought to the public engagement procedures in 2018. Indeed, moving the invited-participation step upstream in order to identify a particular site in a large zone identified as favourable for offshore wind, well before its finalisation, did not bring the expected results during the first experiment in Normandy in 2020, as no consensus was found over the choice of a particular site in a 10 000 km² area. As stated by the public debate commissioner, most criticisms mirrored the delegitimising narratives detailed above, with an emphasis on the redundancy of offshore wind in an energy mix dominated by

nuclear energy, prompting the institution to ‘recommend an economic and environmental evaluation of the impacts of nuclear energy in future debates’ [63].

5.2 At the regional scale – the merging of industrial and regional interests driven by international demand

A very different dynamic is observable on a regional scale, where offshore wind development receives mostly positive mobilising discourses and is advanced by committed discourse coalitions. Here, the ‘creating economic value’ story line emphasises the positive impacts of the offshore wind industry with a focus on local industrial networks (LN2). This story line has been promoted by the alignment of industry representatives, with regional and local actors expecting large-scale job creation and investment in industrial districts and shipyards. They have been actively involved in the later calls for tenders, seeking to take advantage of the dynamics launched by the two major industrial sites in Saint-Nazaire and Le Havre, plus an additional site in Cherbourg [73]⁶. Here, the place-dependency logic of local industrial specialisation play an important role: both Saint-Nazaire and Le Havre are historical industrial districts, specialised in port and shipbuilding maritime activities that could support agglomeration economies with access to pools of skilled labour and supporting intermediary organisations. For example, to supply the offshore wind manufacture, operated by General Electrics and the Saint-Nazaire-based Atlantic Shipyard building electric substations, the region Pays de la Loire has financed the creation of an industrial cluster, baptised Neopolia, to federate one hundred companies working in marine energies.

This storyline has been advanced by regional stakeholders to advance the increase in installed-capacity targets and in arbitrating between different uses of the sea. Indeed, IND3 recalls their role in the conflictual negotiations for the pluriannual national energy program [74] ‘the coastal regions executives, across the political spectrum, have shown impressive commitment to offshore wind development, they were always on our side for putting pressure on national authorities to negotiate and in increasing offshore wind volumes in the national program. In the context of participatory democracy, it is very important to have territory representatives saying that they want to increase the installed capacity on their coasts. These industrial developments allow offshore wind stakeholders to advance that ‘France has not completely missed the opportunity, and we have managed to attract large industrial players on our soil, taking advantage of existing French knowledge, and secured one-third of the European industrial production, while being far from having one-third of the European installed capacity’ (IND2).

However, because of the delay to the French farms and the limits of the French market, these regional industrial clusters rely heavily on exports to maintain their production lines. As stated by IND2: ‘the durability of the industrial fabric will depend on exports, mainly from the US and the UK, such as the Doggerbank wind farm which has saved the General Electric factory in Saint-Nazaire⁷. It is a risky bet, because the international competition is very high and because the development of the technology is very fast’.

5.3 At the national scale – the distinctiveness of the French nuclear energy regime

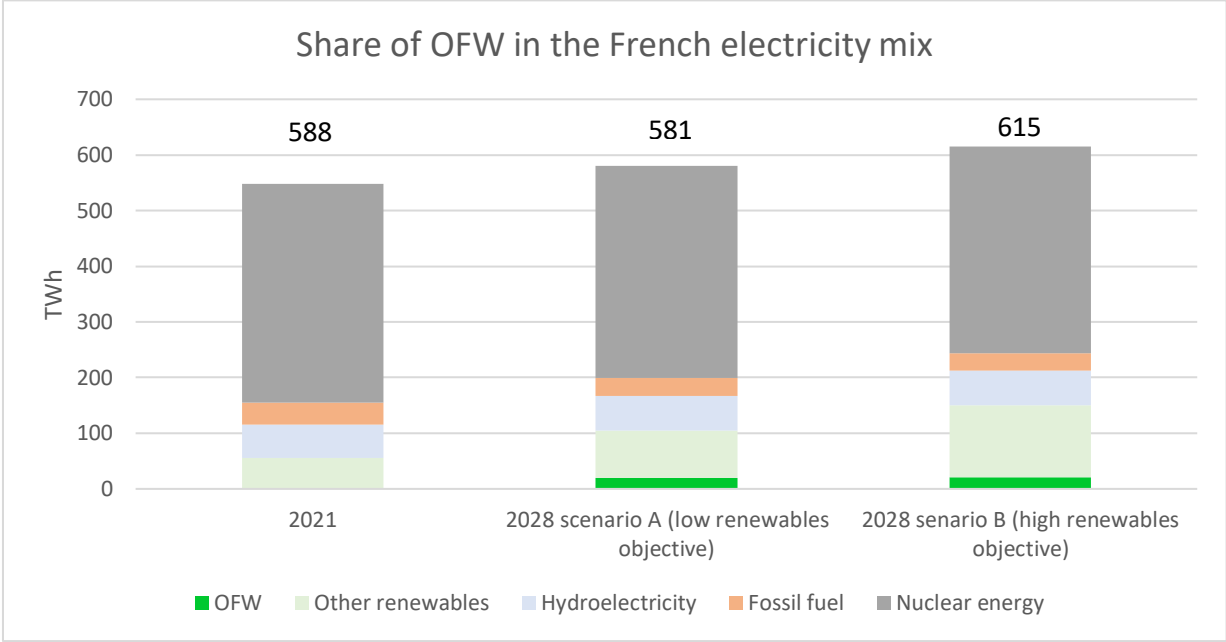
In this section, we explore how these locally- and regionally-based discourse coalitions exist in a wider discursive space, and how their story lines are constructed in interaction with the national energy regime and politics. At this national scale, we argue that a pro-wind lobby structured by

