# *Making the Most Out of Renewable Energy Opportunities: Lessons Learned from a Regional Strategic Mapping Approach*

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## *Keywords*

# *Structured Abstract*

### *Purpose*

Offshore renewable energy technologies provide many new opportunities for coastal regions around the world, and although the energy policy literature has documented the success stories of many 'first mover' regions, there is little guidance for 'second mover' or 'follower' regions. This paper investigates the strategic challenges faced by coastal regions that are not first movers.

### *Design/Methodology/Approach*

We use a multiple case study approach to analyse the behaviour of regional stakeholders when planning and assessing their participation in the renewable energy sector.

### *Findings*

The paper reveals the tendency of regional planners to idealise investments in renewable energy. The negative consequences of idealisation are inadequate strategic visions.

### *Research Limitations/implications*

The findings are only relevant in the context of the regions that are part of the case study.

### *Practical implications*

The paper illustrates how idealisation of technology or strategy is created and how it impacts strategic decision making.

### *Social Implications*

Although much of the energy policy literature discusses the challenge of social acceptance, this paper documents an opposite phenomenon, idealisation. The energy sector needs to find a middle ground between these two extremes.

*Originality*

The paper provides evidence and a theoretical analysis of a decision-making bias, idealisation, that is not discussed in the literature.

# *Acknowledgements*

# *Making the Most Out of Renewable Energy Opportunities: Lessons Learned from a Regional Strategic Mapping Approach*

## 1. Introduction

This paper presents the findings of a comparative regional analysis performed as part of a European funded INTEREG IVa project, Channel-MOR (Channel-MOR, 2014). The Channel-MOR project brought together all the project teams of offshore renewable energy projects previously funded by INTERREG Channel, the European institution promoting and supporting inter-regional collaboration in the Channel area between the UK and France. The objective of the Channel-MOR project was to provide recommendations to member regions so that local businesses could take advantage of Maritime Renewable Energy (MRE) opportunities. The MRE technologies that were considered during the project were offshore wind, tidal energy, and wave energy.

The Channel Arc Manche region includes all coastal Channel regions, from Brittany to Nord-Pas de-Calais on the French coast and from Cornwall to Norfolk on the British coast. All these regions were invited to partake in the project, which was based on a strategic mapping exercise. The principle was to ask participating regions to map their strengths, weaknesses, etc. on a comparative map, in order to help them to formulate adequate strategic plans and to identify opportunities for collaboration. From this perspective, the Channel-MOR project was an applied research project. Despite improving this mapping exercise by deploying operational research methods, surprising and unintended findings emerged. In the strategic mapping exercise, most regional stakeholders wanted to portray their regions as being in strong strategic positions, a participation bias that we explain through the concept of idealisation, a psychological defence process. Idealising one's strategic position is an issue as it undermines the feasibility and plausibility of subsequent strategic plans.

Idealisation in the Channel-MOR project raised a new set of research questions, and the objectives of this paper is to answer them: How can we explain the prevalence of idealisation amongst regional

stakeholders? What are the consequences of idealisation on regional strategic planning of energy transitions? In the rest of this paper, the decision makers that play a key role in local energy transitions are referred to as 'regional stakeholders'. They can be any regional organisation that gets involved in the process of planning for participation in offshore renewable energy initiatives and include regional authorities (councils in the UK and *régions* in France), public and private sector actors, universities, interest groups, associations, etc.

This paper is organised as follows. In the second section below, we describe idealisation theoretically as a psychological defence but also from the perspective of the behavioural theory of the firm. The third part describes the case study methodology which is used to causally explain idealisation and to explore its consequences. The fourth section starts by presenting background information and the results of the Channel-MOR project before proceeding to the analysis of the case studies.

## *2. Theory*

Idealisation is the process of over-valuing and augmenting a concept or idea to the extent that it cannot possibly be challenged (Brown and Starkey, 2000). Idealisation is a psychological defence (Brown and Starkey, 2000): when presented with evidence that an idea is flawed, participants will reject this evidence as they do not want to or cannot bear with the consequence of accepting the flaw or its consequences. In the Channel-MOR case study, participants refused to accept a description of MRE opportunities other than the official government or international organisation positions, or the positions that created their mandates. Idealisation thus brings a behavioural bias in decision-making. For this reason, we propose to explore the paper's research question about the prevalence of idealisation in the Channel-MOR project from the perspective of the behavioural theory of the firm (Cyert and March, 1963). The behavioural theory of the firm challenges the notion that managers aim to maximise shareholders' wealth as they find themselves in complex and ambiguous decisional contexts. Instead of rationally maximising the value of the firm, managers look for ways to improve the value of the firm in a fashion akin to adaptation (Levinthal and March, 1981). The decisional contexts between corporate

managers and the regional stakeholders in this paper are similar enough to make the application of the behavioural theory of the firm feasible.

Idealisation is a commonly used variable in managerial psychology, but it has never been associated with the behavioural theory of the firm. There are however a number of concepts in the behavioural theory of the firm that can explain behaviours akin to idealisation. The behavioural theory of the firm examines the different coalitions that are created around different positions borne out of uncertainty, ambiguity, and bounded rationality. Shared idealisation, which often leads to ignoring the impact of uncertainty on a course of action, is a mechanism for creating a coalition whose behaviour will be similar to the phenomenon of escalation of commitment (Staw, 1981) and irrationality in decision making (Brunsson, 1982), both classic research themes with the behavioural theory of the firm.

Different coalitions will not look for the optimal solution to a problem as they will disagree on both the nature of the problem and the ways to solve it. Instead they will adopt different directions of search (Cyert and March, 1963). The behavioural theory of the firm offers many theoretical perspectives to characterise different searches, as for example the preference for explorative versus exploitative searches (March, 1991) or cognitive versus experiential searches (Gavetti and Levinthal, 2000). This means that the behavioural theory of the firm offers a unique perspective to understand not only idealisation but also its impact on the direction of search that coalitions of regional stakeholders will adopt.

## 3. Methodology

In the Channel-MOR project, 6 regional teams produced strategic mapping and scenarios for 10 regions. This paper investigates these 10 regional case studies. For each region, the purpose of the research is to assess to which extent idealisation was an issue, why, and what were its impacts on strategic planning from the perspective of the behavioural theory of the firm. The 10 cases offer considerable variation in terms of (1) team composition, (2) prior knowledge of the MRE sector, and

(3) decision making independence from political/governmental bodies. As such, the 10 cases make for a very good 'maximum variation sample' as defined by Miles and Hubberman (1994).

