Public acceptability of offshore renewable energy in Guernsey: Using visual methods to investigate local energy deliberations

Submitted by **Bouke Wiersma** to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Environment, Energy & Resilience,
January 2016.

I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

……………………………………………………………………………………………

Abstract

Public support for renewable energy projects is important in transitioning towards a more sustainable energy system. However, the literature investigating local energy acceptability has predominantly focused on understanding local opposition to single (wind) energy projects. As a result, it has relatively little to say about the construction of support for such projects, and about the relative acceptability of other local contributions to sustainability. Also, by focusing on oppositional responses to energy projects, the willingness and ability of local communities to contribute constructively to the design of locally-supported energy developments has also been overlooked by many previous studies.

In response to these limitations, this research adopted a focus on early stage ‘upstream’ deliberation of multiple local energy alternatives, using the British island of Guernsey as a case study. Informed by social representations theory, three studies investigated how potential future offshore wind, tidal and wave energy projects were represented by Guernsey residents to threaten, enhance or fit place-related values and meanings associated with Guernsey and its coast and sea. Working collaboratively with the Guernsey government’s Renewable Energy Team, a mixed methods approach with a focus on participatory, visual methods was adopted, including auto-photography (Study 1), deliberative focus groups (Study 2) and a questionnaire survey (Study 3).

The research found Guernsey and its coast and sea to be meaningful to local residents in many ways and at different scales, including as a unique island in need of more independence, with a coast that is valued for its quietness, wildlife, leisure opportunities, tides, natural beauty and as a space for exploration. Public understandings of tidal and wave energy as a local energy option were highly diverse, and subsequently some but not all local offshore renewable energy options were represented as ‘fitting’ these place-related meanings. In particular, the notion of Guernsey’s local distinctiveness was found to be important; tidal energy projects were represented as enhancing this distinctiveness, while offshore wind energy was instead portrayed as making Guernsey more like everywhere else.

Overall, local energy acceptance at such an upstream stage was found to depend to a substantial extent on the technology chosen, the selected site for the project, and on how the project is interpreted relationally within a context of wider energy systems, policies and the perceived availability of (more appealing) local alternatives.

This thesis suggests that adopting an upstream, visual, place-based approach could be one way to both achieve a better academic understanding of the acceptability of local energy projects, and to contribute to the development of more acceptable energy development practices in the future.

Table of contents

Abstract 2
List of tables 8
List of figures 10
Acknowledgements 11

Chapter 1. Introduction 12

Chapter 2. Developing an 'upstream', relational place-based approach to local energy deliberations 18
2.1 Introduction 18
2.2 Understanding public responses to local energy projects 18
2.2.1 Person, project and contextual factors 19
2.2.2 Place-based approaches 25
2.2.3 Understanding public responses to offshore renewable energy developments 39
2.2.4 Limitations of the local energy acceptability literature 45
2.2.5 An 'upstream' alternative: understanding local energy deliberations 50
2.3 Rethinking place-based approaches through human geography 59
2.3.1 Place-based approaches: A critical review 60
2.3.2 Human geographical approaches to place 65
2.3.3 Towards a relational place-based approach 68
2.4 Understanding representations of place change: Social representations theory 71
2.5 Synthesis: Developing an 'upstream', relational, place-based approach to understanding local energy deliberations 77
2.6 Previous comparative studies of local energy acceptability 82
2.7 Research aims 90

Chapter 3. Methodology 93
3.1 Introduction 93
3.2 Methodology 93

3.2.1 Overall approach 93
3.2.2 Ontological and epistemological considerations 96
3.3 Case study context: Guernsey 97
3.4 Reflections on a case-funded PhD studentship 105

Chapter 4. Exploring place and energy technology representations in Guernsey: An auto-photography study 115
4.1 Introduction 115
4.2 Methodology 123
4.3 Representations of place 128
4.4 Representations of energy technologies 149
4.4.1 Representations of the current electricity system 149
4.4.2 Representations of ORE technologies 151
4.5 Deliberating local energy: The fit between representations of place and technology 159
4.5.1 Place-technology fit at the scale of Guernsey 159
4.5.2 Place-technology fit at the scale of places on Guernsey's coast ... 169
4.6 Discussion 174

Chapter 5. Deliberating local energy: Understanding the conditions for support for offshore energy projects in Guernsey 183
5.1 Introduction 183
5.2 Method 187
5.3 Deliberating 'expert' information on ORE development 193
5.4 Representations of place-technology fit and conditions for support 197
5.5 Deliberating (un)acceptable locations for offshore wind and tidal energy development 204
5.6 Discussion 220

Chapter 6. Public evaluation of three specific offshore wind and tidal energy projects: A quantitative, comparative examination of underlying factors 226
6.1 Introduction 226
6.2 Methods 228

6.2.1 Procedure and sample ... 228
6.2.2 Questionnaire design ... 230
6.2.3 Co-production of the questionnaire ... 232
6.2.4 Measures ... 234
6.2.5 Analytic procedure ... 247
6.3 Results ... 248
6.3.1 Overall patterns in public evaluation of ORE ... 248
6.3.2 Factors explaining public evaluation of three ORE local proposals 252
6.3.3 Distinguishing between multiple project-related variables ... 257
6.3.4 Exploring the importance of site selection and place meanings ... 261
6.4 Discussion ... 267

Chapter 7. General discussion ... 282
7.1 An upstream, place-based approach to local energy deliberations ... 282
7.2 Key findings, reflections and recommendations ... 284
7.2.1 The value of an 'upstream' approach ... 285
7.2.2 Studying upstream engagement using a place-based approach ... 291
7.2.3 Local distinctiveness ... 294
7.2.4 The importance of technology choice and site selection ... 296
7.2.5 Systemic arguments ... 300
7.2.6 Scaling place-based approaches ... 302
7.2.7 Understanding the offshore as a setting for energy projects ... 303
7.3 Limitations and recommendations ... 305
7.4 Conclusion ... 307

Appendix A – Study 1 participant consent form ... 308
Appendix B – Study 1 photograph reproduction consent form ... 310
Appendix C – Study 1 interview protocol ... 312
Appendix D – Study 2 focus group protocol ... 315
Appendix E – Visuals used to illustrate ORE technologies ... 319
Appendix F – Maps used in study 2 to show four feasible locations for offshore wind and tidal energy development ... 323
Appendix G – Questionnaire used* in study 3 ... 325

Appendix H – Data on representativeness of study 3 sample............................ 335
Appendix I – Procedure for selecting items for measuring three place attachment varieties 339
Appendix J – Overview of Wilcoxon tests performed to test differences between place meanings ascribed to zones.. 340
References.. 341

List of tables

Chapter 2

Table 2.1. Four key differences between the existing energy acceptability literature and the ‘upstream’ approach to local energy deliberations proposed in this thesis…………………………………………………………………...59

Chapter 3

Table 3.1. Overview of studies carried out for this research ……………………94

Table 3.2. Overview of visits to Guernsey by researcher and total time spent on the island………………………………………………………………………....98

Chapter 4

Table 4.1. Research questions study 1…………………………………………..123

Table 4.2. Characteristics of study 1’s 28 participants…………………………124

Table 4.3 Key themes in participant representations of Guernsey’s coast and sea……………………………………………………………………………….147

Table 4.4: Representations of place-technology fit at the scale of Guernsey..167

Table 4.5: Representations of place-technology fit at the scale of specific parts of the Guernsey coast……………………………………………………..172

Chapter 5

Table 5.1. Research questions study 2…………………………………………..186

Table 5.2. Socio-demographic attributes of study 2’s 22 participants………...188

Table 5.3. Descriptions of potential future offshore wind and tidal energy projects in Guernsey……………………………………………………………..191

Table 5.4. Conditions for support expressed on future local ORE projects….203

Table 5.5. Arguments used in representing locations as (un)acceptable for ORE projects………………………………………………………………….210

Chapter 6

Table 6.1. Research questions study 3…………………………………………..228

Table 6.2. Output of PCA with direct oblimin rotation for the small offshore wind project…………………………………………………………………………...237

Table 6.3. Output of PCA with direct oblimin rotation for the large offshore wind project……………………………………………………………………………...238
Table 6.4. Output of PCA with direct oblimin rotation for the tidal energy project………………………………………………………………………..240
Table 6.5. Outcome of PCA with direct oblimin rotation for the three place attachment varieties…………………………………………………………......242
Table 6.6. Outcome of PCA with direct oblimin rotation for multiple identities 243
Table 6.7. Evaluation of four renewable energy technologies in general in Guernsey ……………………………………………………………………………248
Table 6.8. Evaluations of the three detailed projects described in the questionnaire……………………………………………………………………...250
Table 6.9. Descriptive statistics for all outcome and predictor variables…….251
Table 6.10. Correlation coefficients (top figures in each cell) and their significance (bottom figures) for the relation between each of the predictor variables and evaluation of the three projects…………………………...252-253
Table 6.11. Output of the three regression models………………………..255-256
Table 6.12. Regression models using the items that made up the significant project-related variables in regression models 1-3 in Table 6.11……...258-259
Table 6.13. Maps of suitable zones used in questionnaire, with statistics on support for an offshore wind/tidal project in each……………………………..261
Table 6.14. Mean scores for the six zones on public evaluation of offshore wind / tidal energy and on the six place meanings…………………………………263
Table 6.15. Regression models exploring the relative importance of six place meanings in predicting evaluation of the small wind and tidal projects across six locations………………………………………………………………………265

Chapter 7

Table 7.1. Overview of overall key findings of this research…………………...285

List of figures

Chapter 2

Figure 2.1. Public expression of evaluation of a local energy proposal………..57

Chapter 3

Figure 3.1. Guernsey, its surrounding islands and key places talked about throughout this thesis……………………………………………………………...99

Chapter 4

Figure 4.1. Place of residence of study 1's 28 participants…………………….125
Figure 4.2. Approximate locations of participant photographs…………………130
Figure 4.3 - Photo 1…………………………………………………………………...131
Figure 4.4 - Photo 2…………………………………………………………………...132
Figure 4.5 - Photo 3…………………………………………………………………...133
Figure 4.6. Maps showing the locations where photographs representing four particular themes were taken…………………………………………………….134
Figure 4.7 - Photo 4…………………………………………………………………...135
Figure 4.8 - Photo 5…………………………………………………………………...137
Figure 4.9 - Photo 6…………………………………………………………………...139
Figure 4.10 - Photo 7…………………………………………………………………140
Figure 4.11 - Photo 8…………………………………………………………………141
Figure 4.12 - Photo 9…………………………………………………………………145
Figure 4.13 - Photo 10………………………………………………………………..160
Figure 4.14: Spatial representation of (un)acceptable locations for offshore wind around Guernsey………………………………………………………………173

Chapter 5

Figure 5.1. The venue for the focus groups…………………………………...187
Figure 5.2. The four offshore wind spatial preference maps produced by the four focus groups…………………………………………………………………205
Figure 5.3. The three tidal energy spatial preference maps produced by the four focus groups…………………………………………………………………208

Acknowledgements

I would like to thank everyone who has supported me in completing this PhD. In particular, I would like to express my thanks and gratitude to my main supervisor Prof. Patrick Devine-Wright for his ever-constructive and thought-provoking feedback, his patience, and for the opportunities that have come my way by working together for the last five years. I have learnt a huge amount from his expertise, especially on thinking critically about my own and others' research.

I greatly appreciate my co-supervisor Dr. Saffron O'Neill for her helpfulness, know-how and her motivating presence throughout this project. My thanks also to co-supervisor Prof. Alan Lewis for making this PhD possible and for his support during the early stages of this PhD.

I am grateful to the Economic and Social Research Council and the States of Guernsey Renewable Energy Team for funding this research. In particular I would like to thank Mat Desforges and Peter Barnes for their eagerness to help and their willingness to adapt to the pace and nature of PhD research. Having such a captive audience for my research activities and findings has motivated me throughout the PhD, for which I am thankful.

I also want to sincerely thank all people who have made me feel welcome in Guernsey and helped in making my fieldwork a success. I am especially indebted to my research participants for their helpfulness, hospitality and honesty.

Finally, I would like to thank my wonderful family and friends for their continued support and interest in my PhD. In particular, I have to acknowledge that without Christine's knowledge, experience and rousing pep talks, completing this PhD would have been a lot more difficult. Dank je wel.

Chapter 1. Introduction

Renewable energy as a response to climate change

Anthropogenic climate change is a very important global challenge, which poses many risks such as biodiversity loss, threats to ecosystems and the services they provide, and threats to health, livelihoods and food security (IPCC, 2014a). Reducing carbon emissions is crucial to mitigate such threats; in particular the decarbonisation (i.e. reducing the carbon intensity) of global electricity generation is a key component of cost-effective mitigation strategies (IPCC, 2014b, p.20). Nationally, many developed countries have adopted targets for the reduction of carbon emissions; for instance the UK Climate Change Act 2008 established a formal target to reduce UK carbon emissions by 80% by 2050 (UK Parliament, 2008). Transitioning the current energy system, which currently is responsible for about one-third of UK carbon emissions (DECC, 2015a), is therefore an essential part of achieving such targets. Alongside strategies such as demand reduction, the increased deployment of renewable energy (RE) technologies is a key strategy to decarbonise energy systems.

Within modern democratic societies public support is an important precondition for achieving such a wide-ranging transition. There is evidence that, on a systemic level, people in the UK are generally positive and supportive towards changes in how energy is supplied, used and governed, and are also committed to renewable energy, energy efficiency and reducing energy demand (Demski, Butler, Parkhill, Spence & Pidgeon, 2015; Parkhill, Demski, Butler, Spence & Pidgeon, 2013). This is in line with findings that majorities are, in principle, in support of the using most renewable energy technologies, when asked at a national level; 65% of UK residents supports onshore wind, 72% offshore wind, 73% wave and tidal, and 80% solar energy (DECC, 2015b).