⁶ At the Saint-Nazaire site, the Chantiers de l’Atlantique, one of the largest former French shipyards, launched a substation manufacturing line. To this was added the Neopolia cluster. This local industrial network also encompasses R&D activities, with the introduction of the GE research and engineering centre into the marine energy sector in Nantes. A second industrial site is in Cherbourg, with blade manufacturing (LM wind power) and a production unit for the 12MW Haliade-X turbine. In Le Havre, Siemens Gamesa took over Areva’s legacy, developing the only industrial center producing both blades and nacelles to equip the Saint-Brieuc, Dieppe and Fécamp wind farms.

⁷ The Doggerbank wind farm is a 3600MW project on the English coast, was won in 2020 by a consortium led by SSI Equinor, which will be equipped with 12MW windmills produced in the Saint-Nazaire factory.

renewable energy industry representatives and regional actors, both defending offshore wind’s capacity to meet climate-change mitigation targets (LN1) and reduce the final price for the consumer (LN3), is not thoroughly aligned with a French government relying on the nuclear industry to achieve GES emissions reduction targets. Indeed, in spite of these mobilising coalitions, offshore wind’s contribution is marginal in both the current energy mix and in the national energy transition program (see Figure 3), fuelling the counter-narrative of its redundancy in the French electricity mix (DLN1).

Figure 3 – Share of offshore wind (OFW) in the French electricity mix [74]



We argue that this marginality is contingent on the ‘nuclear lock-in’ of the national energy regime [75]. This particular spatial embeddedness goes beyond the nuclear landscapes to encompass the legacies from seventy years of technological and institutional coevolution [76,77] and the self-perpetuation of the structural characteristics of surplus capacity and complementarity with hydropower [33]⁸.

This legacy has manifested itself in the failed attempts at reducing the share of nuclear supply in the energy mix: the 2019 pluriannual energy program has adjourned the difficult task of decommissioning twelve nuclear reactors to 2035, extended the lifespan of the oldest reactors from forty to fifty years [74], and has led the State to commission six new evolutionary power reactors to “secure energy independence and reach carbon neutrality in 2050” [78]. We argue that this specific national path dependency undermines the storyline of combating climate change and promoting energy security by promoting offshore wind, both by depriving pro-offshore-wind discourse coalitions of critical sources of legitimacy and aiding its opponents.

On another level, this legacy can contribute to explaining the failures of national management of maritime spatial planning [79], which is now presented by industrial stakeholders as the main challenge for the technology’s development, replacing previous cost issues. As stated by IND2 in reference to the failed attempt at identifying a consensual site in a wide zone through public-engagement procedures for the most recent Normandy development project in 2020, ‘it has now