Case study research is now recognised as an approach to research which is pluralist in terms of methodology (Welch et al., 2011) and that can accommodate positivist, interpretivist, or critical realist paradigms. As the purpose of this paper is to explain the prevalence of idealisation in an applied research project which was carefully designed to 'outlaw' subjectivity through the deployment of several operational research techniques, an interpretivist approach is ruled out. Instead, to explain such a surprising and contrasting outcome requires an emphasis on both strong causal explanation and contextualisation. The central research question is: what were the causes of idealisation? How could it happen in this specific context given all the efforts made to make the approach more rational? Welch et al. (2011) define such a research programme as the contextualised explanation approach to case study research, which uses the ontological basis of critical realism (Bashkar, 1998). The principle of this approach is to use a theory-informed case study analysis which pays attention to the context of the case study in order to abductively provide an explanation of the events and processes that led to the observed results. This means not only paying attention to the context of the case studies themselves but also to the historical national and regional contexts that have shaped the industry prior to the Channel-MOR project.

Figure 1 summarises the behavioural theory of the firm's key conjecture, i.e. the idea that complex decision contexts result in the creation of coalitions adopting specific behaviours, as a research framework explaining how the case analysis will be performed.



**Complex Decisional Context**
*Uncertainty and Ambiguity* → **Behavioural Coalitions**
*Idealisation* → **Impact of Behaviour**
*Consequences of Idealisation*

*Figure 1. Research Framework*

Figure 1 can be used to break down the central research question (causal explanations of idealisation) into a series of structured research sub-questions:

- How complex and ambiguous was the decisional context in the Channel-MOR project?

- What is the evidence that idealisation took place?

- What are the coalitions to consider when explaining idealisation as a behaviour?

- What are the root causes of idealisation? Was it avoided in any of the cases, and if so, how?

- What is the impact of idealisation?


# 4. Case Study

## 4.1. The Channel-MOR Project

### 4.1.1. Background

Marine renewable energy (MRE) is a promising addition to the portfolio of energy sources of the future in a context of increasing global concerns with sustainability. The energy policy literature has discussed the potential of MRE sources in this context at great length, especially in the case of offshore wind (e.g., Makridis, 2013; Higgins and Fowley, 2014; Toke, 2011). There is an equally rich literature analysing the challenges facing the growth of the offshore wind sector (e.g. Govindan and Shankar, 2016), with key concerns including cost (Stentoft et al., 2016; Gernaat *et al*., 2014; Kaldellis and Kapasali, 2013), technology capability (Perveen *et al*., 2014; Kaldellis and Kapasali, 2013, Sun *et al*., 2012), often volatile political support (Normann, 2015), 'battles over institutions' (Jacobsson and Lauber, 2006; Dhanju *et al*., 2011), and social acceptance (Bell *et al*., 2005; Devine-Wright, 2005; Wolsink, 2011). Throughout the rest of this paper, it is important to bear in mind this ambivalent property of renewable energy in both the research literature but also in the popular press: the MRE sector is often described as an exciting, very promising, new 'smart' sector which is however associated with considerable commercial, technological, social, and political risks.

### 4.1.2. Channel MOR Project

The purpose of the project was to produce a strategic position analysis of each Channel region in order to identify strategies so that local businesses (and especially local SMEs) could take advantage of

Maritime Renewable Energy (MRE) opportunities. The Channel-MOR project brought together 6 different partners, 3 from the UK and 3 from France, each involving a team of 5 individuals on average. A traditional strategic analysis approach (SWOT analysis, Wheelen *et al.*, 2015) was used to facilitate data collection as direct and indirect participants would all be familiar with it. However, SWOT can be used subjectively or erroneously (Hill and Westbrook, 1997) and in order to address such issues, the applied research design described below was used.

A literature review was used to generate a list of commonly used strategic factors (strengths, weaknesses, opportunities, and threats, see table 1). To measure the relative importance of strategic factors, a global survey of experts was performed (including but not limited to the Channel-MOR team). The full survey was released in July 2014 after a pilot survey. 1751 invitations to complete the survey were sent to industry experts listed in the Channel-MOR database of contacts, which includes published academic authors, regional officers, and practitioners. A total of 80 e-mails bounced back making the effective population size 1671. A total of 91 people started the survey. However, as the survey was quite long to complete, only 57 completed the survey, for a response rate of 3.4%. The focus of the survey was to rate the importance of strategic factors through pairwise comparisons. For example, respondents were asked if a region would derive a stronger competitive advantage in the MRE sector from local R&D capabilities by opposition to ideal siting conditions for MRE facilities. Survey results are shown in table 1.

The survey results revealed high variation and skew. Given the nature of the survey – rating strategic factors in a sector famous for its strategic ambiguity- this issue was anticipated, and the survey was based on an AHP methodology (Saaty, 1980) through which the logical consistency of respondents can be measured. A question about the respondents' self-rated confidence was also added to the survey, and the graph shown in figure 2 was used to only select as valid answers those from respondents who self-rated themselves as confident and who achieved acceptable levels of logical consistency. The results of the survey from the experts group (*n*=40) was used to define the weight of each strategic factor in the mapping exercise.
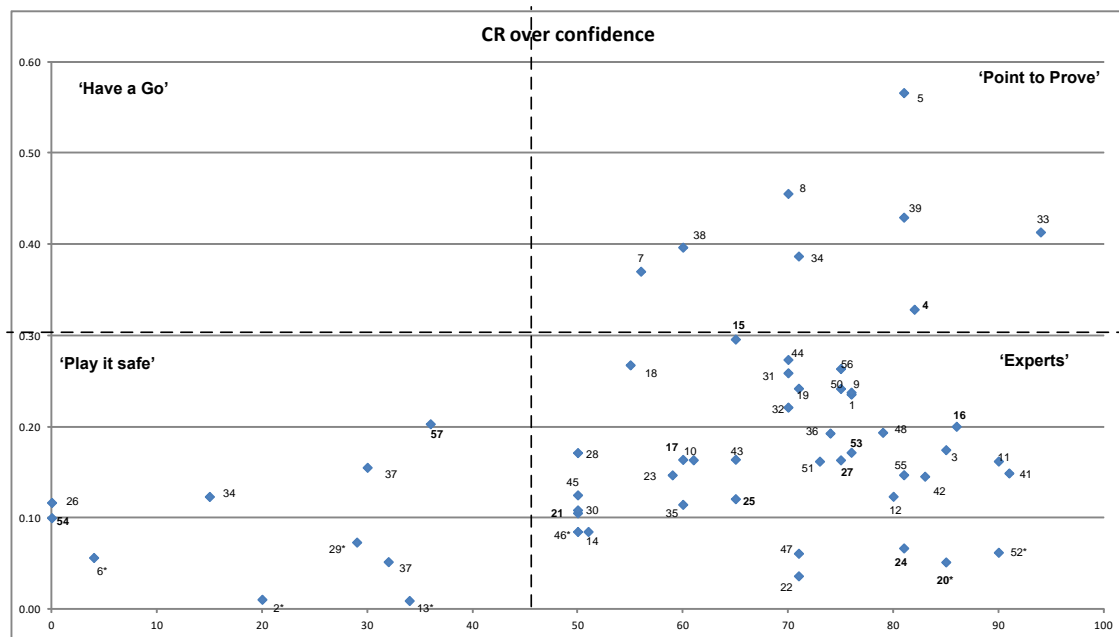
*Figure 2. Scatter diagram of average consistency ratio (y) against confidence (x) of each*