Research on public acceptability of local energy projects

However, despite such strong ‘socio-political acceptance’ (Wüstenhagen, Wolsink & Bürer, 2007), many proposed ‘local’[1] renewable energy projects are opposed by nearby individuals and groups. This lack of ‘community acceptance’ (Wüstenhagen et al., 2007) of local energy developments should not be considered surprising, as many authors have pointed out that support for renewable energy in general is *conditional* upon the way it is implemented (e.g. Bell, Gray, Haggett & Swaffield, 2013; Demski et al., 2015; Walker, Cass, Burningham & Barnett, 2010; Wolsink, 2007). Nevertheless, a key topic of debate within academia, policy-making, the media and beyond has been why local residents and others object to such local energy developments (see Devine-Wright, 2009; Haggett, 2008). A popular explanation for local opposition has been the idea of NIMBYism (Not In My Back Yard; Burningham, 2000), which suggests that objectors’ only reason for opposing a local energy project is its proximity to their ‘back yards’ (e.g. their property or place of residence), suggesting public responses to be essentially rather selfish and short-termist. This label of ‘NIMBY’ is often used (within the media; e.g. Cooper, 2007; Eccles, 2015) as a derogatory term, which stigmatises objectors as egoistic, short-sighted, ill-informed, and ignorant to ‘the greater good’. However, NIMBYism has been dismissed as a theory with no, or very little, explanatory value by scholars for at least 15 years (Burningham, 2000; Devine-Wright, 2009; Petrova, 2013; Wolsink, 2006). Many academic studies have subsequently investigated alternative explanations for public responses to local energy infrastructure development. Especially in the last ten years this literature on local energy acceptability has grown considerably, as illustrated by the increasing number of review papers and books published on this topic in the last few years (Cohen, Reichl & Schmidthaler, 2014; Devine-Wright, 2011a; Fast, 2013; Graham & Rudolph, 2014; Huijts, Molin & Steg, 2012; Perlaviciute & Steg, 2014; Petrova, 2013; Upham, Oltra & Boso, 2015; Wiersma & Devine-Wright, 2014).

---

[1] While it is acknowledged here that energy projects are unlikely to be exclusively ‘local’ (as energy projects typically have regional, national or international dimensions too; Devine-Wright & Wiersma, 2012), the term ‘local energy projects’ is used in this thesis to distinguish between specific energy projects or initiatives that are proposed or sited in a specific locality (‘locally’) and those that could be interpreted to take place at a national level (e.g. energy system change in general).

Approach taken in this thesis

In this thesis, three key limitations of this local energy acceptability literature are identified and addressed. First of all, previous studies within this area have typically used single case studies to understand the emergence of opposition to specific proposed or sited local energy projects, at a relatively late stage in the development process, when such projects have already been designed and proposed (e.g. Devine-Wright & Howes, 2010; Ellis, Barry & Robinson, 2007; Firestone & Kempton, 2007). **This thesis instead explores the potential of an 'upstream' (Whitton, Parry, Akiyoshi & Lawless, 2015) approach to understanding local communities'[2] support and opposition at an earlier stage in the process of developing local energy projects.** This 'upstream' approach in this thesis focuses on understanding **'local energy deliberations'**: the careful consideration, by local individuals and groups, of the reasons for and against a wide array of potential local contributions to a more sustainable energy system. Such an approach has been argued to be able to give a greater voice to local communities in identifying and defining the locally-relevant energy-related challenges and solutions, thereby potentially leading to more acceptable local projects (Whitton et al., 2015). Giving local communities a greater range of ways to contribute to achieving sustainable energy systems beyond the resentful 'acceptance' of externally-designed, top-down imposed (wind) energy projects has also been argued to offer a broader, more lasting contribution to sustainability (Barry & Ellis, 2011). In this research, an 'upstream' perspective is adopted as a research approach, aiming to better understand the ways in which local energy deliberations play out, and to investigate their potential to identify ways of designing and implementing locally-supported energy projects. In doing so, this research addresses a key critique on the energy acceptability literature to date: that it has focused overly on the emergence of opposition, but has relatively little to say about the construction of local support (Aitken, 2010). Also, by considering community deliberations of

[2] In this thesis the phrase 'local communities' is used to refer to the individuals and groups that live in particular localities (given the focus of this thesis, it usually refers here to the individuals and groups living in Guernsey). It is acknowledged that few (if any) communities are exclusively 'local' (and that some communities may have no shared geography at all; e.g. communities of interest). It is also recognised that a place like Guernsey is likely to play host to an array of different and diverse 'communities' – rather than a single, uniform, harmonious community.

multiple local energy options, factors that have previously been largely overlooked by the energy acceptability literature due to the use of a single case study research design (e.g. technology choice and site selection) can be opened up in greater detail.

Secondly, the case studies conducted within the energy acceptability literature have predominantly focused on onshore wind developments, while only relatively recently beginning to focus more on the social dimensions of offshore renewable energy (ORE) technologies (Kerr et al., 2014; Wiersma & Devine-Wright, 2014), which is an important limitation given increased deployment of such technologies (Kerr et al., 2014). ORE refers to both offshore wind energy and 'marine renewable energy' technologies (Kerr et al., 2014): tidal energy (utilising tidal currents[3]) and wave energy – technologies which are presently being tested but are not currently commercially viable. **This thesis therefore aims to further enhance understanding of the social dimensions of ORE, in particular tidal and wave energy** (Kerr et al., 2014).

Thirdly, the energy acceptability literature is dominated by studies using verbal or text-based methods. **This research aims to contribute to methodological diversity and innovation within the energy acceptability field by using a number of visual research methods.** Visual methods have been argued to elicit richer data than verbal or text-based methods alone, as visuals can be effective as stimuli for rich, in-depth discussion and have been argued to engage people in a fundamentally different way and have the potential to empower participants (Harper, 2002; Rose, 2007).

This thesis adopts a 'place-based approach' (Devine-Wright, 2009) – an approach that tries to understand local public responses to proposed energy

[3] The term tidal energy refers to two groups of technologies. First of all, tidal stream or tidal current technology utilises currents generated by the tides. A number of different technology prototypes are being researched and developed at present, which all generate some kind of rotational movement. Some of these devices are designed to be placed on the seabed, while others are floating on the surface; some are surface-piercing while others are entirely submerged. Secondly, tidal range technology uses barrages to create tidal reservoirs, and generate electricity when the tide enters or leaves the reservoir. Tidal range technology is not feasible in Guernsey due to a lack of large estuaries suited to hosting a barrage, and therefore in this thesis the term 'tidal energy' is understood to refer only to tidal stream technology.

projects by foregrounding the ways in which places are meaningful to their residents. In particular, the concept of 'place-technology fit' (Brittan, 2001; McLachlan, 2009) is used to open up the ways in which diverse potential local energy projects may be represented to 'fit', enhance or threaten such place-related meanings. These approaches are especially useful in this research as they have been found to be able to offer a conceptual tool for understand both support and opposition to local energy projects (e.g. Devine-Wright, 2011b; McLachlan, 2009).

The island of Guernsey is used as a case study in this thesis. Guernsey is a suitable case because it has currently no installed or proposed renewable energy projects, yet it does have substantial resource availability in terms of wind, tidal currents and waves. Therefore, investigating local energy deliberations ('local' being used in this thesis to refer to Guernsey) in Guernsey at this (early) stage has the potential to enhance our understanding of both local opposition and support, as well as to contribute to the design and implementation of locally supported energy projects in the future.

Thesis structure

The next chapter critically reviews various literatures to outline existing research on the local acceptability of renewable energy projects. It focuses in particular on those studies that have adopted a place-based approach to local energy acceptability. It combines these literatures with scholarship from human geography and social psychology to outline the overall approach and main aims of this thesis. Chapter 3 outlines the mixed methods approach and the broadly social constructivist epistemology adopted in this research, and discusses the broader context of this research, including an introduction to Guernsey and critical reflections on the co-production of this research with the external stakeholder (the Guernsey government's Renewable Energy Team). Next, the three empirical studies conducted as part of this research are presented, which employed participant photography and interviews (chapter 4), deliberative focus groups (chapter 5) and a large-scale representative sample questionnaire survey (chapter 6). The general discussion in chapter 7 critically reflects on the key findings of this thesis, outlines key academic and policy implications and suggests a number of avenues for future research.

Chapter 2. Developing an ‘upstream’, relational place-based approach to local energy deliberations

2.1 Introduction

In this chapter, several strands of literature are reviewed in order to map existing research approaches and key findings on public responses to local energy developments and beyond. Research gaps and limitations are identified within current approaches to understanding local energy acceptability, with a particular emphasis on studies employing place-based approaches. Two key areas of scholarship are subsequently explored in greater detail in the latter part of this chapter, which form key pillars of the approach taken in this thesis: human geographical thinking on place and the social psychological theory of social representations. Throughout this chapter, these insights are brought together to inform the development of the conceptual approach taken in this research: a relational place-based approach to local energy deliberations. The final section of this chapter outlines the overall aims of this research.

2.2 Understanding public responses to local energy projects

Many factors have been identified within the local energy acceptability literature as determining public responses to local energy developments; these will be briefly reviewed in this section to provide a broad backdrop to this thesis. These factors can be organised into four groups (adapted from Devine-Wright, 2013a): person-related factors, project-related factors, contextual factors, and place-related factors. In this thesis, the focus is on place-related factors, and therefore those will be discussed in more detail in section 2.2.2, after a brief review of the role of person, project and contextual factors in section 2.2.1. In section 2.2.3, the emerging research field that is specifically interested in public responses to ORE is reviewed, and compared to studies on onshore energy developments. Next, the local energy acceptability field as a whole is critiqued in section 2.2.4, which informs the development of the first pillar of this thesis’ conceptual approach in section 2.2.5: upstream public engagement on local energy deliberations.

2.2.1 Person, project and contextual factors

Person-related factors

Person-related factors refer to individual socio-demographic attributes such as age or gender, which have often been included in quantitative acceptability studies as control variables. However, across five quantitative studies of public responses to local energy developments, none of these socio-demographic variables have been consistently significant in explaining public responses to energy projects (Vorkinn & Riese, 2001; Firestone & Kempton, 2007; Jones & Eiser, 2009; Devine-Wright, 2011c; Devine-Wright, 2013a). Age has been found to be both positively (Vorkinn & Riese, 2001) and negatively (Firestone & Kempton, 2007) correlated with acceptance, as well as being non-significant (in the other three studies). Gender was a significant predictor in only one of these five studies; Vorkin and Riese (2001) found project support to be lower among women. Education levels were non-significant in three of the four studies that measured it; only one study found a significant positive relation between education level and acceptance (Firestone & Kempton, 2007). Income was included in two studies; one study found a significant negative relation with acceptance (Vorkinn & Riese, 2001), but another found no significant relation (Firestone & Kempton, 2007). Home ownership was found to be associated with both higher (Firestone & Kempton, 2007) and lower levels of acceptance (Jones & Eiser, 2009). Employment status, membership of conservation or environmental groups and voting preferences were further socio-demographic variables that were found to be non-significant across several studies. A different set of studies (Ladenburg, 2009; Ladenburg & Möller, 2011) examined whether individuals with visual ‘experience’ of wind turbines (i.e. those living near existing turbines) are more positive towards offshore wind farms, but found mixed, inconclusive evidence for this hypothesis.

In sum, given these mixed results, there seems to be a lack of straightforward, generalisable patterns in the role played by these person-related factors. This could be partly due to diversity in case studies across different countries (UK, US, Norway) and technologies (onshore wind, offshore wind, tidal energy, hydropower). However, it does suggest that the role of socio-demographic characteristics is highly context-specific and likely to vary across local energy projects (Devine-Wright, 2013a).

Project-related factors

Project-related factors refer to (perceptions of) certain aspects of specific local energy projects that have been found to influence acceptability.

a. Distributive justice

One key area highlighted by some as an important factor underlying public acceptability is the perceived fairness of the distribution of costs and benefits associated with a project (e.g. Wüstenhagen et al., 2007). One aspect of this has been a 'disjuncture' (Haggett, 2011) between local 'costs' like visual, environmental and economic impacts of local energy developments and their national or global benefits like climate change mitigation or enhancing energy security (see Kempton, Firestone, Lilley, Rouleau & Whitaker, 2005; Haggett, 2011). A second distributional justice issue concerns the fairness of the distribution of project revenues between project developers, local residents and other stakeholders. In both instances, perceptions of this distribution as unfair have been found to explain opposition to local energy projects (Petrova, 2013).

Two potential ways of rebalancing the distribution of these costs and benefits have been proposed. The first of these is to financially compensate host communities through the provision of financial community benefits, which may increase levels of acceptance in some cases (Walker, Wiersma & Bailey, 2014), but may also be perceived as bribery (Cass, Walker & Devine-Wright, 2010). The second proposed option is the (co-) ownership of energy developments by local communities. Local ownership has been shown to be associated with higher rates of wind energy deployment in a comparison of multiple European countries (Toke, Breukers & Wolsink, 2008), while a case study of two adjacent wind farms in Scotland found a project that was community-owned to enjoy higher levels of support than a nearby private sector-owned wind project (Warren & McFadyen, 2010). It should be noted, however, that *"the benefits of community ownership may have as much to do with local involvement in the development process as they do with the potential profits of ownership"* (Bell, Gray and Haggett; 2005, p.473). In other words, issues of distributional justice are often interlinked with issues of procedural justice (Firestone, Kempton, Lilley & Samoteskul, 2012).

b. Procedural justice

Procedural justice refers not to the outcomes of an energy project, but to the processes through which such outcomes are produced. Studies have pointed out how affected individuals and communities have voiced concerns over a lack of influence and transparency in the decision-making process (e.g. Devine-Wright, 2013a; Firestone et al., 2014; Gross, 2007; Wolsink, 2007). Subsequently, one of the most common recommendations made by energy acceptability scholars has been for earlier and more meaningful engagement in the local energy development process (e.g. Wolsink, 2007; 2010; Haggett, 2008; Whitton et al., 2015; Woolley, 2010). However, while there is a wealth of evidence for the importance of justice issues in local energy acceptability, one case study suggests that, much like the person-related factors above, procedural aspects may not be universally important across all local energy developments in shaping acceptance. Devine-Wright (2011b) found that a small single tidal energy converter in Northern Ireland was widely supported despite some misgivings around procedural fairness. Finally, some authors have broadened their scope away from public perceptions of the decision-making process and the developers and government officials at the heart of such processes. Instead, they focused on broader public-developer interactions, for instance by exploring how developers' conceptions or imaginations of 'the public' inform their public engagement practices (Barnett, Burningham, Walker & Cass, 2012; Burningham, Barnett & Walker, 2015; Cass & Walker, 2009; Heidenreich, 2015; McLachlan, 2010; Walker et al., 2011). These studies have identified developer discourses of local communities as both latently hostile and lacking understanding of the benefits of particular local energy developments. This has been argued to inform developer strategies aimed at minimising engagement, which in turn tends to produce misgivings with the engagement process itself. Any subsequent opposition may then confirm those existing impressions of local communities as latently hostile and lacking understanding – a process described as the 'cycle of NIMBYism' (Devine-Wright, 2011d).