⁸ Wind power does not fit well in an ESI structure where demand base-load nuclear is complemented with fairly abundant reserves of hydropower, and integrating its production is considered problematic by actors in the generation and transmission sectors. Furthermore, there are more reactors than are needed to satisfy French domestic consumption, and the two solutions to stabilize the ESUI output have been to export electricity to neighbouring countries and to encourage domestic consumption, a situation that is difficult to change [33]

become obvious that no planning was done for offshore wind in the French maritime area. The schedule was there (objectives, volumes), the 10 000 km² maritime space is also there, but not the identification of favourable zones. If we keep looking for places without any other commercial or military activity, instead of building one with the stakeholders in place, we will never find any.’ A similar statement on offshore wind development is issued by the spokesperson for France Nature Environment (MAR2), the largest national federation of national environmental NGOs: ‘The absence of debate on maritime spatial planning threatens offshore wind, the state does not know how to answer the question of “why these particular zones” and does not provide as many environmental studies safeguards as for fishing and commercial routes’. These accounts echo the recommendations of the CNDP for future public debates, calling for the French state to issue official statements on the intangibility of the exclusion of maritime zones as well as an economic and environmental evaluation of the impacts of nuclear energy [63].

We argue that this delay in maritime spatial planning can be interpreted as a result of low prioritisation of the technology’s development, due to both its contestation in the public sphere and its redundancy in meeting emissions reductions targets in the context of nuclear energy. This interpretation mirrors France’s setbacks in RET development when compared to its European neighbours⁹.

6. Discussion and conclusion

By moving between different geographical scales in the previous section, we have explored how the development of the French offshore wind industry is shaped by discursive dynamics as well as historical path dependencies, with important implications for present and future policy actions. Indeed, our scalar approach both emphasises the scalar structure of discourse coalitions – local, regional, national – but also their close interconnectedness with the spatial embeddedness of energy systems and the perceived legitimacy of each scale. We can systematise our results through the conceptual framing of the paper, before outlining lessons that can be drawn from the study.

First, we provide an integrated social-acceptance assessment of an energy industry, encompassing both its setting and the industrial production of its components. With this larger background, we are able to compare the deployment of the technology on different scales [2] and to explore how offshore wind reconfigures the spatial patterns of economic and social activity in favour of defiance or support for the technology. Indeed, the siting of offshore wind farms on the French coast challenges not only the values and representations associated with this landscape – as natural, preserved from industrial activity – but also the national energy landscape developed from the 1970 onwards, where electricity production is dominated by a centralised model reliant on nuclear power plants with highly localised impacts [75]. This inherited energy production model, with its close ties with the centralized political system, allows local opponents to argue against the deployment of offshore wind on the French coast on grounds of its redundancy. In parallel, the development of an international offshore wind market led by major firms and commissions from European countries reconfigures the industrial development of the technology, with the promise of jobs and industrial activities prompting national and regional stakeholders to subsidize offshore wind manufactures in French historical industrial shipyards such as Saint-Nazaire and Cherbourg, thereby prompting none of the criticisms faced by wind farm projects. Interestingly, both defiance and support appear to be influenced by legacies of the 20th century industrial system, suggesting that the reconfiguration brought about by renewable energy described by Bridge et al. [2] also inherits place-based dependencies.

⁹ In 2022, RET represents 19,1% of France’s final consumption, under the 23% objective set for 2020 by the 2009/28/EC Directive [80]

Secondly, in order to explore these legacies, we argue that these divergent trajectories mirror central place-based narratives at various scales. Following both Devine-Wright [17] and Pesch [18] by studying the social conflicts which systematically accompany the development of offshore wind farms, we show how formal public-engagement arenas, held only at a small scale, are overflowed by alternative claims carried by groups of residents. We also show how their framing of the technology is closely linked with the structure of the national energy system, echoing wider national narratives [19]. In the formal public engagement procedures and the parallel informal arenas opposing offshore wind, the technology itself is indeed increasingly described as redundant in an electricity mix dominated by nuclear power, which is presented as sufficient to complete climate emissions reduction targets and to secure the country's energy autonomy. These delegitimising narratives serve as a basis for distributive justice claims, which posit that the costs of offshore wind farms – altered seaside landscapes and their impacts on fishing and tourism economies, real-estate value, and the environment – are not justified by their contribution to the nation's greater social good. However, we also argue that the competing energy futures defended by these critical accounts of offshore wind, elsewhere described as forward-looking [16] are deeply rooted in the modernist ideals of nuclear energy serving as a synonym for both technological prowess and national glory [48].