*respondent*

Each regional team was asked to perform an External Factors Strategic Analysis (EFAS) and an Internal Factors Strategic Analysis (IFAS; Wheelen et al., 2015). Each team reviewed previous applied research projects outputs and/or collected new data in order to determine a regional rating for each strategic factor, i.e. a measure of the ability of a region to take action in relation to a factor. Typically, additional data collection was done through workshops involving 5 to 10 additional participants.

The strategic mapping was performed with the approach developed by Chang and Huang (2006): the product of the weight and of the rating for each factor gives a score on a scale from 0 to 5. For each region, these values are plotted on Christensen et al. (1976) grand strategy matrix, where threats are considered as negative opportunities and weaknesses as negative strengths, as shown at the top of figure 3.

| Strategic factors and their relative importance | | Pilot | Full Survey Results | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | GM | GM-All | GM-1 | GM-2 | Channel MOR | UK | France | Rest of Europe | Rest of World |
| Number of respondents | | 12 | 57 | 40 | 17 | 12 | 35 | 14 | 4 | 4 |
| **MRE Technology** | Offshore Wind | 0.42 | 0.49 | 0.47 | 0.43 | 0.53 | 0.45 | 0.52 | 0.66 | 0.49 |
| | Wave | 0.31 | 0.16 | 0.15 | 0.18 | 0.22 | 0.19 | 0.12 | 0.13 | 0.17 |
| | Tidal | 0.27 | 0.35 | 0.38 | 0.38 | 0.25 | 0.36 | 0.35 | 0.21 | 0.34 |
| **Opportunities** | Construction (CAPEX) | 0.12 | 0.24 | 0.23 | 0.25 | 0.17 | 0.26 | 0.19 | 0.19 | 0.21 |
| | R&D | 0.28 | 0.18 | 0.17 | 0.20 | 0.23 | 0.19 | 0.17 | 0.08 | 0.13 |
| | Operations and Maintenance (OPEX) | 0.23 | 0.23 | 0.24 | 0.21 | 0.18 | 0.22 | 0.24 | 0.38 | 0.23 |
| | Downstream supply chain (distribution, storage, retail) | 0.16 | 0.18 | 0.17 | 0.20 | 0.24 | 0.17 | 0.18 | 0.24 | 0.25 |
| | Internationalisation (seeking global opportunities) | 0.21 | 0.17 | 0.19 | 0.14 | 0.17 | 0.16 | 0.20 | 0.11 | 0.18 |
| **Threats** | Competition | 0.19 | 0.15 | 0.14 | 0.16 | 0.13 | 0.18 | 0.17 | 0.18 | 0.18 |
| | Cost (cost of renewable electricity is a threat to sector) | 0.19 | 0.29 | 0.30 | 0.26 | 0.32 | 0.23 | 0.23 | 0.24 | 0.24 |
| | Public (opposition to developments) | 0.1 | 0.13 | 0.14 | 0.12 | 0.12 | 0.16 | 0.18 | 0.17 | 0.19 |
| | Market Power(of large industry players) | 0.22 | 0.14 | 0.13 | 0.16 | 0.11 | 0.17 | 0.18 | 0.18 | 0.19 |
| | Uncertainty (of sector as a whole) | 0.3 | 0.30 | 0.29 | 0.30 | 0.32 | 0.26 | 0.23 | 0.24 | 0.19 |
| **Weaknesses** | Lack of ability to move technology forward | 0.21 | 0.26 | 0.24 | 0.29 | 0.32 | 0.26 | 0.25 | 0.24 | 0.25 |
| | Lack of resources | 0.41 | 0.32 | 0.34 | 0.27 | 0.26 | 0.28 | 0.27 | 0.29 | 0.24 |
| | Not possessing a first mover's advantage | 0.12 | 0.18 | 0.17 | 0.23 | 0.21 | 0.22 | 0.22 | 0.23 | 0.24 |
| | Weak industrial capability | 0.26 | 0.24 | 0.24 | 0.21 | 0.21 | 0.25 | 0.25 | 0.24 | 0.27 |
| **Strengths** | Preference weather and geographical factors | 0.27 | 0.26 | 0.27 | 0.22 | 0.25 | 0.25 | 0.27 | 0.23 | 0.26 |
| | Preference export (of electricity) | 0.27 | 0.17 | 0.17 | 0.15 | 0.16 | 0.20 | 0.22 | 0.25 | 0.24 |
| | Preference expertise | 0.29 | 0.31 | 0.29 | 0.36 | 0.36 | 0.29 | 0.27 | 0.27 | 0.24 |
| | Preference policy (supporting) | 0.17 | 0.27 | 0.27 | 0.27 | 0.23 | 0.27 | 0.24 | 0.25 | 0.27 |

*Table 1. Pilot and Full Survey results (GM= normalised Geometric Mean; 1 = experts; 2= non-experts)*

The results were surprising as nearly all regions were positioned in the Strength-Opportunity (SO) quadrant of the strategy matrix, where growth strategies would be advocated. The qualitative evidence collected in the strategic data tables suggested otherwise and the regional teams with regions positioned in the ST quadrant challenged the realism of the ratings of the other regions. This led to a moderation exercise where all ratings for all regions were reviewed by a moderation team that collected additional data when needed. The moderated strategic map is shown at the bottom of figure 3.