While the themes of distributional and procedural justice are clearly key aspects of public acceptability of local energy developments, the focus of this thesis lies elsewhere – as explained further below in this chapter.

c. Trust

Trust in the developer, government and regulatory authorities, and in particular mistrust of their motives and intentions, has been found to be an important factor too across multiple local energy case studies. For instance, a rhetorical analysis of relevant documents around a Northern Irish offshore wind farm found 'a common theme of a lack of trust in government and regulatory agencies and wind energy developers and supporters' (Barry, Ellis & Robinson, 2008, p.75). A quantitative study into public responses to a proposed new high-voltage transmission line in England found trust in the developer to be a significant positive predictor of support (although trust in a local campaign group was non-significant; Devine-Wright, 2013a). This suggests that trust in the developing stakeholder is a consistently important condition for support across different types of local energy project. Similar conclusions about the importance of trust have also been drawn in the context of other ('riskier') energy technologies, such as nuclear power (Siegrist & Cvetkovich, 2000) and carbon capture and storage (Midden & Huijts, 2009; Terwel, Harinck, Ellemers & Daamen, 2009). Some authors have suggested that early, meaningful public consultation may engender trust in the developing actors, in turn enhancing acceptance (e.g. Aitken, 2010) – linking to the arguments on procedural justice in section b above.

d. Perceived impacts

Expectations around the positive and negative impacts of particular developments have also frequently been highlighted as shaping local energy acceptability. Relevant expected negative impacts include the visual impact on an area's aesthetics, concerns about local wildlife, damage to tourism, and noise and health concerns. Expected positive impacts include a contribution to climate change mitigation, enhanced energy security, enhancing a place's standing or profile, benefits to tourism, and employment opportunities (Bailey, West & Whitehead, 2011; Devine-Wright, 2011b; Hall & Lazarus, 2015; Kempton et al., 2005; Simas et al., 2012; Stokes, Beaumont, Russell &

Greaves, 2014; Waldo, 2012). Although the importance of the visual impact of especially wind energy has been foregrounded explicitly or implicitly by many papers (Bishop & Millar, 2007; Ladenburg, 2009; Wolsink, 2007,), the existence of well-supported onshore wind energy proposals or developments (e.g. Pedersen & Johansson, 2012; Warren & McFadyen, 2010) suggests that these factors are also not universally significant across all local energy projects in all contexts.

e. Proximity

A key assumption in the NIMBY theory is that people living closer to local energy projects are less supportive of such developments. However, across various studies that have examined this relationship (e.g. Jones & Eiser, 2009), mixed evidence has been found for this 'proximity principle' for onshore wind energy (for reviews see Swofford & Slattery, 2010 and Van der Horst, 2007). Nevertheless, this 'proximity principle' has to some extent been validated for offshore wind energy, by a series of studies utilising choice experiments and contingent behaviour methods (Krueger, Parsons & Firestone, 2011; Ladenburg & Dubgaard, 2007; Ladenburg & Dubgaard, 2009; Westerberg, Jacobsen & Lifran, 2013, Landry, Allen, Cherry & Whitehead, 2012; Lilley, Firestone & Kempton, 2010; for a review see Knapp & Ladenburg, 2015). Across these studies, individuals and tourists generally preferred wind turbines to be located at greater distances from the coast, and were willing to pay for this through their energy bills. However, that the issue of siting (offshore) renewable energy is more complex than this is a key point that will be returned to throughout this thesis.

Contextual factors

This third set of factors originates from a broader research approach which considers the wider energy policy context and institutional arrangements within which local energy projects are embedded. Multiple cross-national studies, typically focusing on policy analysis rather than case studies of local energy controversies, have argued that differences in institutional arrangements and traditions, such as (top-down, technocratic) policy regimes, economic incentives and regulations can account for differences in renewable energy deployment rates and public acceptance (Agterbosch, Meertens & Vermeulen, 2009; Fast, Mabee & Blair, 2015; Jobert, Laborgne & Mimler, 2007; Toke, 2002; Wolsink & Breukers, 2010). Other studies have pointed out that energy developments and technologies do not exist in a vacuum, but are inherently part of a wider system and policy context, and may be seen in relation to alternative (more desirable) energy projects or technologies. Based on an examination of public attitudes towards whole energy system change in the UK, Parkhill and colleagues (2013) argue that policy-makers need to make clear how specific changes to the energy system fit into wider programmes of energy system change, in order to be publicly acceptable. In particular, for certain technologies like nuclear energy, carbon capture and storage (CCS) and biofuels, public acceptability was found to be conditional upon other aspects of energy system change (e.g. renewable energy deployment) being realised. A similar conclusion was drawn by Setiawan and Cuppen (2013), based on a case study of acceptability of carbon capture and storage in Indonesia – they argue that to fully understand public attitudes to CCS, one needs to understand broader public ideas and viewpoints about CO_2 emission reduction and energy supply. Lilley and Firestone (2013) conclude, based on surveys in the US in 2008 and 2010, that attitudes towards offshore wind energy development in the US did not significantly change as a result of a large-scale oil spill in the Gulf of Mexico. Some case studies of local energy projects have also, albeit tangentially, explored the influence of the wider energy system context on public responses to these local projects, and found significant effects. Westerberg and colleagues (2013) concluded that a hypothetical offshore wind farm in the French Mediterranean was more acceptable when accompanied by a coherent environmental policy. Similarly, a German wind farm was suggested to have been more acceptable because of its positioning as part of a wider energy park (Jobert et al., 2007). Finally, a US survey study found that a proposed offshore wind farm would be significantly more widely supported if it was the first of many such proposals, rather than an isolated development (Firestone & Kempton, 2007). This suggests the importance of considering the wider policy and energy system context within which local energy projects are embedded.

Conclusion

In summary, previous research has been successful in identifying a number of important factors that contribute to our understanding of public responses to local energy developments. A key finding is that few, if any, of these factors has been consistently significant in explaining public responses to specific developments. Some factors (e.g. procedural justice) seem to be more consistently important than others (e.g. gender) when compared in quantitative analyses, but nevertheless the role played by each of these varies across contexts. This clearly suggests that local context needs to be a central part of any attempt to understand public responses to local energy projects. Having introduced most of the main lines of enquiry within the energy acceptability literature above, the next section reviews a distinct strand of literature, which has explicitly focused on this local context through emphasising the role of place-related meanings and attachments in shaping local energy acceptability.

2.2.2 Place-based approaches

In contrast to the person or project-oriented focus of some of the studies cited above (e.g. Barry et al., 2008; Jones & Eiser, 2009), a growing body of research has instead taken a specific interest in the local context of specific energy or land use controversies. These studies have adopted a 'place-based approach' (Batel & Devine-Wright, 2015a; Devine-Wright, 2009) to understanding public responses to these local projects. Within such an approach, local developments are conceptualised as inherently emplaced, or embedded within a specific local context:

> *"A 'place-based' perspective would focus upon how individuals and groups living in different settlements or places affected by a given energy infrastructure make sense of it and respond to it, in addition to taking account of their feelings or relationships to those places"* (Batel & Devine-Wright, 2015a, p.1079).

Such a conceptualisation of place as *meaningful space* offers an alternative focus compared to studies that predominantly emphasise procedural aspects (Barnett et al., 2012; Gross, 2007; Wolsink, 2007) – though of course both factors may overlap (e.g. public engagement processes may seem to be lacking when not taking into account local place meanings).

Within these place-based studies, the concepts place meanings, place attachment and place identity have been found to be useful concepts to understand acceptability by a number of studies reviewed below. *Place meanings* are typically understood in such studies to encompass both “instrumental or utilitarian values as well as intangible values such as belonging, attachment, beauty, and spirituality” (Cheng, Kruger & Daniels, 2003, p.89). *Place attachment* has been defined in a range of different ways (see Hernández, Hidalgo & Ruiz, 2014), with most definitions referring to individuals’ ‘emotional bonds’ or ‘connections’ to particular places (e.g. Altman & Low, 1992; Manzo & Devine-Wright, 2014). Many different epistemological approaches to place attachment have been taken – for instance including discursive and social constructivist (Di Masso, Dixon & Durrheim, 2014; Dixon & Durrheim, 2000) and phenomenological approaches (Manzo, 2005). However, within the energy acceptability literature the interest in place attachment has mostly focused on quantitative measurement of strength of individuals’ place attachments (e.g. Brownlee et al., 2015). Finally, *place identity* refers to the ways in which physical and symbolic attributes of certain locations contribute to an individual’s sense of self or identity (Proshansky, Fabian & Kaminoff, 1983, in Devine-Wright, 2009). Twigger-Ross and Uzzell (1996) have drawn on Breakwell’s (1986) social psychological identity process theory to highlight four principles through which place may contribute to identity: *distinctiveness* (living in particular places or types of place can contribute to an individual’s sense of identity), *continuity* (i.e. places may help in maintaining continuity of the ‘self concept’, for instance by acting as referents to ‘past selves’), *self-esteem* (describing how living or being in favourite places can support a sense of pride and self-esteem), and *self-efficacy* (e.g. when places enable individuals to live their everyday lifestyle).

Multiple approaches to ‘place-based’ research have been taken, and there is no uniformly used definition of what constitutes a ‘place-based approach’. In particular, two strands of place-based approaches are reviewed in this section; a mostly qualitative, social constructivist strand with an interest in (conflicting) representations of place and place change, and a mostly quantitative, realist strand with an interest in the ‘disruption’ of individual attachments to place.

Findings from both approaches – which overlap in some studies – are discussed in the next two subsections.

Qualitative place-based approaches exploring representations of place and place change

This strand of place-based approaches broadly originates in human geography and sociology, and has mostly used qualitative methodologies to explore conflicting and contested representations of place. It has broadly adopted – or at least been inspired by – a social constructionist philosophy, which supposes that people's perceptions of the world are not grounded in an objective reality, but that such perceptions are the product of social interactions between people and that meaning is thus produced socially (Burr, 2015). The focus is thus on broader discourses which frame places in a certain way, and in doing so, position certain forms of place change as (un)acceptable.

A fundamental starting point for this strand of work is that whether or not something is seen to be 'in place' depends very much on the place it is 'in': *"the geographical setting of actions play a central role in defining our judgement of whether actions are good or bad"* (Cresswell, 1996, p.8). According to this perspective, there is nothing *natural* or *inevitable* about what is seen as 'in place' or 'out of place'; instead what is considered 'acceptable' in a given place is understood as being continuously defined and redefined through social processes of contestation and the underlying power structures. Instances where this normality is challenged by a new action, behaviour or development ('transgression') are considered as moments when different cultural values clash and become apparent, and a (new) normality is defined for what is 'in place' and what is not. Illustrating this line of thinking, Cresswell (1996) described a case study of competing representations of Stonehenge as a place, which surfaced when groups of people attempted to organise summer solstice gatherings and celebrations at Stonehenge. The controversy highlighted a clash between different representations of *what kind of place* Stonehenge fundamentally 'is'. The dominant representation, communicated by organisations such as English Heritage and the national government, framed Stonehenge as a museum, a place that should be 'looked at', rather than be used or touched. This contrasted with a conflicting representation of

Stonehenge as a place that has historically been used, and should still be used, for celebrations and gatherings at particular significant times of the year. Media and institutional attempts to frame the proposed solstice celebrations at Stonehenge as 'out of place' were ultimately successful, thus highlighting the contested and political processes inherent within judgements on the acceptability of particular developments in places. Similarly, a second case study discussed how dominant discourses represented graffiti as 'out of place' in the streetscape, but simultaneously as 'in place' in art galleries (Cresswell, 1996). This study thus illustrates that the acceptability of a new action or development needs to be seen as inherently linked to the place it is proposed or carried out, and the competing ways in which such places are represented by various stakeholders. This point has been illustrated and refined in the context of local energy projects by various studies reviewed below.

One study that shares Cresswell's interest in competing representations of places used secondary data (e.g. submitted objections, media coverage) on a proposed wind farm in rural Wales (Woods, 2003). It identified two sets of conflicting representations of the rural. The first set of competing representations contrasted in its representation of nature; one representation framed nature as beautiful, unspoilt and peaceful, while the second instead portrayed nature as threatened by global climate change. While the first representation built a strongly local narrative, where wind turbines were framed as threatening the natural and peaceful qualities of the local environment, in the second representation nature was instead framed globally rather than locally, with the wind project being positioned as offering local residents a chance to contribute to global sustainability. Such 'green-on-green' controversy, where 'pro-nature' arguments are used in different ways by both sides of the debate, has a lengthy history (Warren, Lumsden, O'Dowd & Birnie, 2005). The study's second set of contrasting representations focused on the rural. The first represented the countryside as a space of production, historically through farming and now for producing energy. By contrast, the second representation of the countryside, as a space of consumption, argued that with the decline of agriculture, the commodification of the rural (and its perceived beauty and naturalness) is increasingly important for rural economies. As such, wind farms were framed both as fitting in a utilitarian space of production, as well as not fitting in a landscape mostly valued for its scenic beauty and naturalness. This case study thus echoes, in a renewable energy context, Cresswell’s (1996) point that what is considered as ‘acceptable’ in a given place depends on (conflicting) ways of representing such places.

An essay drawing on several strands of thinking about landscape has made a similar point, and coined the term ‘fit’ between landscape and technology – with a focus on wind energy (Brittan, 2001). The paper agrees with the two studies above that nothing can be (in)appropriate to a landscape per se and wind turbines cannot be inherently ‘ugly’ – instead such interpretations are argued to depend on the place they are located. The author draws on the notion of wind turbines as ‘weeds’: a plant is only a weed if it is deemed to be out of place, and likewise it is the ‘fit’ between such representations of technology and place that informs notions of whether something is ‘in place’ – and thus acceptable – or not.

Brittan’s focus on landscapes (which are things *“to look at”*; Cresswell, 2004, p.10), rather than places (which are *“things to be inside of”*; Cresswell, 2004, p.10), is shared by a more recent study which focused on the interplay between meanings attributed to different landscape types in Northern Tasmania and representations of plantation forestry in this area (Anderson, Williams & Ford, 2013). It used interviews and a Q method sorting task using photographs portraying the range of different land uses in Northern Tasmania’s rural landscape. The Q analysis found four clusters of dominant ways of representing the rural landscape (multifunctional, productive, stewardship and conservation). A separate analysis was conducted to understand representations of plantation forestry. The study concluded that certain meanings of the rural landscape were associated with particular representations of plantation forestry – for instance representations of the rural landscape as productive went hand in hand with positive interpretations of plantation forestry (e.g. as providing extra income). Moreover, those ascribing lifestyle and amenity-related meanings to the rural landscape were more likely to represent plantation forestry as an unacceptable risk, mirroring findings from Woods (2003). Such representations of the countryside as a space for production have also been found in a mixed method case study of wind energy development in the American Midwest, where such representations were associated with widely supported wind energy development (Mulvaney, Woodson & Prokopy, 2013).

The focus of these papers (Anderson et al., 2013; Brittan, 2001; Mulvaney et al., 2013; Woods, 2003) is predominantly on landscape and rurality in general, rather than the specific meanings and values associated with particular places (e.g. Stonehenge). Other studies have instead focused on these place-specific values and have thus to some extent been able to better capture the role played by connections between people and specific places.