Thirdly, we explore the failure of a “back-flowing” policy [18] when policy changes strive to include new issues in the formal assessments without accommodating debates at larger scales. Here, we show how the French effort to hold public debates upstream, before the choice of a particular site, technology or developer, leads to an unproductive outcome whereby no consensus is found on the location of future developments – albeit planned for in the energy transition strategies at the rate of 1GW per year until 2030. This failure, we argue, has its roots in the flawed national debate over the form and function of wind energy in the wider energy transition at the local scale, as demonstrated elsewhere [5], but also in the lack of an assertive approach to maritime spatial planning. Indeed, we interpret the absence of negotiation and compromise from public authorities to widen the scope of possible siting zones, restricting instead the location of future farms to places devoid of any maritime constraint, as both the sign and the result of the marginality of technology in the national energy transition policy.

These analyses of the ties between the dynamics of social conflict and national narratives of the energy system suggest possible directions for policy-makers. One of them is that they reiterate the importance of accommodating wider debates over the energy systems in the formal assessment procedures [17], recognizing that the national scale is still important for basing the legitimacy of a project. Excluding challenges to the merits of a renewable electricity technology and its contribution to national interests from public engagement, in the case of offshore wind in France, has led to an increasingly polarised debate dominated by the question of its redundancy in the context of nuclear energy. It has deprived offshore wind supporters from central legitimising narratives, such as climate change mitigation and energy autonomy, without giving them the means to contest the economic and environmental impacts of nuclear power plants in the absence of official national statements. Creating arenas for these debates, in order to approach a social contract on technical change, would also mean changing the scale of public engagement, as successfully demonstrated by the 2020 democratic experiment of a citizens' assembly tasked with finding consensus on a social-justice led energy transition [81].

A second direction is that these results bring into question the possibilities for reframing offshore wind as part of the national narrative, aligned with national values. The success of France's industrial development, making it the third major European manufacturing country, is in part due to non-economic factors, such as regional and national narratives of France as an industrial leader. We argue that connecting offshore wind with elements of the country's identity is a necessary task for national public authorities if France is to reach its own 2030 target, but our results also show

the deep interconnection of this possible new framing to the continued reliance on the national gamble on nuclear technology, which has yet to become its own public debate.