The next step of the project was to ask each region to produce industrial scenarios through which they could encourage their local businesses to participate in the MRE industry. Given the results shown in figure 3, where the majority of regions are shown to be belong to the ST quadrant (region with strong competitive position in slow growth markets), one would expect scenarios recommending diversification or joint ventures, consistently with Christensen et al. (1976). Instead, most of the regions wrote typical growth scenarios (e.g. market development, market penetration) which can only feasibly be applied by regions positioned in the SO quadrant.

## *4.2. Case Analysis*

### *4.2.1. Evidence of idealisation*

As mentioned in the introduction, a surprising feature of the Channel MOR case study is to provide evidence of idealisation of MRE opportunities, not once, but consistently throughout the project:

- The survey eliminated the extreme views of the respondents with a 'point to prove' (figure 2), i.e. respondents who are idealising a specific strategic factor or technology. This was the first 'warning' provided to participants against idealised views.
- During the strategic mapping exercise, only 2 regions out of 10 assessed themselves objectively, without idealisation effects (look in figure 3 for regions with relatively similar positions after moderation).
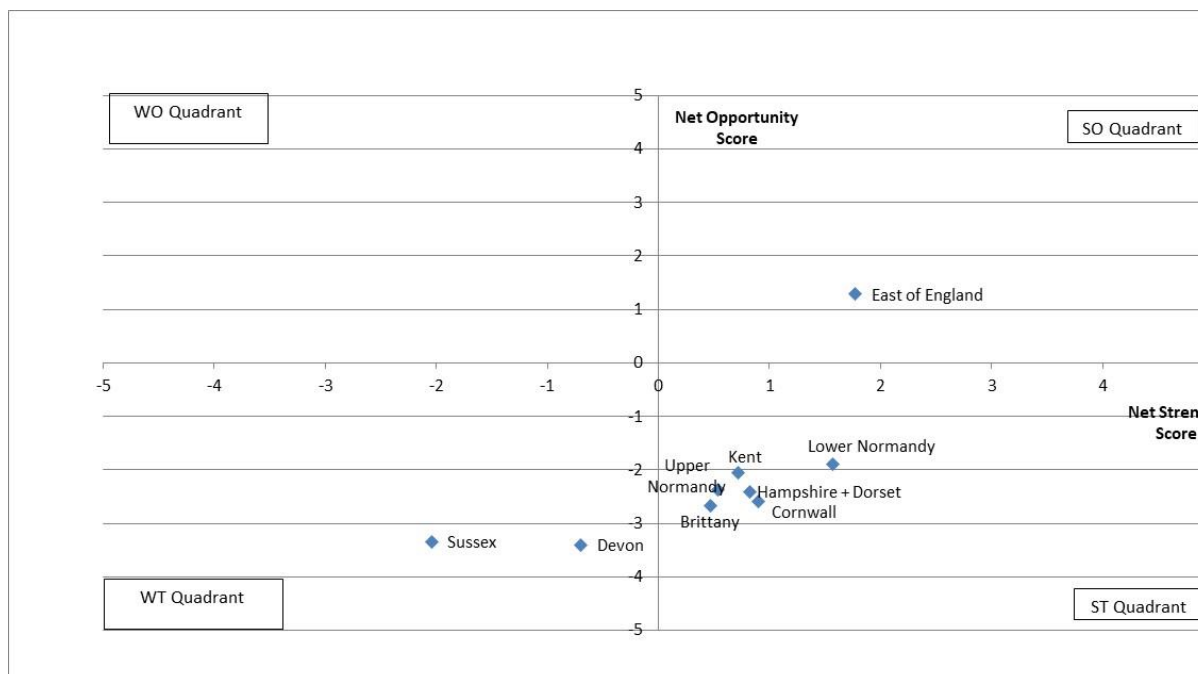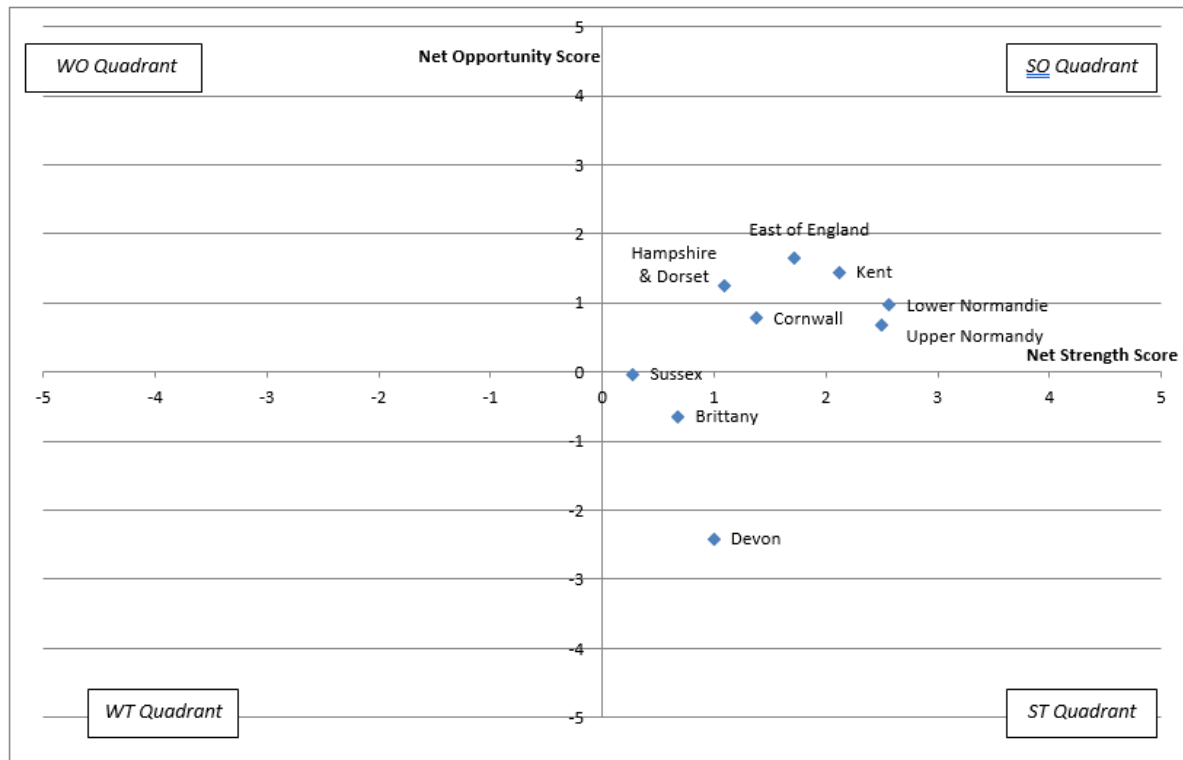
*Figure 3. Strategic Mapping Results (Unmoderated at the top, Moderated at the Bottom)*