McLachlan (2009) adapted Brittan's (2001) notion of 'fit' between landscape and technology to examine the 'fit' between symbolic interpretations of place (rather than landscape) and technology in the case of a UK wave energy test facility. Drawing on key stakeholder interviews and secondary data, the study identified multiple 'logics of support and opposition', based on diverse interpretations of place and technology. These include instances of 'place-technology fit' such as ['technology as experimental' + 'place as nature' = objection], ['technology as pioneering' + 'place as resource' = objection] and ['technology at one with Mother Nature' + 'place as nature' = support] (see McLachlan, 2009, p.5348). By focusing on place, rather than landscape, the paper thus goes beyond an emphasis on general characteristics of landscape types towards investigating the diversity of place-specific nature of representations of place and technology that may shape local energy acceptability.

Various other recent, mostly qualitative, studies have further developed these ideas of acceptability being shaped by both representations of place and technology. Gee (2010) used open questions in a postal questionnaire in coastal northern Germany to explore meanings associated with both the sea and the terrestrial landscape in the area, and found arguments around the aesthetic qualities (e.g. openness, naturalness) of the sea, which contrasted with representations of the land as man-made and structured, to be influential in shaping oppositional attitudes towards local offshore wind development. Collins and Kearns (2010) found public responses to a new housing development in a coastal part of New Zealand to be informed by representations of the place as signifying an increasingly rare wilderness, beauty and isolation, while memories of experiences at younger age and intergenerational, historical familial links to the landscape were also influential in shaping public responses to the development. Gormally, Pooley, Whyatt and Timmis (2014) also found certain historic place-related meanings, such as the historic local use of hydropower, to aid acceptance of community-led energy initiatives among residents of three rural UK communities. Such an emphasis on local histories reflects two important dimensions of place-related identity processes (distinctiveness and continuity with the past; Twigger-Ross & Uzzell, 1996); suggesting developments which draw on a place's history and distinctiveness may be more acceptable locally (Devine-Wright, 2009; a point that will be returned to throughout this thesis). A similar conclusion was drawn in a comparative case study of five wind farms within 50 km of each other in Ontario (Canada), which found that *"the developers who took the time to understand local histories and make effort to respect and include these in wind energy projects are more successful"* (Fast & Mabee, 2015, p.35). Fast and Mabee (2015) and Fast and colleagues (2015) also found these wind farms to be interpreted by some as industrialising the landscape, while others instead portrayed these wind farms more positively, as simply part of ongoing processes of change with the rural landscape, or as providing a continuity with the past by allowing farmers to stay in the land due to the added income from hosting wind farms (echoing notions of the countryside as a space for production; e.g. Woods, 2003). Boyd and Paveglio (2015) found place-specific themes such as local independence and pride, the presence of multi-generational residents and a desire for population growth and economic stability to be important factors in shaping acceptability of future energy developments in a small, rural community in Canada. Otto and Leibenath (2014) describe clashing local discourses over a proposed wind farm on a German hill covered by commercial forest. In one discourse, representations of the forested hill as providing local jobs and enhancing independence and sustainability were associated with wind project support, while in the converse discourse, representations of the place as beautiful, silent and natural were associated with objection to the wind farm.

In summary, there is an increasing number of studies that have suggested the potential of a place-based approach, and the relevance of investigating acceptability by considering representations and meanings associated with both place and technology. These meanings have usually not been taken for granted within these studies, but instead have often been seen as multiple, diverse and politically charged. A key conclusion of this work is that acceptability needs to be seen as produced through (contested) representations of both place and technology: the concept of 'place-technology fit' (McLachlan, 2009) is therefore taken up in this thesis as a conceptual tool to understand local energy acceptability.

Quantitative place-based approaches exploring place attachment and place identity

The second strand of place-based acceptability studies employs a more individualistic, positivist socio-psychological approach, examining the potential of place change (such as local energy development) to 'disrupt' individuals' place attachment and place identity. A key starting point for such studies is the idea that individuals are attached to particular places, and derive their identity in part from inhabiting these places. Consequently, it is hypothesised in this body of work that individuals who are more strongly attached to a place are more likely to exhibit 'place-protective' behaviour or attitudes (Devine-Wright, 2009; Stedman, 2002; Vorkinn & Riese, 2001).

Stedman (2002) is one of several scholars to posit this hypothesis. In particular, he argues that 1970s human geographical scholarship from a phenomenological tradition (see section 2.3.2) has developed strong ideas around sense of place, but at the same time is limited by its lack of empirical testing and overlooking of the behavioural implications of sense of place and attachment. The author contrasts this to positivist research on place attachment, which addressed those gaps but is argued to lack deeper theoretical engagement with these phenomenological ideas. He thus calls for studies that empirically test the notion that strong place attachment is associated with greater willingness to engage in 'place-protective action'. Very similar points have been made by Wester-Herber (2004), who instead argued for a greater role of place identity (rather than place attachment) in understanding risk perceptions of industrial and waste facility siting. In particular, the author suggests the need to study how the four aspects of place identity (i.e. distinctiveness, continuity, self-esteem and self-efficacy; Twigger-

Ross & Uzzell, 1996) *"can be affected in a negative way if changes are made to a landscape by the introduction of a high-risk and stigmatized industrial venture"* (p.109). A recent review paper has suggested the relevance of such an approach by highlighting a variety of ways in which large industrial developments (e.g. mining) have transformed the meanings associated with local places (Jacquet & Stedman, 2014).

One further paper has drawn on these ideas on the relevance of place attachments and place identity to develop ideas around public responses to renewable energy projects, rather than mining or housing developments (Devine-Wright, 2009). In particular, Devine-Wright proposes that local opposition to RE projects should not be seen as NIMBYism but as forms of 'place-protective action' (see Stedman, 2002) which emerges *"when new developments disrupt pre-existing emotional attachments and threaten place-related identity processes"* (p. 426). The paper argues that important symbolic and affective aspects of place-related action have been overlooked. It therefore argues for an emphasis on 'place', which *"regardless of discipline, […] is a distinctive way of thinking about social research that stresses 'emplacement', in which physical and spatial contexts are more than mere backdrops to social and psychological phenomena"* (p.427). As such, the emphasis remains on local opposition (rather than the full spectrum of public responses), however, local opposition is reconceptualised from being selfish 'NIMBYism' to being understood as legitimate, as emanating from genuine and authentic attachments to place, which are threatened to be 'disrupted'. Finally, Devine-Wright complements the individualistic approach of Stedman (2002) and Wester-Herber (2004) with an emphasis on the importance of how public responses are socially constructed outcomes, by suggesting the use of social representations theory (see section 2.4) to better understand these responses.

This interest in place-protective action rooted in people-place bonds has been explored further by a number of empirical studies. The first study that examined place attachment as a predictor of public responses to local energy development was Vorkinn and Riese (2001). This quantitative study examined strength of place attachment at two scales (attachment to the municipality and to the rather unspecific *"areas expected to be affected by the development",* p.255) in the context of a hydropower development in Norway. It found both place attachment variables to be significant; attachment to the affected areas was a significant negative predictor of project support, while attachment to the municipality was a significant positive predictor. The study also found that the two place attachment variables explained a greater proportion of variance than the socio-demographic variables combined, suggesting the relevance of place attachment in such contexts. In particular, attachment to the affected areas was the strongest predictor (explaining 17% of variance), compared to attachment to the municipality (explaining 3%). Three more studies have explored place attachment strength as a predictor variable in studies of local energy acceptance. A US survey study of two proposed nearshore wind farms near two West Virginia coastal towns found place attachment among recreational water users to be positively associated with support in one town but negatively related with support in the other (Brownlee et al., 2015). However, this study was weakened by the use of ambiguous questionnaire items that provide unclear data, such as ‘I support offshore wind energy in this area because I think it will increase energy independence (from foreign sources, produce own energy)’. Another US survey study used structural equation modelling to find respondents’ attachments to their ‘community’ was not a significant predictor of support for hypothetical wind farm development ‘in or near their community’ (Bidwell, 2013). Finally, an Australian study using regression analysis found that respondents’ attachment to their property (i.e. their home) did not significantly predict their intention to oppose an existing or planned local wind farm (Read, Brown, Thorsteinsson, Morgan & Price, 2013). However, this study was weakened by its small sample size (N=116), its recruitment of participants via pro-renewables and anti-wind websites (likely reaching those with more extreme views only), and the fact that not all respondents lived near a proposed wind farm.

What these studies illustrate is the plurality of approaches taken by studies looking at the role of place attachment: for instance focusing both on proposed and hypothetical projects, and exploring attachment at different scales (e.g. to properties, hometowns, municipalities). This diversity makes the drawing of firm conclusions more challenging. However, what these studies do suggest is that the role played by place attachment may vary across different contexts. This conclusion is broadly confirmed by three further studies, which have combined an interest in strength of place attachment with an investigation of the role of multiple place-related meanings as shaping local energy acceptance.

A US questionnaire study explored factors predicting respondents' willingness to engage in 'place-protective action' against a range of future environmental changes (including new housing developments and a change in local water quality) near the small lakes where (most) respondents lived next to (Stedman, 2002). Using regression analysis, it found place attachment strength and the extent to which these places were seen as 'up north' (highlighting its wilderness and escape from civilisation) a significant, positive predictors of willingness to engage in 'place-protective action'. The extent to which each place was seen as a 'community of neighbours' was a significant negative predictor.

Devine-Wright and Howes (2010) examined public responses to a proposed offshore wind farm in two coastal towns within sight of this project in North Wales (Llandudno and Colwyn Bay), using a mixed method approach involving interviews, focus groups and a questionnaire survey. The paper found a significant negative correlation between strength of place attachment and project acceptance for Llandudno residents, but not for Colwyn Bay residents, which, combined with the qualitative data, is interpreted by the authors to evidence 'disruption' to place attachment. The authors argue that this correlation can be explained by a lack of 'fit' between symbolic meanings associated with place and project. In particular, the project was seen as destroying the natural beauty of Llandudno, and as 'fencing in the bay'. In Colwyn Bay, which was represented as run down, the wind project was evaluated less negatively (though not positively either) and the authors speculate that the project may therefore have been interpreted as an enhancement to the place – although the quantitative data suggests more of a general lack of engagement with the project in Colwyn Bay.

The notion of place enhancement is further developed by Devine-Wright (2011b), who focused on symbolic meanings of place and technology in two villages (Portaferry and Strangford) near a single installed nearshore tidal energy converter in Northern Ireland. Based on focus groups and questionnaire survey responses, the study concluded that the project was well-supported, due to interpretations of the tidal energy device as enhancing place-related distinctiveness (putting each village 'on the map worldwide'), increasing place-related esteem and pride, and fitting in the locality well in a visual sense (looking like it had always been there, and thus providing a sense of continuity with the past). These findings thus suggest the value of interpreting public responses to local energy projects through the lens of these principles of place identity (Twigger-Ross and Uzzell, 1996), ultimately concluding that *"enhancing local distinctiveness fosters public acceptance of tidal energy"* (p.83). Devine-Wright (2011c) uses empirical data from the same study in a regression model which shows that strength of place attachment is a significant positive predictor of project acceptance in both villages. Two locally relevant place meanings were also found to be significant predictors of acceptance: in Strangford, the notion of the village lacking vitality was a significant positive predictor of acceptance, while in Portaferry, the idea of the village being a pleasant community that should not change was a significant negative predictor of acceptance. As such, this study reaffirms the relevance of both place meanings and place attachment as potential predictors of acceptance of place change, and shows that place attachment can be an important predictor of support, not just objections.

One further survey study has adopted a similar approach to support for solar farms in California (Carlisle, Kane, Solan & Joe, 2014), but rather than eliciting locally-relevant place meanings, copied the place meanings found in the Northern Irish case study reviewed above. In a logistic regression analysis, Carlisle and colleagues find none of these place meanings to significantly predict support, which suggests the importance of eliciting locally relevant place meanings – rather than using researcher-generated sets of meanings that are simply presumed to reflect the ways in which a place is meaningful to its residents.

A final strand of studies that focus on place attachment have instead aimed to open up different varieties of place attachment, rather than focusing on a one-dimensional 'strength of attachment' variable. In particular, recently energy acceptability studies have opened up the role of active and traditional varieties as predictors of local energy acceptability. Active attachment has been conceptualised as being linked to self-conscious decisions to live somewhere, taking an active interest in the place's goings-on and an openness to change and new experiences, while traditionally attached individuals are understood as having an unselfconscious attachment, taking where they live for granted, and more strongly holding conservative values (valuing tradition, security and conformity) (Bailey, 2015; Devine-Wright, 2013a; Hummon, 1992; Lewicka, 2011).

In one of these studies, Devine-Wright (2013a) examined public responses to a proposed high-voltage transmission line near Nailsea in southwest England, comparing the relative importance of project-related variables (e.g. positive impacts, negative impacts, procedural justice, trust in developer) with person-related variables (socio-demographics) and place-related variables (distinguishing between active and traditional place attachments). The study found project-related variables (such as the project's negative and positive impacts and perceived procedural justice) to explain the majority of variance in public responses to the proposal, with place-related and person-related variables explaining small but significant proportions of additional variance. It also found that those with a more active attachment variety were significantly more negative towards the proposal, though no significant influence was found for strength of traditional attachment. This suggests that those individuals who made a conscious decision to move to a certain place (in this case an English town in a rural setting), rather than having lived in the same place all their lives, are more likely to oppose local energy projects like high-voltage transmission lines. This finding therefore highlights the value of opening up the ways in which places are meaningful to people beyond a comparatively narrow focus on (quantitatively measured) strength of place attachment.

This argument was developed further by Bailey (2015), who adopted a mixed method approach in the same case study context as Devine-Wright (2013a). Bailey focused on 'life-place trajectories' – in response to critiques that people-place bonds are typically studied in ways that do not account for the dynamics of such bonds over time, and the different place attachment varieties (Lewicka, 2011). In this study, life-place trajectories were found to shape representations of the local countryside, and subsequent responses to the proposal. Local residents with a more traditional attachment variety (i.e. those who had lived all their lives in Nailsea) represented the countryside around Nailsea as already replete with energy infrastructure, and subsequently did not object to the proposed power line. On the other hand, those with a more active attachment variety (characterised as people who typically moved to Nailsea at a later age, yet are very active members of the community) represented the countryside around Nailsea as natural, picturesque and thus saw the proposal as industrialising the countryside – a reason for opposing the project. This study thus confirms that representations of place (in this case the countryside) and technology (in this case a power line proposal) can combine to inform public responses to local energy developments (or 'place-technology fit'; McLachlan, 2009). It also highlights the value of considering a diversity of people-place bonds in greater depth beyond a focus on strength of place attachment alone.

Although the notion that 'incomers' may be more averse to change than 'locals' is a point that returns in various studies discussed above (Bailey, 2015; Devine-Wright, 2013a; Woods, 2003), in this thesis the emphasis is less on a historical account of people's relation to place (or 'life-place trajectories') and more on how meaning is constructed in the present (see subsequent sections in this chapter). As such, the question of locals versus incomers is explored in less depth than in previous work.