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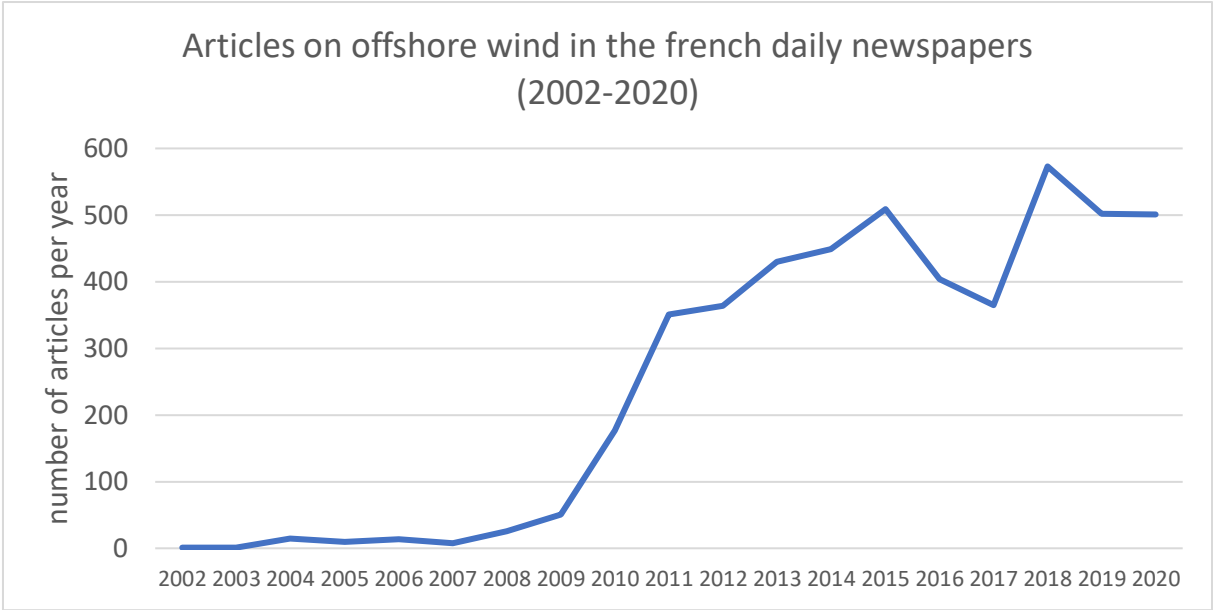
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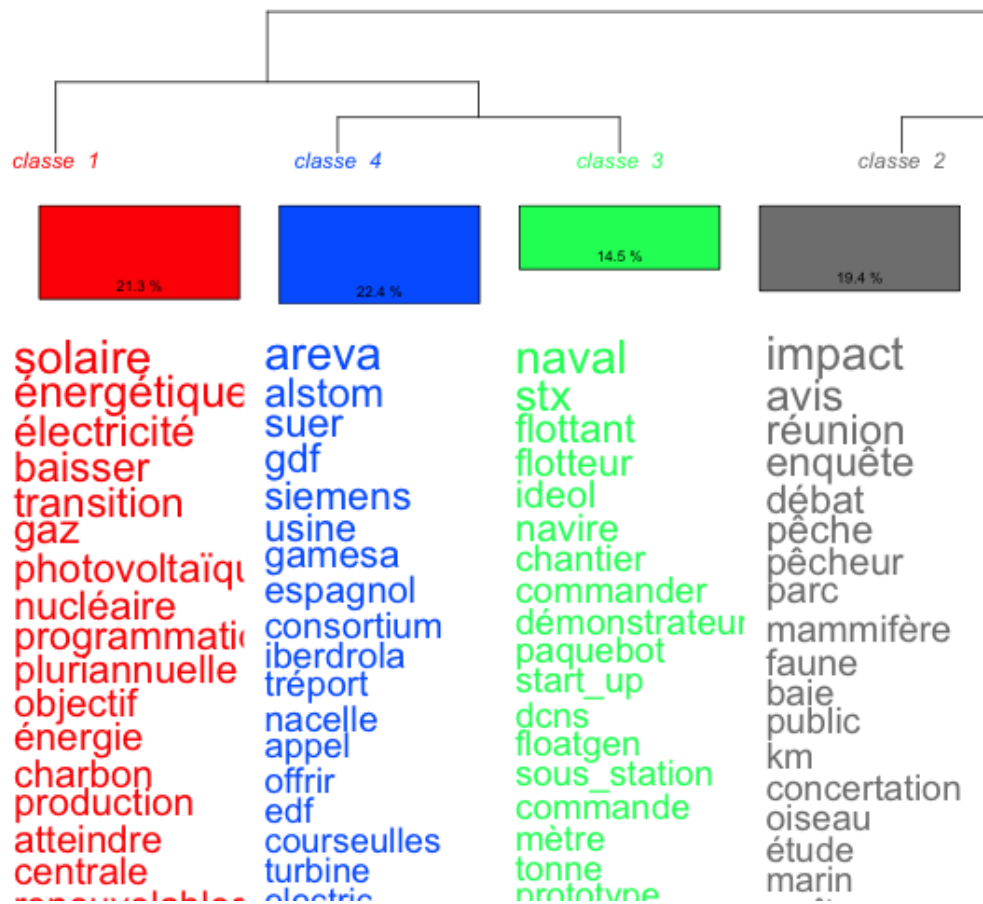
Annex 1 – description of the press articles database: publication year and main sources



Most prominent newspapers in the offshore wind corpus (2002-2020)

Name	Number of articles
Ouest France	1451
Paris Normandie	608
Presse océan	499
Les Échos	364
Le Télégramme (Bretagne)	330

Annex 2 – results of the lexicometric analysis on the press corpus



Class 1: with keywords such as *solar*, *energetic*, *transition* and *photovoltaic*, this class comprises articles on the national energy transition strategy.

Class 2: with keywords like *Areva*, *Alstom* and *Suez*, which are French multinational companies involved in the nuclear fuel cycle, this class is composed of articles on the part played by offshore wind in French industry