- Despite the moderation exercise which reclassified most of these regions from the SO to the ST quadrant in figure 3, regional stakeholders then devised scenarios based on the original idealised mapping of their region.

- Regions that had little experience of the MRE sector failed to learn lessons from more experienced participating regions that explicitly stated they had failed to achieve the significant growth expected in the SO quadrant. In other words, even when presented with hard evidence, non-experienced participants preferred to hold onto their idealised views of opportunities.

- During various interviews and workshops in the Channel-MOR project, participants acknowledged that their expectations of success in the MRE sector were heightened to unrealistic levels, i.e. a collective psychodynamic similar to the gold rush.

### *4.2.2. Decisional Context*

Figure 4 describes the decisional context faced by regional stakeholders as the intersection of two ambivalent fields of decision making.

On one hand, the results of the survey (table 1) shows that uncertainty is perceived to be one of the most important threats by the experts who completed the survey. Yet the strategic mapping exercise shows that opportunities are perceived to be high. This high return-high risk decisional context is represented by the horizontal field in figure 4.
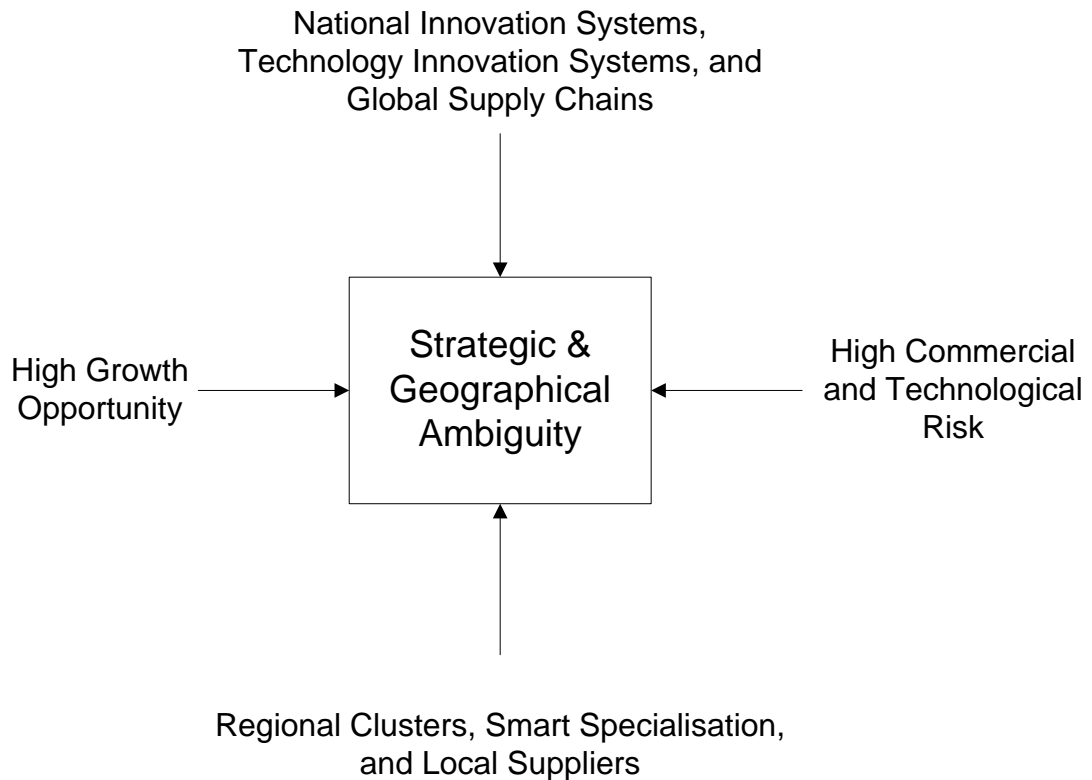
National Innovation Systems,
Technology Innovation Systems, and
Global Supply Chains

High Growth
Opportunity

Strategic &
Geographical
Ambiguity

High Commercial
and Technological
Risk

Regional Clusters, Smart Specialisation,
and Local Suppliers

*Figure 4. Decision Making Context*

On the other hand, it is important to understand how regional stakeholders approach the decision from a theoretical basis. Regional stakeholders predominantly pursue strategies that inscribe themselves in the regional specialisation agglomeration economics of Porter's Diamond Framework (Porter, 2000) and/or of smart specialisation (Foray, 2014).

This approach aligns itself with the success stories that can be found in the technological innovation systems (TIS) literature (e.g., Bergek and Jacobsson, 2003). These success stories depict regional clusters serving (protected) national markets for renewable energy technologies that relied on local networks of suppliers. This does not mean however that the ultimate target market scope of these clusters is regional. For example, Vestas, one of the leading offshore wind turbine manufacturers exports today 99% of its production (Lewis and Wiser, 2007) and is increasingly developing a global supply chain. This means that although regional stakeholders are looking for local, regional economic dynamics, the source of the technology, the know-how and eventually the market and operation scope are national or global concerns.

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In the Channel-MOR project, nearly all participating regions had mapped local supply chains that could be used by the MRE sector. There are many research papers based on supply chain principles (such as supply chain integration and collaboration; Hennely and Wong, 2016; Brink, 2017; Kavin and Stentoft, 2017; Neri, 2016) that present supply chains as a pathway for entering and innovating in the MRE sector. However, none of these articles advocate focusing on local supply chains. Instead, their recommendation is for local SMEs to become suppliers within global supply chains.