Conclusion

In summary, a variety of studies from different disciplines and parts of the world, and using various methods, have adopted place-based approaches. Despite the diversity across these approaches, a common theme is an emphasis on the human dimensions of place (i.e. place-related meanings and attachments), in combination with a focus on symbolic interpretations of place change (usually a proposed local energy project). Social constructivist, interpretivist studies from a geographical or sociological point of view have demonstrated how conflicting representations of the meanings of places are central to judgements on the acceptability of place change in such contexts (e.g. Cresswell, 1996; McLachlan, 2009; Woods, 2003). These have shown that symbolic place and project-related meanings, and especially the 'fit' between them, are important factors in understanding public responses to place change. It has successfully identified instances of particular place-related narratives being associated with both oppositional and supportive attitudes. Studies from a socio-psychological perspective, generally employing a positivist epistemology, have also highlighted the relevance of place meanings, and have in addition demonstrated how individual attachments to places and place identity can be influential in determining public responses to local developments (e.g. Devine-Wright & Howes, 2010; Stedman, 2002). The direction of the relation between place attachment and acceptance of place change is not uniform though, as several studies have found a positive association (e.g. Devine-Wright, 2011c; Vorkinn & Riese, 2001), a negative association (e.g. Devine-Wright & Howes, 2010; Stedman, 2002; Vorkinn & Riese, 2001) or no relation (e.g. Bidwell, 2013; Carlisle et al., 2014; Devine-Wright & Howes, 2010; Read et al., 2013) between these two variables. This body of work thus offers a conceptual toolbox for further study of public responses to local energy projects. In this thesis, the concepts of place attachment and 'place-technology fit' will be adopted and developed further in the context of local energy deliberations, answering calls for a greater role of place and place meanings within wider climate-change decision-making and debates (Adger, Barnett, Chapin & Ellemor, 2011) and within psychological approaches to environmental change (Clayton et al., 2015).

2.2.3 Understanding public responses to offshore renewable energy developments

As observed by Kerr and colleagues (2014), there is an increasing move in some countries towards the development of ORE. However, the energy acceptability literature has to date mostly focused on onshore energy developments, while only recently more studies examining offshore wind energy have emerged, along with the rise in offshore wind farm development. Studies on public responses to developments employing other ORE technologies, such as tidal and wave energy, have also become more common, though remain a minority (Wiersma & Devine-Wright, 2014). Instead, research on wave and tidal energy has mostly focused on technical and environmental aspects, though work on their human dimensions has become more commonplace in recent years(Kerr et al., 2014; Soma & Haggett, 2015). This section reviews the main findings and gaps in previous research on public responses to ORE developments.

Previously, two review papers have discussed the similarities and differences between public responses to onshore and offshore wind energy developments (Haggett, 2008; 2011). These studies observed that it is common for scholars and policy makers alike to portray offshore wind energy as a problem-free, universally acceptable alternative to onshore wind energy. However, such assumptions were strongly objected to in these papers and, based on a review of studies of public responses to offshore wind energy projects, Haggett (2008; 2011) argued that in fact those factors found to be relevant in shaping public responses to onshore wind energy are equally relevant for offshore wind developments. Such factors include visual impacts, environmental impacts, spatial demands, place attachment, local context, the disjuncture between the local and the global, relationships with outsiders (e.g. the developers), and issues around planning and participation. This conclusion is confirmed by studies which have specifically asked whether offshore wind is more acceptable than onshore wind (Aravena, Martinsson & Scarpa, 2008; Dalton, Lockington & Baldock, 2008; Ek, 2006; Ladenburg, 2008; McCartney, 2006; Veidemane & Nikodemus, 2015). The inconsistent findings of these studies suggest that neither onshore nor offshore wind energy is universally preferred, but instead such preferences depend on local context (e.g. the meanings associated with both the land and the sea in a given area).

A more recent review of studies on public acceptability of offshore wind, wave and tidal energy broadly agrees with Haggett (2008; 2011) that offshore renewable energy acceptability is shaped by many of the same factors which shape onshore wind energy acceptability (Wiersma & Devine-Wright, 2014). However, in addition some aspects were argued to be distinct to ORE.

First of all, studies focusing on ORE projects have highlighted important and uniquely marine issues that are not necessarily relevant in an onshore context: the notion that the sea is used dynamically and by many users simultaneously (which could give rise to conflicts of use), ownership of the sea(bed) (which is not often privately owned), and relatively recent questions around marine decision making processes, as well as conflicting visions of what the sea represents and should be used for (as previously discussed in relation to the rural by Woods, 2003) (see Alexander, Wilding & Heymans, 2012; Gray, Haggett & Bell, 2005; Kempton et al., 2005). These governance issues could to some extent be addressed by marine spatial planning, though the lack of established practice in this field contrasts with its onshore equivalent, land use planning. This highlights another potential difference between public engagement with onshore and offshore energy developments (Haggett, 2008; Jay, Ellis & Kidd, 2012). Such an absence of institutionalised procedural frameworks around public engagement and consultation could thus risk causing concerns over procedural justice and fairness.

Second, aside from specifically marine issues that shape public responses, impacts expected by local communities are also frequently sea-based rather than land-based, as they would be for onshore infrastructure, including loss of access to marine areas and subsequent loss of livelihood, concerns about marine wildlife and the quality of waves for surfing (see Bailey et al., 2011; Stefanovich, 2009; Stokes et al., 2014). Studies furthermore noted fundamental beliefs about the sea as a special place where human structures do not belong (Kempton et al., 2005).

Third, as noted by Haggett (2008; 2011), visual impact remains a central concerns about the impacts of ORE development. However, this may not be altogether straightforward, as some offshore wind farms that are close enough to the shore to be clearly visible have run into opposition (e.g. Devine-Wright & Howes, 2010; Kempton et al., 2005), but others that are even closer to shore have not (Sørensen, Hansen & Larsen, 2002), while some nearshore tidal technologies have been well-received (Devine-Wright, 2011b). This nuances common sense assumptions about the importance of siting ORE further offshore to eliminate opposition. With regard to wave and tidal energy, expectations among developers and regulators are that these technologies will be less visible (McLachlan, 2010), leading to presumptions of widespread public support for such developments. This contrasts strongly with onshore wind, toward which RE actors perceive the existence of a latent public hostility (Barnett et al., 2012), thus illustrating one further difference between onshore and some offshore energy technologies.

Fourth, it has become clear that public understandings, knowledges and expectations of ORE—a novel, emerging group of technologies—are highly variable (Bailey et al., 2011; Butler, Parkhill & Pidgeon, 2011). This represents a potential contrast with onshore wind technology, which may be both more visually familiar and associated with existing discourses of controversy and stigma, as a result of having been covered by media reports for years.

This last point links to one of three key criticisms that can be levelled at this body of ORE scholarship (also see Wiersma & Devine-Wright, 2014). Despite various studies concluding that individuals are typically unfamiliar and not very informed about offshore technologies (Butler et al., 2011; SDC, 2007), many studies have treated participants as sufficiently knowledgeable to make judgements about the desirability of wave and tidal energy, for example using terms such as ‘wave/tidal’ without further explanation (DECC, 2015b). Some studies (Krueger et al., 2011; Lilley et al., 2010) have tried to inform participants using visualizations, but these were often not included in the published paper and no explanation was given as to how they were produced. As such, there is a greater need to be sensitive to the multiple (potentially rudimentary) understandings that may exist around such novel technologies, and to make available information to help participants make a judgement on their acceptability when eliciting attitudinal evaluations.

A second shortcoming is the relative lack of breadth covered by studies of ORE acceptability. Looking across previous reviews of public engagement with RE, mostly based on onshore wind research (e.g. Petrova, 2013), a number of factors can be identified that have rarely been examined in an offshore setting, especially in relation to wave and tidal energy projects. Such factors include ownership models of such projects, , physical characteristics of wave and tidal energy devices (colour, spatial arrangement, size, number, noise), trust in marine regulatory and governing bodies, and the implications for acceptability of employing wave and tidal energy devices that are completely submerged (which is often presumed to eliminate opposition altogether; McLachlan, 2010). It could also be argued that there is a need to move away from studying the factors found to be relevant in onshore energy developments, toward specifically ‘marine’ factors, such as the ones above. Such a focus on the sea could for example be achieved through greater use of ethnographic or other methods that are suited for exploring people’s experiential, lived experience in place and symbolic connections to the sea, for instance drawing on the notion of marine citizenship (McKinley & Fletcher, 2012). If public responses to ORE are to be fully understood, future research needs to consider the uniquely marine characteristics and concerns associated with ORE in more critical and ambitious ways (Wiersma & Devine-Wright, 2014).

A third limitation of the existing literature on public responses to wave and tidal energy is that at times it has been focused on providing descriptive, rather than explanatory findings. For instance, several studies have merely listed expectations or concerns around these technologies (e.g. Conway et al., 2010; Stefanovich, 2009; Stokes et al., 2014). More theoretically-informed research is needed, which contributes to and learns from other areas of scholarship, in order to develop a more systematic, diverse and robust field of enquiry and thus reach a better understanding of public responses to ORE projects – a point which has been made earlier in relation to the literature on onshore wind energy (Devine-Wright, 2005).

With regard to place-based approaches, only some studies have applied a place-based perspective to understand public responses to particular ORE developments, and the place-based literature has not really engaged with the ways in which marine settings are meaningful to people. Because academic interest in place has historically been very land-focused, and has tended to overlook place as a marine concept (Peters, 2010), this represents a missed opportunity to contribute to knowledge on how marine or offshore ‘place meanings’ can be understood. Frequently the offshore setting is conceptualised as only relevant in terms of its physical distance to the development, foregrounding its visual aspects (e.g. Knapp & Ladenburg, 2015). Only a few studies have aimed to understand the offshore context by investigating the meanings and attachments associated with these settings. However, even in these studies the emphasis has remained on how offshore places are experienced and become meaningful from the land. For instance, several studies focused on the meanings associated with coastal towns, rather than meanings of the sea or the offshore areas where the wind project was to be sited (Brownlee et al., 2015; Devine-Wright, 2011b; Devine-Wright & Howes, 2010). Similarly, in McLachlan (2009) some meanings ascribed to the sea in general were reported, but again no specific marine place meanings were considered. Although these studies demonstrate that offshore settings do become meaningful from the land, and that these meanings are important in shaping public responses to ORE projects in such settings, it nevertheless represents an oversight not to examine the other ways in which marine spaces may be meaningful in their own right. Previous work has shown how different parts of a marine area were valued to different extents, and therefore judged to be suited to host a tidal energy array to varying degrees (Alexander et al., 2012; see section 2.6). It is argued here that a fuller understanding of ORE from a place-based perspective needs to learn from such approaches by critically examining the role of meanings ascribed to marine places in their own right, rather than presuming the offshore only becomes relevant in a land-based, visual sense, as a scenic backdrop for coastal towns.

Some further important suggestions for future research on the social dimensions of wave and tidal energy development have been made based on a workshop in Orkney, UK, which was attended by academics and local stakeholders in ORE development (Kerr et al., 2014). The authors argue that one of the key concerns in the context of ORE is knowledge sharing; due to the competitive nature of the industry, with several companies trying to develop a ‘winning’ design, companies may be unwilling to disseminate all information about the technologies. This has potential implications for public responses, for instance through trust in the developer, as a lack of transparency on the part of the development may arouse suspicion as for their ‘real’ intentions or ‘hidden’ project impacts (Barry et al., 2008). Kerr and colleagues (2014) also call for the use of knowledge of local stakeholders such as fishermen in designing optimal ORE projects. A further theme that is suggested to be potentially influential in shaping public responses to these technologies is the uncertainty associated with particular aspects of these technologies, such as their ideal location and scale, visual appearance, onshore land requirements, and their need for exclusion zones. Finally, Kerr and colleagues call for more comparative studies which are able to provide greater insight into the local energy configurations that are deemed acceptable, and others that are not. This is a key point that will be returned to throughout this chapter and the thesis as a whole.

In short, the human dimensions of ORE projects – especially wave and tidal energy projects – are an emerging topic within the energy acceptability literature. Numerous studies have begun to open up public engagement with such technologies, and this thesis aims to further contribute to these debates.

2.2.4 Limitations of the local energy acceptability literature

The previous section illustrates that the energy acceptability literature represents a sizeable and diverse field, which has successfully identified many person, project, context and place-related factors underlying public responses to local energy development. This section critiques this literature in a number of ways, to inform an alternative 'upstream' approach that replaces a focus on *public responses* to single proposed energy projects with a focus on understanding *local energy deliberations* (see 2.2.5). Those studies specifically taking a place-based approach, as discussed in the last section, are critically discussed in section 2.3.1.

A first limitation of the local energy acceptability literature is its implicit framing of local opposition as 'deviant', as somehow unusual or surprising and therefore in need of explaining (Aitken, 2010; Batel & Devine-Wright, 2015a). Usually this framing is performed in introductory sections, where the notion of a local-national 'gap' in support levels is used to justify the research focus: while national levels of support for a technology are high, local projects using the technology often run into opposition. However, this typical framing is problematic, first of all because of the uncritical assumption of universally high levels of support for technologies at a national level (Batel & Devine-Wright, 2015a). Instead, this support needs to be seen as very much *qualified* in nature, and as contingent on many conditions and values (see Bell et al., 2005; 2013; Fast, 2015; Parkhill et al., 2013). Also, it has not been sufficiently acknowledged by many studies that local and national studies measure different constructs entirely (i.e. attitudes towards specific local projects versus attitudes towards the general idea of using a technology *in principle*) and are thus a misleading basis for comparison. It has been argued recently that there may not be a straightforward 'gap', but rather a range of differences and similarities between local and national attitudes, when looking at more comparable questions across the local and the national (Batel & Devine-Wright, 2015a).

This conceptualisation of local opposition as 'deviant' also becomes problematic when studies have used such a starting point to argue that this opposition needs to be overcome to achieve higher renewable energy project approval rates (in turn meeting climate change targets). In doing so, some studies have implicitly adopted an unreflectively pro-development stance (which due to the predominance of wind energy case studies in practice has been a pro-wind stance), rather than a more proximate critical stance, where both support and opposition could be morally 'right' (Ellis et al., 2007). For balance, it should also be noted that many studies have simultaneously been critical of developers' practices (e.g. Walker et al., 2011), and have widely called for communities' voices to be heard more (e.g. Woolley, 2010). Nevertheless, prominent framing of opposition as in some way 'deviant' within much of the literature has positioned local opposition as a problem or 'barrier' (Cherry, García, Kallbekken & Torvanger, 2014) that needs to be eliminated, rather than as a valuable and legitimate part of fair and democratic decision-making processes (Aitken, 2010; Ellis et al., 2007). This contrasts with the major cross-disciplinary shift within the last 20 years where ideals of educating a knowledge-deficient public have been replaced with *"the recognition that publics possess important local knowledge and the capacity to understand technical information sufficiently to participate in policy decisions"* (Burgess, 2014, p.48). Such a view is for example reflected in ideas around collaborative planning (Healey, 2006) and communicative action (Habermas, 1984). While several studies have successfully drawn on such local voices (e.g. Alexander et al., 2012), many energy acceptability studies have largely overlooked and marginalised the potential contribution that local voices, values and knowledge could make to achieving better and more acceptable energy projects. As such, there remains significant potential to explore and make use of local voices and knowledge in more diverse ways and in greater depth (a point that is developed further in the remainder of this chapter and the next).