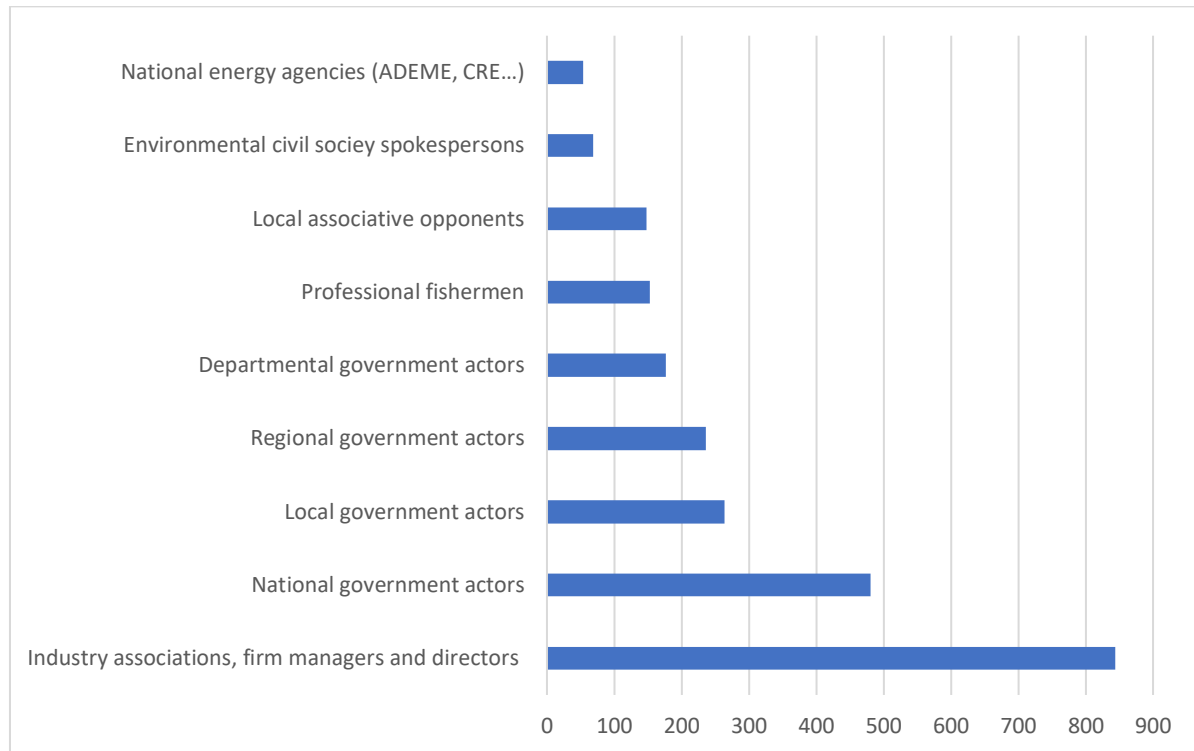
Class 3: the words *naval*, *STX* and *floating* show that this class of articles is concerned with in the local impacts of offshore wind on manufacturing activities.

Class 4 and 5: the words *impact*, *opinion*, *reunion*, *enquiry*, *debate* suggest that these articles are concerned with the public concertation process.

Annex 3 – recurrence of arguments on offshore wind in the press corpus (2002-2020)

Overarching narrative	Specific arguments	Number of occurrences
Arguments in favor of offshore wind	Total	119
	The concertation process is well-organised	5
	Offshore wind in other European countries is a success	16
	Offshore wind supports French industry	62
	Offshore wind is not a problem for maritime planning	10
	Offshore wind is increasingly competitive	18
	Only the first wind farms were too expensive	8
Criticisms of offshore wind	Total	114
	Offshore wind damages landscapes, tourism and environment	20
	Offshore wind is a bad choice in the French energy system	45
	Offshore wind is too expensive	9
	Oppositions have delayed offshore wind	23
	The concertation process is flawed	9
	Offshore wind does not create jobs	8
Criticisms of the French strategy on offshore wind	Total	51
	The political support for offshore wind is too limited	27
	The flawed regulation at the national scale has hindered offshore wind development	14
	Responses of spokespersons of the French government to the above criticisms	10
Floating offshore wind		32
	France is a pioneer in floating offshore wind	16
	Floating offshore wind is a better technology	12

Annex 4 – number of quotations for nine types of stakeholders in the press corpus (2002-2020)



Annex 5 – table of interviews

Code	Organisation and function	Date
OP1	President of the Fréhel Environment association	July 2020
OP2	Founder of the 'West Coast Without Wind Farms' collective	August 2020
OP4	President of the Federation for a Sustainable Environment	August 2020
OP5	President of the 'Free Horizon' association	August 2020
OP6	President of the 'For a coast without wind farms' association	August 2020
OP7	President of the 'No offshore on the horizon' association	August 2020
IND1	Chief of the marine energy sector at the French Renewable Energy Union, the professional	October 2020

	association of renewable energy stakeholders in France.	
IND2	Deputy CEO of <i>France Énergie Éolienne</i> , the professional association of wind energy stakeholders in France.	September 2020
IND3	Offshore Wind Development, Total.	July 2020
MAR 1	Member of the Regional Fisheries Committee of the Loire <i>département</i>	August 2020
MAR 2	Chair of the Oceans network, France nature environnement	September 2020

Annex 6 - Chronology of legal challenges filed against OFW in France