Both Porter's diamond and the smart specialisation frameworks highlight the importance of rich entrepreneurial knowledge exchanges within a specific geographical area, whereas the literature on National Innovation Systems acknowledge how difficult it is for regions to get involved with the formative stage of new technologies that are taking place at the national level (Wilson, 2012). Bridge et al. (2013) confirm that despite very active national policy regimes, regional authorities often struggle to appreciate the impact that offshore investments will have on their economies and what economic and social transitions, if any, are required.

The TIS literature acknowledges that it has been criticised for not translating its implications explicitly enough into practical guidance for policy makers, a criticism that has been addressed by Bergek *et al*. (2008) functional dynamics scheme of analysis. The core principle of this scheme is to understand the functional patterns achieved by a TIS though the combination of the different functions that it serves: knowledge development, resources mobilisation, market formation, influencing the direction of search, legitimising the TIS, encouraging entrepreneurial experimentation, and stimulating the development of positive externalities (Bergek et al., 2008). This scheme, however, has only been applied at a national rather than a regional level of analysis (Bento and Fontes, 2015; Wieczorek *et al*., 2015), and thus, it does not address the strategic ambiguity faced by regional stakeholders.

Finally, it is important to add that in the strategic mapping exercise, many respondents indicated that they felt unable to deal with strategic threats of a global nature. In many of the EFAS forms, many respondents added as comments to a threat: "National-level issue that we cannot address at a regional level'. This local-global decision ambiguity is represented by the vertical decision field in figure 4.

### *4.2.3. Coalitions*

Regional stakeholders must work with the following coalitions:

- Local opposition coalitions: Regional coalitions that are typically concerned with the visual impact and the environmental impact of wind farms. Public opposition is one of the weakest threats according to the survey (cf. Table 1), and a low-impact threat in the strategic mapping exercise. As a result, the Channel-MOR report (2014) did not discuss social acceptance of technology at length and never predicted the fact that the Navitus Bay wind farm project in the British county of Dorset would be rejected. Such a prediction may be have been possible to make through a less idealised view of windfarms.

- Clustering coalitions: These are composed mostly of regional officers who see renewable energy as a means to create a new smart sector on their shore.

- Technoentrepreneur coalitions: These are composed of small start-up firms developing new but unproven technologies. Although they are acknowledged regionally, the level of funding required and the intrinsic technology risk are such that these coalitions are 'born-global' start-ups that seek funds and customers at both a national and global level.

- Techonology-specific coalitions: These are either national of regional scale interest groups created to create awareness and promote the adoption of a specific technology. For example, wind energy networks have been created by almost all regions in the Channel area. They are many divisions between these coalitions, e.g. those interested in traditional offshore wind versus floating offshore wind.

- All energy coalitions: These are interest groups formed of a multitude of actors that attempt to address energy issues at a regional level. They are a breeding ground for ideas and projects as they often combine actors from multiple sectors (electricity, oil and gas, ports, etc.).

### *4.2.4. Causal Explanation of Idealisation*

The TIS literature stresses the importance of the formative cycle of technology development and concludes that it is only through an understanding of this cycle that *ex post* TIS dynamics can be understood (Bergek *et al*., 2008). According to Bergek *et al*. (2008) two important phases of the formative cycle are legitimisation and the emergence of positive externalities. They result in *'powerful "bottom up" process of system growth'*. Jacobsson and Lauber (2006) insist on the potential length of the formative cycle, which can span several decades and can go through a series of growths and declines as institutional support changes. In the case of the development of offshore wind in the Channel area, the TIS literature would suggest that an offshore wind TIS can only emerge on the back of a robust and sustained formative cycle taking place in ideally both sides of the Channel.

A formative cycle started in the 1970s/1980s when offshore wind (and more generally wind power) did not achieve any form of legitimisation in either country. At a time when Germany was going through a 'battle over institutions' (Jacobsson and Lauber, 2006) and when Scandinavian countries invested heavily in technology development, wind power was disregarded as a minor technology search field in France and the UK. In the UK, the few indigenous turbine manufacturers were acquired by Scandinavian firms or went bankrupt. In France, the priority was given to the development of nuclear energy. This meant that search efforts were not deployed in either country and that resource mobilisation was very low. This is not to say that there was no interest in wind power, as both regions experimented with onshore wind power but at a small scale when compared to some other European countries. Some French firms invested in offshore wind and successfully gained market positions but usually through global rather than home market opportunities. Overall, these stifled formative cycles resulted in very low positive externalities.

This means that when other European countries were going through complex and sometimes controversial formative cycles, the regions surrounding the Channel either dismissed the possibility of offshore wind power (the UK) or adopted a careful 'wait and see' approach (France), constraining these regions to being followers or laggards in the future, should the technology take off.

The interest in MRE technologies changed recently when official government positions became shaped by Europe's commitment to carbon reduction. When faced with carbon reduction targets, France and the UK are in very different positions. The UK faces a genuine physical challenge due to its traditional portfolio of energy sources. As France relies heavily on nuclear power for its energy, carbon emissions are not as critical a problem. Nevertheless, both show today a strong political will to invest in offshore wind. The consequence of this sudden change of hearts *vis à vis* offshore wind is national policies of idealisation. In other words, regional decision makers that had learned to dismiss offshore wind as a source of energy for the future are suddenly told that they should demonstrate their engagement and commitment to offshore wind as one of the key technologies through which key national and supra-national targets will be attained. This turnaround is not possible without a strong marketing campaign and issuing directives, typically at central government level. The sometimes coercive nature of this 'institutional push' were observed in the Channel-MOR project, as for example when one region refused to produce a scenario analysis on the grounds that it could not as a regional entity produce a view point which would differ from national directives.

The Channel-MOR project was composed of regions that had substantial experience with the MRE sector and regions that were new to the sector. Experience was either practical (i.e. having operated wind farms for a few years or engaged with the sector) or prospective (i.e. through extensive strategic analysis prior to the Channel-MOR project). The extent of idealisation of a region (as measured by the differences between the original and moderated positions in figure 3) and the realism of the scenario analysis were directly correlated to this level of previous experience. Therefore, observations from the Channel-MOR project suggest that idealisation of MRE opportunities are created by the joint effect of very strong global/national marketing legitimisation campaigns and lack of experience. In the terminology of the behavioural theory of the firm, many of the participating regions could not perform a backward looking experiential search (Gavetti and Levinthal, 2000) and instead contributed to the Channel-MOR project through cognitive searches solely informed by national policy directives.