In addition, the literature's pro-development stance has also (perhaps unwittingly) reinforced the dominant top-down, developer-led implementation model without exploring the potential of alternative configurations of energy system change, such as bottom-up or decentralised sustainability action. Instead, local residents have continued to be treated by many studies within the local energy acceptability literature as passive 'recipients' of various proposals, whose relevance only manifests (as a nuisance) in the implementation stage of projects designed by external developers. This may be a logical consequence of dominant planning paradigms in countries like the UK, where top-down implementation of large-scale energy infrastructure is the norm (Rydin, Lee & Lock, 2015; Woolley, 2010) – which normalises the marginalisation of local communities. Nevertheless, the academic local energy acceptability literature could be argued to have reinforced this norm through its focus on better understanding how local communities can be heard *within* the top-down framework, rather than making a case for how alternative modes of engagement could contribute to better understand acceptability issues (e.g. more 'upstream' engagement; see 2.2.5; or using participatory visual methods; see chapters 4 and 5). Subsequent academic suggestions for how to increase project acceptance have thus to a large extent been done within this very same, taken-for-granted power structure (e.g. redressing the imbalance between local 'costs' and global 'benefits'; see Petrova, 2013). Such a narrow focus on eliminating the obstacle of local opposition, rather than an interest in the full range of public discourses around local energy developments, has therefore often failed to examine issues of local energy development more broadly and constructively. As a consequence, it could be argued that while the literature has been very successful in identifying factors that may cause local opposition, as reviewed in the previous section, it has rather less to say about the construction of support for a variety of local contributions to sustainable energy system transitions, beyond rather descriptive findings around the positive impacts that may be expected from particular developments (e.g. Bailey et al., 2011).

This somewhat narrow focus on eliminating local opposition is also reflected in the dominance of case studies of suitably controversial local energy developments (e.g. Devine-Wright, 2011b; Devine-Wright & Howes, 2010; Ellis et al., 2007; Firestone & Kempton, 2007; Gross, 2007; Kempton et al., 2005; McLachlan, 2009; Waldo, 2012). These case studies habitually focus on single, top-down developments (usually wind energy), for which major decisions, such as the technology employed and its location, have already been decided upon by the developer (and/or government). These projects have usually, at the very least, been submitted for planning permission, and have thus provoked some kind of 'deviant' local reaction which is subsequently investigated.

Such a focus on project-specific research designs has been very effective in understanding the factors behind public responses to such specific projects – as documented by the wealth of research findings summarised in sections 2.2.1 and 2.2.2. However, this project-focused approach to acceptability can also be critiqued as a way of operationalising local energy acceptability. For instance, an important consequence of this dominance of the single case study research design is that relatively little can be said about the comparative acceptability of alternatives in a given place. For example, studies which examine the relative acceptability of several technologies in one place may help in understanding if some technologies may be more acceptable in particular places than others, and the potential this may hold to achieve more acceptable local energy solutions. Only a few studies to date have directly compared the relative acceptability of two technology options in a local or regional context (e.g. Pedersen & Johansson, 2012). Likewise, very few studies (see 2.5.2) have examined the relative acceptability of different sites within the same locality for siting a specific project, and the potential difference finding the 'right' place could make to local support (e.g. Alexander et al., 2012). Instead, case studies have typically focused on existing developments, where the option of using a different, more acceptable, technology or location is simply not up for discussion as such decisions have already been made by the developer (an exception is the emerging literature on community-led energy initiatives; e.g. Haggett & Aitken, 2015; Walker, 2011). Consequently, the local energy acceptability literature has been very successful in understanding public responses to specific local energy developments, and based on those findings, making recommendations for how future projects in the same (top-down) mould could be made more acceptable. However, it has not systematically explored the *alternative* configurations of achieving local sustainability that may have been more acceptable locally, for instance in terms of the type of technology (it does not *have* to be a wind project – it could be some other contribution to reducing carbon emissions), a project's location and the project's ownership model: section 2.2.5 outlines how this thesis aims to address this shortcoming.

Thus, through continued reference to NIMBYism and 'deviant' local opposition, some of the energy acceptability literature has to some extent reinforced the overlooking and marginalisation of other potentially productive avenues of public engagement with renewable energy development, and energy system change more generally. This is despite recent conclusions that individuals expect, want, and are fully willing and able to engage with wide-ranging energy system change (Demski et al., 2015; Parkhill et al, 2013). The energy acceptability literature could thus be argued to offer a relatively limited potential contribution to broader sustainability:

> *"While these policy initiatives [i.e. wind energy projects] may induce a short-term increase in the deployment of renewable energy, it is unlikely that they will contribute to a more lasting response to the challenges of climate change and peak oil. For this there is a need for a more fundamental transformation in society's relationship with energy, including reduction in demand"* (Barry & Ellis, 2011, p.30).

In other words, if scholarly research on the human dimensions of local energy development is to contribute to a successful and multi-faceted transition towards a sustainable society – rather than only to the successful implementation of top-down large-scale renewable energy (wind) development – alternative research designs which go beyond the investigation of opposition to single controversial projects may complement existing project-focused approaches. Therefore, this thesis adopts an alternative research design, which aims to capture public views on broader local energy system change, such as which technology or local site is deemed 'fitting' for a local energy project – which is outlined in more detail in the next section. This approach may hold the potential – in response to the critique in the quotations above – to make a broader contribution to achieving wider sustainability beyond the local acceptance of wind energy, as it aims to open up otherwise overlooked alternative local contributions to a more sustainable energy system. In doing so, it may also address other shortcomings in the energy literature, for instance by bringing back together closely related aspects of the energy system, such as supply and demand, and centralised and decentralised modes of delivery, which have largely been studied in isolation from each other.

One further argument in favour of a greater focus on the potential of local residents and communities in having a greater say in how localities make a contribution to global sustainability has been provided by some authors within the area of transition studies, an area of research interested in the promotion and governance of 'sustainability transitions' (see Markard, Raven & Truffer, 2012). Here, arguments have been made that the achievement of a fundamental transition away from a carbon-intensive, centralised, top-down energy system relies on innovation in alternative *niches*. Within such thinking, some have placed great emphasis on the potential of local action (such as community-led energy projects) as a niche that may have the potential to bring about fundamental innovation and ultimately change to the current unsustainable energy system (Seyfang & Smith, 2007). This has led to calls for a rethinking of the agency ascribed to local actors, and suggests the value of an approach that does not attempt to reinforce and improve existing models (of top-down energy delivery), but instead has an interest in understanding and galvanising the potential of alternative (bottom-up) modes of delivery. In line with this, the approach outlined in the next section describes how this thesis moves away from a focus on improving the effectiveness of top-down delivery models of energy system change towards a locally-embedded, broader public engagement with energy system change.

2.2.5 An 'upstream' alternative: understanding local energy deliberations

This thesis aims to address the limitations of the existing energy acceptability literature as outlined above, which suggested the potential value of an approach that enables a broader understanding of the human dimensions of local energy development. Here, one alternative to fill this gap is proposed by developing the notion of an 'upstream' approach to understanding *local energy deliberations*. The key tenets of this approach, as outlined in this section, are summarised in Table 2.1 at the end of this section (p.58).

Several authors have previously already suggested *"the importance of 'upstreaming' public involvement in the decision-making process"* (Barry et al. 2008, p.67), or have proposed:

> *"a communicative power-shift during [decision-making] processes, whereas local context and the priorities of local people are central within 'upstream', primary level discussions, as opposed to the dominance of expert-level discussions establishing the energy-related 'problems' or 'challenges' at hand, in absence of place-based considerations and citizen perspectives"* (Whitton et al., 2015, p.135).

Such papers have borrowed the term 'upstream', which also refers to early public involvement in the research and development of new technologies (Wilsdon & Willis, 2004). This thesis follows Barry and colleagues (2008) and Whitton and colleagues (2015) by using the term to refer to early public engagement with local energy futures. Such an approach could be contrasted with the existing local energy acceptability literature in that it does not preclude any technology or project configuration but instead explores public preferences for multiple forms of local energy system change. This contrasts with the 'downstream' nature of public involvement in UK consultation practices (Rydin et al., 2015) and existing acceptability studies (see above) – 'downstream' is understood here to describe a stage in the development process by which most major decisions (e.g. type of technology, number of devices, project location) have already been taken. Although in practice the consultation process can allow negotiation of certain aspects (e.g. the choice between several locations for power line proposals; e.g. Cotton & Devine-Wright, 2012), these choices are about details rather than a fundamental rethinking of the manifestation of local energy. This is illustrated by the observation that in current UK consultation practices around major wind energy projects a 'how not whether' approach to participation dominates, where local participation is focused on negotiation of compensatory measures rather than whether or not such projects should proceed at all (Rydin et al., 2015).

Similar arguments for earlier and more participatory public involvement have been common within the local energy acceptability literature (e.g. Ellis et al., 2007; Firestone et al., 2012; Gross, 2007; Haggett, 2008; Wolsink, 2007; 2010;

Woolley, 2010). They can be situated within the broader *"participatory turn"*, which represents *"a shift from top-down approaches to less formalized, more inclusive and flexible governance"* (Hindmarsh & Matthews, 2008, p.226). Such thinking encourages early involvement, transparency, inclusiveness, deliberation and partnership in agenda setting (Horlick-Jones et al., 2006), and tends to use methods such as citizen forums, roundtables and other methods encouraging deliberative dialogue (Healey, 2006; Hindmarsh & Matthews, 2008) – while also noting that such idealised attempts at more inclusive decision-making offer no guarantee for fairer, better, more democratic or sustainable outcomes (Cooke & Kothari, 2007). While many studies have focused on concepts of distributional or procedural fairness in existing 'downstream' case studies (e.g. Gross, 2007), few studies have heeded calls for a further broadening of public engagement with local energy system change more widely, where the academic interest lies in local communities deliberating local energy futures beyond (not) accepting single (wind) energy projects. For instance, Barry and Ellis (2011) argue there is a need to frame local energy proposals within the wider non-local context of the 'energy crisis', thereby prompting debates around how local communities envisage their energy future:

> *"The ability of communities to bargain an appropriate energy future 'package' from as wide a choice of policy options as possible is of crucial importance. One could imagine, for example, that, if a community accepted an obligation to reduce greenhouse gas emissions, it may either choose to host a local wind farm and bear any perceived deterioration in landscape quality, or alternatively commit to energy conservation equal to the emission saving offered by the wind farm. (…) The measures through which individuals or communities express their 'opt in' to tackle the 'energy crisis' could thus take a variety of forms other than dutifully (or resentfully) acquiescing to the mass deployment of renewable energy proposals." (p.38)*

A similar call for alternatives to a centralised 'predict and provide' model has been made by Fast and Mabee (2015):

> *"Also important is region-level energy planning which distributes the responsibility for energy production to regions and makes explicit the trade-offs that would be involved if a wind project is not built (e.g. another form of electricity production must be built in the region within the same larger 'place')." (p.35)*

Such an interest in the wider contributions to achieving a sustainable energy system that could made by local communities, beyond (resentfully) accepting a local wind farm, represents a fundamentally different way of engaging with local communities. It contrasts with the approach taken in some of the energy acceptability literature, which aimed to increase wind energy deployment (a 'pro-wind bias'; Ellis et al., 2007). However, a critical stance towards such an approach (see section 2.2.4) would suggests that this represents a relatively narrow potential contribution to achieving sustainable energy systems, as it overlooks other potentially widely supported local energy system changes. Local acceptance of wind energy projects has thus at times been seen as a goal in itself, rather than framing such studies within overarching goals of achieving sustainable energy systems. Consequently, the notion that wind energy is simply the 'wrong' technology in a given place is not entertained within parts of the pro-wind local energy acceptability literature including a recent review paper (Petrova, 2013).

To address such limitations, this thesis adopts an 'upstream' approach to investigating *local energy deliberations*, which in this thesis are understood as the careful consideration, by local residents and communities, of the reasons for and against multiple potential local contributions to a more sustainable energy system – a definition which draws strongly on an existing definition of deliberation:

> *"Deliberation refers either to a particular sort of discussion—one that involves the careful and serious weighing of reasons for and against some proposition—or to an interior process by which an individual weighs reasons for and against courses of action." (Fearon, 1998, p. 63; in Abelson et al., 2003)*

This thesis' interest in *local energy deliberations* means that it is interested in a potentially infinite range of stances towards diverse potential local energy projects, including but not limited to support, acceptance, ambivalence and apathy. The potential of such an approach to open up wider public discourses around what changes are acceptable or desired in a particular place (and under which conditions) has recently been demonstrated by a study focusing on public deliberations around whole energy system change in the UK (Demski et al, 2015; Parkhill et al., 2013 – see section 2.6).

Public engagement that is 'upstream' in energy infrastructure decision-making processes could broaden understanding of the context in which public responses are being shaped, by emphasising energy policy alternatives including supply and demand-side alternatives. It may open up views on the relative acceptability of various local sustainability actions, rather than focusing on single projects that are the result of expert-level discussions establishing the energy-related 'problems' or 'challenges' at hand (Whitton et al., 2015). Instead, it poses questions around how local energy technology evaluation plays out when local communities consider the full range of alternative configurations of contribution to local and global sustainability. This could for instance open up broader questions such as: What kind of local energy options are preferred? Are decentralised options preferred over centralised options? Are supply side measures preferred over demand-side measures? What kind of technology 'fits' best in the historical or cultural local context?

Importantly, the argument here is not to give local communities ultimate responsibility for achieving local sustainability – which may be impractical for large project development. Instead, the point is that by engaging communities early and broadly – rather than 'downstream', in the context of an existing, designed project – communities are empowered to express their full range of views on the desirability of multiple local energy options. Of course it could be argued that if decisions are ultimately still being taken centrally, local deliberation might just be 'tokenism' (Arnstein, 1969). However, regardless of who ultimately takes subsequent decisions, from an academic point of view it is important to *understand* the potential contribution greater involvement in such decisions can make to achieving locally supported energy action. Therefore, in this thesis the interest is not in who makes the eventual decision – it's about exploring the use of a different approach to 'researching acceptability', where greater focus is not on what local communities *do not* want, but on how local energy projects can address local needs and fit in with what a given place is seen to represent. This entails allowing participants the freedom to express broader ideas around local energy system change, rather than merely asking for their views on an already-designed local energy project, which helps to build a better understanding of the construction of support – overcoming the bias towards studying opposition found in segments of the existing energy acceptability literature.

Through opening up broader local preferences, the focus of such an ‘upstream’ approach is thus on identifying local energy options that are well-supported or ‘place enhancing’ (Devine-Wright, 2009), rather than understanding how opposition to existing projects has emerged. This entails achieving a better understanding of what is valued about places, and how such values may be threatened or enhanced by local energy projects. This thesis therefore takes up suggestions by Devine-Wright (2009) and McLachlan (2009) for focusing on locally-relevant place-based meanings in order to design more acceptable projects:

> *“Policy makers and industrialists face the challenge of devising energy projects and procedures that are interpreted to enhance rather than disrupt places, promoting support rather than opposition, and managing conflicts when they arise, mindful of the symbolic, emotional and evaluative aspects of place attachments and place identities. To that end, the framework suggests psychological principles that can be used to inform practices of public engagement, whereby project instigators can seek to anchor and objectify change in such a way as to enhance rather than threaten place-related continuity, distinctiveness, self-efficacy and self-esteem.”* (Devine-Wright, 2009, p.437)

Although not made explicit within this quotation, an important potential facet of such an approach is the opening up of important decisions (e.g. technology choice, site selection) to deliberation by local communities. This may help to understand the relative importance of such decisions in determining local support for such energy projects. This is especially important because such decisions have usually already been taken by the project instigator in the dominant ‘downstream’ case studies, which means that at present the current local energy acceptability literature has rather little to say about the relative importance of such upstream factors.

Additionally, one further key implication of such an 'upstream' approach is that it posits a fundamentally different conception of the role of local residents and communities within local energy system change. To date, the local energy acceptability literature has been mostly concerned with what has been termed 'public responses' to local energy projects (Batel, Devine-Wright & Tangeland, 2013). This entails a reactive conception of the role of local communities in local energy development, where communities' only role is to passively 'respond' to local projects conceived and designed by others (reflecting current top-down implementation practices; Rydin et al., 2015; Woolley, 2010). The reverse position is taken by the upstream approach adopted here, which gives the initiatives to individuals and communities to deliberate and propose energy projects or actions that they consider suitable to their locality. This alternate perspective requires a shift in language used, as the interest of this approach is in how local individuals and groups, which are presumed to be knowledgeable and willing to contribute to wider sustainability locally, deliberate diverse local energy options. Therefore, the focus is not on reactive 'public responses' but on 'public evaluations' of multiple diverse options, because in an upstream context, local residents do not 'respond to' specific projects, but instead evaluate and deliberate the desirability of multiple local alternatives. Nevertheless, terms like acceptance and support remain useful to reflect the ways in which different positions towards particular local energy options are voiced by local residents within diverse local energy deliberations (which may include reluctant acceptance of some technologies and active support for others). Therefore, throughout this thesis these terms will continue to be used to reflect different kinds of *public evaluations* of local energy projects.

Although the approach outlined here is partly built on the notion that some previous work has been overly focused on making wind energy acceptable to local communities (Ellis et al., 2007; Petrova, 2013), it should be noted that this approach is of course not entirely free of bias either. In particular, it continues to aim for community acceptance of local renewable energy projects, which is no neutral standpoint (though arguably a justifiable one given the dangers posed by climate change; IPCC, 2014a). However, the difference is that the possibility of local communities preferring options that are non-wind are more explicitly opened up, and in doing so this research may be able to address the limits of research that only considers public responses to wind farms (as outlined throughout this chapter).

The rationale behind the upstream approach proposed in this thesis is concisely illustrated by a picture which was shared by a Guernsey resident some time after participating in the research (Figure 2.1). The image shows a message posted on the inside of someone's living room window, expressing a negative view towards the idea of wind energy being developed at a Dutch island called Schiermonnikoog. While this in itself is not particularly novel, the interesting thing about it is that this person also went through the effort to add a further message on what alternative local energy options he or she *would* support. This illustrates the notion that local residents should not be conceptualised as inherently oppositional 'obstacles', because while they may reject some local energy options, at the same time they may be very supportive towards other alternatives. The argument could be made that most previous research has only investigated the first statement made on this window ('why do local residents not want wind turbines?'). However, clearly, a highly relevant question that has largely been overlooked is suggested by the statement about solar energy: what other alternatives *are* supported? It is suggested here that adopting an upstream approach can address such wider questions about achieving well-supported local contributions to energy system transitions.

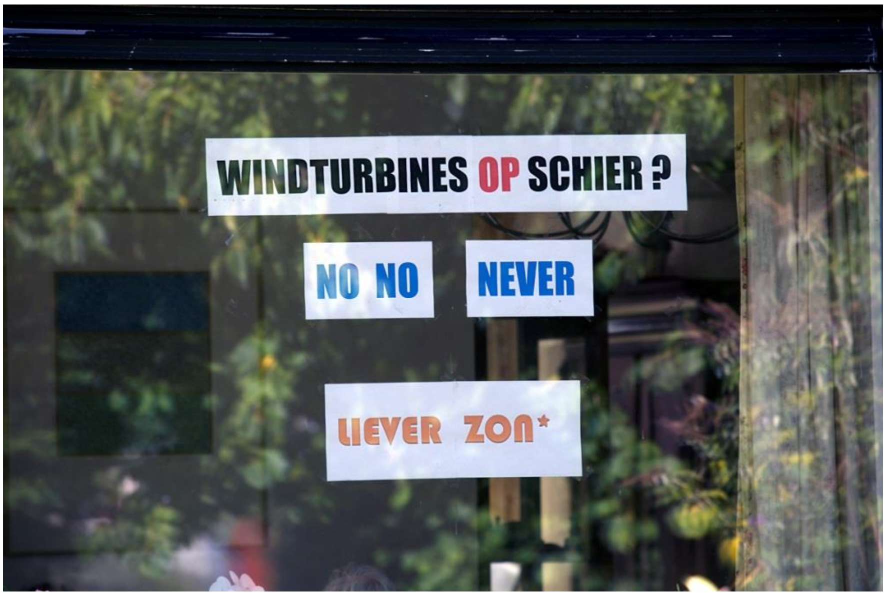


Figure 2.1. Public expression of evaluation of a local energy proposal (translation: *"Wind turbines on Schier? No, no, never. Prefer solar."*)

To sum up, this ‘upstream’ approach to local energy deliberations has two aims. The first aim is to better understand the potential contribution an ‘upstream’ approach can make to identifying and designing widely supported local energy projects. In particular, this research aims to open up the deliberation of multiple local energy options, to examine the importance of largely overlooked upstream factors (e.g. technology choice, site selection) in shaping local energy acceptance. The second aim is to make a broader contribution to achieving acceptable energy system change, beyond the increased deployment of wind energy. In other words, while previous studies have mostly examined existing energy controversies in order to limit opposition (by understanding the underlying reasons), this opposite approach aims to galvanise support through focusing on which configurations of local energy project might be supported. The main ways in which this ‘upstream’ approach to local energy deliberations is different from dominant ‘downstream’ energy acceptability studies are summarised in Table 2.1.

	Key attributes of the existing local energy acceptability literature	Key features of an 'upstream' approach to local energy deliberations
#1	❖ Aims to achieve the local acceptance of (mostly) wind energy ❖ Takes an interest in *responses to* specific local projects	❖ Aims to achieve well-supported local contributions to a sustainable energy system ❖ Interested in *local energy deliberations* of multiple alternatives
#2	❖ Aims to understand opposition through the study of mostly externally-conceived, top-down local energy projects	❖ Aims to understand what locally-specific ideas around place and technology exist which can be used to design a locally acceptable energy future
#3	❖ Is focused on understanding opposition and how to avoid it	❖ Is focused on understanding how to create place-enhancing local energy projects
#4	❖ Tends to overlook the potential contributions local communities can potentially make to the design of acceptable local energy projects, by focusing on local communities as hostile	❖ Represents local communities as fully willing and able to constructively engage with local energy system change (as a source of knowledge)

Table 2.1. Four key differences between the existing energy acceptability literature and the 'upstream' approach to local energy deliberations proposed in this thesis

2.3 Rethinking place-based approaches through human geography

So far, this chapter reviewed various strands of literature on public responses to energy developments (sections 2.2.2 and 2.2.3), their limitations (2.2.4), and developed an alternative, upstream approach (section 2.2.5). It suggested the value of adopting a place-based approach within upstream energy research. To build on this, this section critiques and further develops a place-based approach to understanding local energy acceptability. In particular, it draws on a closer reading of human geographical engagement with the concept *place*, to further develop the more critical, relational place-based approach adopted in this thesis.

2.3.1 Place-based approaches: A critical review

The value of a place-based approach in understanding public responses to local energy developments is suggested by numerous studies (see section 2.2.2), confirming the approach can be a helpful tool to understand these responses by being sensitive to context-specific place-based meanings, values and attachments (e.g. Devine-Wright & Howes, 2010; McLachlan, 2009). Nevertheless, a number of important critical points need to be made about its application so far, in order to critically assess its strengths and weaknesses as an approach to this research.

First of all, some versions of the place-based approach have in some ways reinforced a NIMBY-like way of conceptualising local energy controversies. This is perhaps unsurprising, given that in Devine-Wright (2009), the place-based approach was framed explicitly as an alternative to the NIMBY explanation of local opposition. To some extent, the reactive notion of 'place-protective action' (and the associated hypothesis that strongly attached individuals are more likely to object to local projects) shares with NIMBYism a continued emphasis on opposition, rather than a broader range of possible public responses. Although local opposition is legitimised by acknowledging its potential grounding in genuine attachments to places, the focus nevertheless remains on understanding opposition (see Devine-Wright, 2009). The notion of 'place-technology fit' has instead been suggested to provide a way of overcoming this limitation by focusing on both supportive and oppositional public responses (Devine-Wright, 2011b; McLachlan, 2009).

One prominent research approach has been to focus on strength of place attachment, which has been found to be both a positive and a negative predictor of project support (see section 2.2.2). However, a focus on strength of place attachment poses a number of limitations. First of all, it overlooks other aspects of attachments, such as how attachments may develop over time, and how different varieties of attachment may be related in different ways to public support or acceptance of local energy projects. Although these have recently been opened up by two place-based energy acceptability studies (Bailey, 2015; Devine-Wright, 2013a; see section 2.2.2), more work remains needed to better understand how different varieties of attachment and changes to attachment shape local energy acceptability. Second, a key tenet of the place-based approach as outlined by Devine-Wright (2009) was a substitution of individualistic explanations of public responses to place change towards socially constructed approaches. However, the commonly individualistic operationalisation of place attachment (as experienced by the individual, but as socially inert), and the use of essentially individualist language in this literature ('perceptions'; Brownlee et al., 2015; Read et al., 2013) could be argued to continue the predominant individualistic approach to understanding energy acceptability. Unless place attachments are understood as socially powerful, active constructs (Di Masso et al., 2014; see section 2.3.3), such an individualistic conception of place attachment is unable to enhance understanding of the social contestation of meanings and values that shape public responses.

One way to address some of these concerns is a shift away from focusing on individual place attachments towards understanding broader place-related meanings. As outlined in section 2.2.2, a substantial number of studies have used the concept of 'place-technology fit' to understand the extent to which developments are represented as suiting a certain place. Such an approach could enable research to more fully capture the social contestation and negotiation of what places are, mean or should be – or the inherently political process of *place making* (see next section). Such a perspective replaces an interest in mitigating 'threats' and avoiding 'disruption' to individuals' attachments with a broader consideration of the multitude of meanings and values associated with places at multiple scales, in relation to multiple technologies (as described in section 2.2.5). By looking beyond strength of individuals' attachments to places this could find particular place-technology configurations that 'fit' well and potentially even 'enhance' places (Devine-Wright, 2009). Additionally, it has been argued that these meanings and values associated with places form the basis of attachments, and are thus the more fundamental, underlying concept that needs to be examined, as *"for a land use to disrupt place attachment it must first be perceived to conflict with the meanings attributed to that place"* (Anderson et al., 2013, p.123). Similarly, a study by Brehm, Eisenhower and Stedman (2013) also suggested the relevance of exploring place meanings rather than attachments, as it found that place meanings predicted environmental concern while place attachment did not – suggesting *"the importance of place attachment for predicting environmental concerns may be tempered when we have place meanings included in the analysis"* (p. 533).

In terms of methodology, place-based studies on local energy acceptability are weakened by a relative lack of methodological emphasis on the in-depth elicitation of locally-relevant place meanings. Several studies quantitatively measured place meanings without clarifying why particular meanings were included in the questionnaire (Stedman, 2002), while others uncritically copied meanings from other studies in very different contexts (as described in 2.2.2, Carlisle et al., 2014, simply copied place meanings from a rural Northern Irish case study to a Californian context). This is an important limitation, *"because there are nearly an infinite number of potential place meanings, [and so] there is a need to use exploratory methods (…) to ensure place meanings and categories of meanings are locally-generated and locally-relevant"* (Jacquet & Stedman, 2014, p.1296). Other studies used methods like focus groups to elicit locally-relevant place meanings, yet fail to mention exactly which questions or tasks were used within the focus groups to elicit these meanings, or how much time during the workshop was spent on such discussions (e.g. Devine-Wright, 2011b), which illustrates that this aspect of the study was apparently not a key component. Others only use relatively limited methods of eliciting locally-relevant place meanings, such as word association tasks or open questions in questionnaires (Devine-Wright & Howes, 2010; Gee, 2010). This lack of in-depth engagement with people-place bonds, and the values and meanings specific to each place under study, is a significant weakness of this literature, especially given that place meanings are suggested to be a central feature of place-based research (Devine-Wright, 2009). If place-based approaches are to fully capture the complexity and richness of place-related meanings and attachments, then the elicitation of such meanings needs to be a much more important part of their research design and methods. This thesis aims to explore the usefulness of giving the elicitation of place meanings a more central role in its research design, and aims to explore the utility of a number of in-depth methods within such a research design.

Finally, despite the relative lack of a consensual definition of what a place-based approach is, clearly the concept of 'place' lies at its heart. However, there has been relatively little critical attention to both the operationalisation and conceptualisation of this key term, notwithstanding its centrality, at least in a linguistic sense, within the place-based approach. In terms of operationalisation, there has been no or very little critical discussion of at what scale 'place' is defined in each study, why that scale was deemed the most appropriate, and what other places or scales were excluded as a result. Yet the complexity of defining a relevant 'local community' to study has already been noted in previous work:

> *"Should […] the 'local community' be defined as those residents of the administrative [mostly uninhabited] 'community' in which the site falls, or the as the residents of the nearest town, or as those living on lines of visibility of the proposed turbines, or as the 'community' of ramblers and other recreational users of [the area]? Each of these groups have claim to voicing a 'local' representation of nature and rurality in the Cambrian Mountains."* (Woods, 2003, p.286).