### 4.2.5. Impact of Idealisation: Search Vulnerability

As previously mentioned, the direction of search selected by a region is often strongly influenced by clustering and technology specific coalitions resulting in a gold rush mentality. This is fuelled by the classic success stories of German and Scandinavian regions that has followed this exact pattern and are now at a stage of their business models where they can achieve an optimal trade-off between exploitation with exploration (March, 1991). In the face of uncertainty, one would expect decision makers to select a direction of search very carefully. Figure 5 illustrates the three feasible directions of searches that a rational actor could possibly consider.

The first direction of search to escape the ST quadrant is to seek a joint venture to diversify into a line of product or service which will later offer opportunities for substantial growth. This first direction of search is based on the direct application of strategic management and Christensen's et al. (1976) grand strategy matrix framework. An example of this strategy is the (now implemented) decision to merge the Kent and East of England Centres for Renewable Energy in order to provide a pathway out of the ST quadrant for the Kent region.
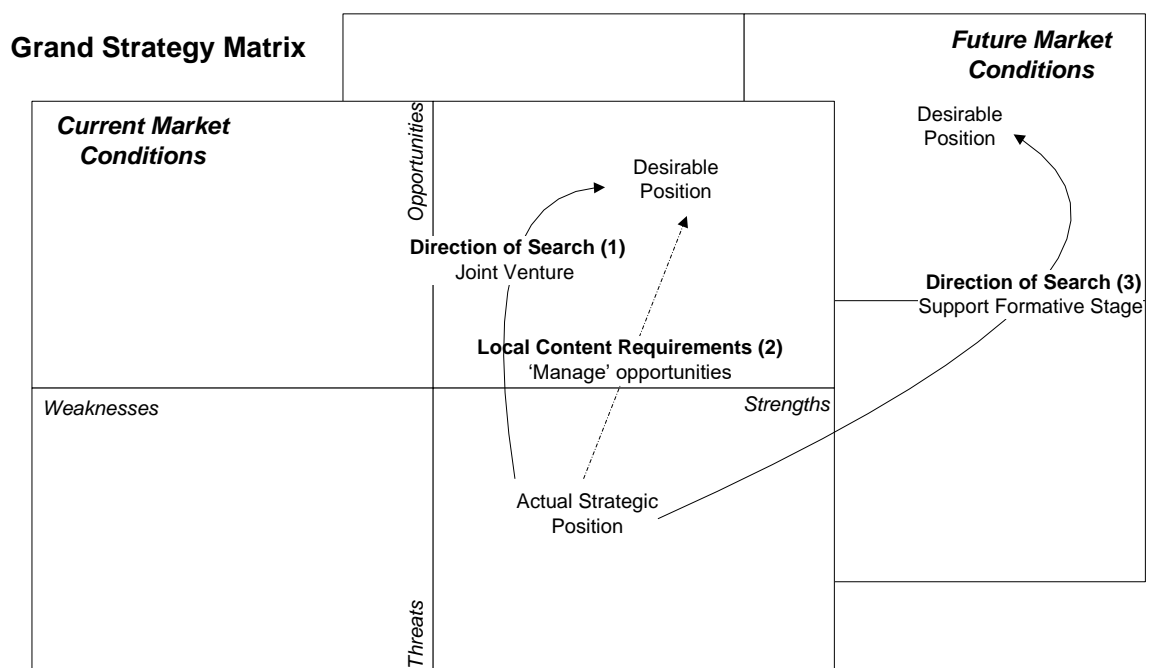


Figure 5. Available Directions of Search

The second direction of search in figure 5 is based on the idea that it is possible to create a new industry sector by importing technologies through local content requirements (as for example through the Supply Chain Plan; DECC, 2014). As the effectiveness of local content requirements is increasingly questioned by international economists (Hufbauer *et al*., 2013), and especially in the context of renewable energy markets (Kuntze and Moerenhout, 2013), the feasibility of this approach is a contentious point.

The third direction of search is to more actively support TIS which are still in the formative stage (like tidal, wave, and floating wind energy) whilst the technologies and market are still not mature enough to provide sizable opportunities. In other words, this strategy is about investing in the development of a strength which will be used to seek growth in a future market.

Although some regions in the Channel-MOR project identified scenarios compatible with these directions of search, the majority of regions in the ST quadrant did not attempt to provide such narratives of transitioning from one quadrant to the other. Instead they simply adopted the exploitative search narrative of existing first-mover regions, without acknowledging the risks and feasibility issues arising from attempting to compete head-on with established players, and this in the absence of technology know-how! This is somewhat irrational and can only be explained by the proposition the idealisation negatively mediates the relationship between uncertainty and direction of search, and as such, represents a vulnerability in the ability of decision makers to identify a feasible direction of search.

### 4.2.6. Regions immune to idealisation

The East of England has, like other UK regions considered in this paper, not benefited from a long formative cycle and could be argued to be more exposed to competition as it is in close proximity to North Sea-based clusters of equipment providers. Applying the reasoning from the previous sections would lead to the conclusion that this region should end up in the ST quadrant of the grand strategy matrix in figure 3. This is not the case as it sits in the SO quadrant and is one of the only two regions that provided an accurate assessment of their strategic position from the outset. There are three reasons explaining this 'immunity to idealisation':

- Absorptive capacity: The East of England region has a long-standing experience in offshore work with the oil and gas sector. This provides the region with the absorptive capacity (Cohen and Levinthal, 1990) which is needed to support knowledge development in the formative stage of a TIS (Bento and Fontes, 2015).

- A service focus: Experience in the oil and gas sector does not allow the region to compete with turbine or cable manufacturers. Instead, the region has developed its capability to provide services to the renewable energy sector, when these services intersect with their knowledge base. This has been the case of many SMEs originally operating in the oil and gas sector that have managed to rapidly become global players in the MRE sector.

- An All Energy vision: A striking feature of the East of England region is its level of engagement with the national energy sector. The East of England has always been a key region in the electricity generation landscape of the UK. The region's involvement with the energy sector is also catalysed through the very active East of England Energy Group (EEEGR). This interest group organises information and discussion events on a regular basis and has been a shaping force of knowledge development in the formative stages of a differentiated TIS. For example, the region is currently gaining experience in the decommissioning of oil and gas platforms and is fully aware that this experience will allow them to compete in the decommissioning of wind farms when the time comes. The direction of search of EEEGR also includes the future role of storage, carbon capture, but also the future of traditional sources including nuclear energy. This 'all energy' vision contrasts with that of other regions in our sample, where the planning focus remained on renewable energy only.

## 4.3. Propositions

Figure 6 summarises the contextual explanations developed in this paper. It shows that in the renewable energy sector, a number of factors (regional mandate, national policy directives) and coalitions make regional planning decisions pertaining to renewable energy particularly complex and subject to uncertainty. Uncertainty is not only an issue in terms of the type of technology and projects

to support but also in terms of local/global scoping of economic efforts. This double uncertainty affects the identification of suitable search directions through which regions can make the most out of renewable energy opportunities and participate in energy transitions.

Very strong national and international programmes that legitimise technology directions through strong marketing and policy-based institutional push create, when combined with a lack of an experiential basis, a vulnerability that mediates negatively the ability to overcome uncertainty and identify a suitable and robust direction of search. This blocks the identification of explorative regional directions of search that could position regions as new contenders in future global markets. All energy interest groups and coalitions are an antidote to this vulnerability as they bring the knowledge and networking opportunities to reduce uncertainty, address the negative effects of search vulnerability, and help define growth strategies deploying local capabilities in global markets.
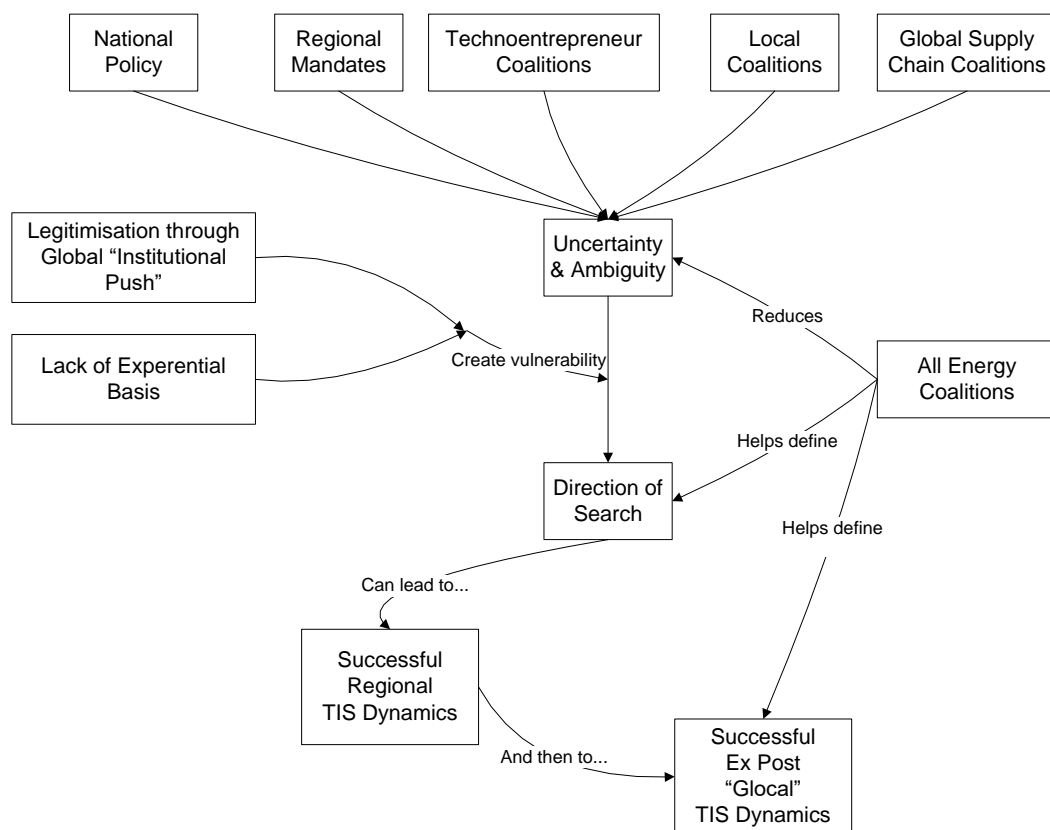


*Figure 6. Graphical Summary of Contextualised Explanations*

## *5. Conclusion*

As with any case study research based on a contextualised explanation methodology, the propositions made in this paper cannot be generalised. Regional strategic planning of investing in the energy sector varied considerably in the different regions and would vary further in a different context than the Channel-MOR project. In the specific context of the Channel area, idealisation was an issue that created a search vulnerability in most regions. This paper has shown that this vulnerability is the result of trying to engage with the energy sector from an overly narrow perspective in terms of knowledge (lack of absorptive capacity), technology (focusing only on MRE projects), and regional strategy scope (not being able to reconcile local versus global issues). This paper has also shown that idealisation can be avoided by spending more time learning about the sector and interacting with it more directly. Universities have a role to play in helping regional stakeholders to better understand the sector, its challenges, and prospects through problem structuring rather than problem solving workshops.

However, the propositions made in this paper, if generalisable, could have a profound impact on the management of the energy sector. The paper documents the cause, existence, and impact of idealisation in regional strategic planning about renewable energy. There is a need for more research to assess to what extent idealisation of renewable energy technologies is a constraining issue across the energy sector. If it were the case, it would result in clashing coalitions (respectively for and against renewable energy) and in increasing strategic uncertainty and ambiguity. This in turn would make strategic decisions more vulnerable to impractical directions of search.

The paper also questions the controversial role of technology-specific coalitions and their impact of the legitimisation process that create decision making vulnerability. "All energy" regional interest groups are shown to be much more productive coalitions that reduce decision making vulnerability. This also raises the question, in the context of renewable energy, of what is the optimal balance between national and regional decision making. Currently, regions that have historically been involved in the energy sector are making the most of renewable energy opportunities. As renewable energies typically require more geographically diverse sites with different weather conditions, a design where energy production remains concentrated in existing energy producing regions may not be sustainable.

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