Vorkinn and Riese (2001) were perhaps equally unsure in defining a 'relevant' place, as they measured place attachment at two scales (the 'area impacted by the energy development' and the wider municipality). The fact that they found contrasting effects for these two place attachment variables (see 2.2.2) suggests that the decision to define a place or scale at which to operationalise place attachment can evidently shape study results, which leads the authors to conclude that *"one should be very careful with regard to what level attachment is measured"* (p.261). However, despite this recommendation, in subsequent studies there has been very little or no critical discussion or justification of important methodological choices on place and scale. This is despite the substantial diversity of scalar choices made by previous place-based studies, which have looked at municipalities (Vorkinn & Riese, 2001), villages, towns or cities of residence (Bidwell, 2013; Brownlee et al., 2015; Devine-Wright, 2011c;

Devine-Wright & Howes, 2010), the lake next to one's home (Stedman, 2002), one's home (Read et al., 2013), while others simply referred to *"the area"* (Carlisle et al., 2014, p.127).

A further area in which place-based studies diverge strongly is that in some studies respondents all came from the same place and reported on their attachments to that place (e.g. Devine-Wright & Howes, 2010), while in others the relevant place was different for some or all participants (e.g. the lakes next to their property; Stedman, 2002). Moreover, some studies that focus on place attachment were not 'based' in a single place – instead comparing multiple areas without engaging with the meanings of particular places (e.g. Carlisle et al., 2014). Nevertheless a commonality across all these studies is that the 'places' that have been considered were residential places in the vicinity of particular proposed or hypothetical developments. This emphasis on physical proximity of places of residence to energy projects has been argued to represent one further similarity to NIMBYism, and has been recommended to be abandoned in favour of a more plural understanding of the ways in which places may be meaningful to people (Batel & Devine-Wright, 2015a). This focus on place of residence potentially overlooks the relevance of meanings, values and attachments associated with, for instance, places used for leisure, or places that hold meanings associated with particular memories or life events (Manzo, 2005). Moreover, the overlooking of offshore or marine places has already been highlighted in section 2.2.4, where it was noted that the places affected by offshore developments have mainly been presumed to be on the land (e.g. coastal towns; Devine-Wright & Howes, 2010). This thesis aims to address these limitations by being more open to, and to reflect on, the multiple places and scales that may be relevant in understanding local energy acceptability.

In terms of the conceptualisation and theorisation of place, a similar lack of critical reflection and engagement with theory around place afflict the current set of place-based studies (e.g. Bidwell, 2013; Brownlee et al., 2015). Even though place is an inherently geographical concept, there has been a lack of critical engagement with human geographical scholarship on the concept of place, how it can be understood, and how it can be operationalised in research. In several studies (e.g. Stedman, 2002; Devine-Wright, 2009), there are some passing references to (mostly 1970s) human geography, but the overall approach remains distinctly socio-psychological (or environmental psychological; Devine-Wright, 2015). More critical human geographical thinking from subsequent decades, which questions the notion of local attachments, is thus consistently overlooked. This literature is discussed in the next section, in order to further develop the place-based approach adopted in this research.

2.3.2 Human geographical approaches to place

The discipline of human geography has theorised the concept of *place* since at least the 1970s. In this decade a strand of scholarship known as humanistic geography emerged, in response to positivist spatial science which attempted to develop generalised laws based on spatial patterns. Instead, humanistic geographers developed the idea of place as a central meaningful component in human life (Cresswell, 2004), explicitly recognising the deep-rooted, emotional human experiences in places, and the values and meanings associated with places. In this reading, place was differentiated from space: *"What begins as undifferentiated space becomes place as we get to know it better and endow it with value"* (Tuan, 1977, p.6). This clearly resonates with the notion of places being meaningful to individuals living in those places, which has been the basis of place-based studies of local energy acceptability (section 2.2.2). However, in subsequent decades, this rather romantic notion of places as a locus of attachment and meaning has been critiqued by different schools of thought within and beyond human geography. Marxist and feminist geographers have problematised the notion of places as centres of meanings, instead conceptualising places as socially constructed in contexts of unequal power relations, representing relations of domination and exploitation (Harvey, 2001). Thus places and their associated meanings do not simply exist – they are the result of politicised processes of *place making*, a process that has winners and losers. From this perspective, the way places are organised simply reflects broader social relations taking a particular geographical form, rather than representing any inherent meaning (Cresswell, 2004). Such an approach rejects humanistic geography's concern with the home as a centre of (universally positive) meaning in life, by highlighting how places such as the home can be the backdrop of exclusion, violence and should thus not be romanticised. Moreover, it has been argued that places should not be seen as bounded, fixed and static, but in terms of *place as process* – as the temporary coming together of different flows, seeing places as being constantly produced and reproduced. Places are thus seen as defined by the flows in and out, and their connections to the outside, rather than having essential, inherent qualities or meanings (Massey, 2005).

These insights have sometimes been understood as constituting 'relational geographies' (Cresswell, 2013), a set of ideas that is grounded in various schools of thought including but not limited to thinking around poststructuralism and deconstruction (Wylie, 2006), actor network theory (Bosco, 2006) and non-representational theory (Cresswell, 2013), a discussion of which is beyond the scope of this thesis. Relational geographies have been described as:

> *"rather than thinking about the inhabited world as a set of discrete things with their own essences (this place, different from that place), we can think about the world as formed through the ways in which things relate to each other."* (Cresswell, 2013, p.218).

In other words, essentialist conceptions of places as possessing inherent, observable meanings are replaced by the idea that meaning can only be constructed from something's relation to something else; the 'outside' plays a crucial role in defining the 'inside' (Cresswell, 2013). This critical stance towards essentialist thinking is also strongly present in post-structural and deconstructionist philosophy (Wylie, 2006). This is often talked about in reference to 'binaries' such as male/female, heterosexual/homosexual; as meanings are understood as not inherent within these terms, but as instead deriving their meaning from the other term: *"the meaning of something is constituted by what that thing is not"* (Wylie, 2006, p.300). Therefore, for example the meaning of what it is to be a man is defined through the exclusion from this definition of all things seen to be female. Similarly, dualities have also often been found to play an important role in framing the local energy debates (e.g. industry/nature; local/global; change/conservation – e.g. Haggett, 2011; McLachlan, 2009).

In short, human geography has moved from uncritically valuing place as something universally positive to being highly critical of the idea of local attachments and identities being a normatively ‘good’ thing. Current thinking on the role of local attachments has been characterised as divided into two camps: territorial and relational approaches to place and place bonding (Jonas, 2012; Varró & Lagendijk, 2013), which resemble what Tomaney (2012) refers to as localism versus cosmopolitanism. Broadly speaking, according to relational approaches, places are understood as open and discontinuous spaces which are understood to have no boundaries, while also not being in any way stable or fixed (Amin, 2004; Massey, 2005). Rather, they can only ever be a temporary coming together of flows and connections to other places. Notions of place as a fixed, orderly, demarcated territorial entity are thus replaced by ideas of ‘throwntogetherness’ (Massey, 2005). It reflects a more open and progressive notion of a ‘global sense of place’ (Massey, 1997). Within this strand of thought, local attachments and identities are dismissed as politically-driven desires *“to define and contain social and political processes”* (Tomaney, 2012, p.660). Within such a conception of place attachment, places are seen to be essentialised, romanticised and wrongly ascribed certain meanings in order to provide some sense of evidently misguided identity. *“Local attachments produce a politics hooked around the myth of a regionalised identity”* (Tomaney, 2012, p.667), or in other words, feelings of local or regional identity become the basis for exclusion of others (or the ‘threatening outside’) and the exercise of power over the place of attachment. According to the cosmopolitan line of thought, the inherently unfair and backward localism, or indeed nationalism, associated with attachment to particular places needs to be replaced by a global, cosmopolitan ethos of solidarity and universalism.

By contrast, the opposing, territorial perspective recognises the ways in which people continue to live locally and the ‘local’, ‘regional’ and ‘national’ continue to wield influence. According to this perspective, boundaries may indeed be porous, places may be imagined rather than physically definable, and there may be practices of exclusion inherent in place making. However, this does not equate to a need to reject the basic idea that ‘discourses of belonging constructed around place remain important’ (Graham, 2000, p95), as such belonging may be associated with shared ways of life and experiences in place that give individuals a sense of being part of a collective (Claval & Entrikin, 2004), and thus remain meaningful.

Looking across these different approaches to understanding place and people-place bonds, it is clear that the socio-cognitive, territorial conceptualisation of place attachment used in most place-based studies to date (Brownlee et al., 2015; Devine-Wright & Howes, 2010; Stedman, 2002) is most akin to humanistic approaches from the 1970s. It could thus be argued that such place-based approaches to local energy developments have adopted a rather romantic notion of people-place bonds, in which places are implicitly conceptualised as stable, definable objects within which deeply-rooted individuals can find an authentic belonging (though within the wider place attachment literature other perspectives abound; see Manzo & Devine-Wright, 2014). This peaceful, harmonious status quo is conceptualised as abruptly threatened by some form of alien and disturbing place change, which 'disrupts' these faithful individual attachments to place. In other words, the language of 'place disruption' implies a defensive, reactive imagination of what place and people-place bonds are, and is not open to the socially contested politics of place making within which they are embedded. Comparing such a perspective with current human geographical thinking on the role of attachments in today's world, it becomes clear that a more critical understanding of the bonds between people and places, informed by such relational perspectives, may enhance place-based approaches to local energy development. The perspective adopted in this thesis draws on the notion that meaning is derived *relationally* (from its relations to other places), but most closely resembles what is referred to above as a 'territorial perspective' – which continues to acknowledge the ways in which places may be meaningful to people, while simultaneously recognising the inherently political and exclusionary nature of giving meaning to places.

2.3.3 Towards a relational place-based approach

Human geographical scholarship on place, as briefly discussed above, is drawn on in this section, to outline a more critical, relational approach to local energy deliberations that will be called a *relational place-based approach.* This approach conceptualises places as meaningful to people, and recognises the agency of such meaning in shaping public evaluations of place change. It does not, like some relational viewpoints in human geography (e.g. Amin, 2004), dismiss the notion of local attachments as irrelevant, because place-based meanings and attachments have been consistently found to be relevant in energy acceptability studies (no matter how misguided these attachments might be from a cosmopolitan perspective; Tomaney, 2012). However, by taking a more relational approach, the previously defensive, reactive, romantic notion of place is replaced by an understanding of place meanings as contested and changeable – the approach taken in this thesis is thus different from previous conceptions of a place-based approach in two main ways.

First of all, the notion of *place as process* (Massey, 2005), as constantly being constructed and reconstructed, an essentially temporary coming together of actors and networks rather than a fixed and stable entity, would suggest that *place change* (such as renewable energy development) could never be 'disruptive', as places were never 'stable' in the first place. However, such a viewpoint is not taken up in this thesis, as findings from the local energy acceptability literature clearly suggest that such local developments are widely experienced (or at least represented) by local communities to fundamentally 'change' places (e.g. 'industrialising' them; Devine-Wright & Howes, 2010). Nevertheless, such standpoints do suggest the value of a shift in analytic interest towards a greater focus on the *process*, not the *outcomes* of social processes, contestation and exclusion around place making (Batel & Devine-Wright, 2015b). Although there has been increasing attention to the social processes that shape place meanings (Devine-Wright, 2009), place attachments and meanings have been largely taken for granted within the energy acceptability literature, without critical enquiry into the power relations that shape them and the interests they serve. There is a need to complement this notion of place attachment as a *"deep-seated, internalized, emotional affinity"* (e.g. see Brownlee et al., 2015) with seeing such bonds through a discursive or constructivist lens, where people-place bonds are active, publicly available discursive resources, which are able to for example exclude, blame and build credible identities (Di Masso et al., 2014). This implies place meanings and attachments are not only relevant as internal constructs, but also as active political agents which serve interests, exercise power, are 'used' by individuals and collectives to achieve particular goals, within the context of the *process* of place making.

Second of all, in contrast to territorial conceptions of places as bounded, defined objects, a more relational perspective would be more mindful of the porosity of place boundaries. The notion of *place as process* understands places as unbounded, or as having no definable boundaries with other places. This contrasts with previous place-based studies, which focused on self-contained places with clear boundaries, and the bonds between people and such places. Instead, a more relational approach would emphasise the permeability of place boundaries. Thus it would emphasise how places are not self-contained but constituted by their relations with the 'outside', or 'other' places, and that places can never be 'well-defined' and singular, but instead are construed and represented differently across space and time. This suggests the importance of an observation made in section 2.3.1: that existing place-based studies have been largely uncritical about important methodological choices regarding how 'place' was defined, and which other notions of place (such as marine places) were thus excluded. A relational place-based approach would instead be more mindful of how 'place' needs to be understood through its broader situatedness and connectedness, and as something that is part of a wider context, where individuals and communities develop attachments and contest meanings across and beyond researcher-defined 'place boundaries'. Thus, such a research approach would be interested in the values associated with different places at different scales, beyond those pertaining to a single, spatially defined territory, to capture broader webs of meaning and discourses of appropriateness *relationally*. It would go beyond a focus on single, bounded places, and highlight the multiple places that are (made) meaningful at multiple scales; and would instead focus on people's multiple identities. This leads to a different approach which does not focus on single attachments, but instead opens up wider networks of meanings that shape people-place bonds. This suggests the value of looking at meanings ascribed to a multitude of places while being mindful of the relational origin of these meanings. Although some studies (Brownlee et al., 2015; Devine-Wright & Howes, 2010) have studied two, rather than one place, such places were still conceptualised as separate, unrelated entities, and they have thus not opened up their relationality or the multiple identities that may exist in relation to such places.

The relational place-based perspective outlined here has a number of synergies with a more upstream approach to local energy development (section 2.2.5). Both approaches have an interest in multiple places and technologies, and emphasise the relation between them. In an upstream approach too, it is not pre-defined (by either the researcher or the developer) which place is the 'relevant' one to examine, but instead a multitude of interconnected places at different scales may be considered relationally. In other words, this relational approach represents a tool to move beyond the standard single case study research design. Instead, this approach enables the researcher to open up the potential of energy development in multiple places, relationally, and may open up issues of siting and the relative acceptability of different technologies in different locations. It is argued here that these place relations and an understanding of wider context can be drawn upon to better understand the relevance of a multiplicity of representations of place meanings and values within the context of local energy deliberations.

2.4 Understanding representations of place change: Social representations theory

The previous section has outlined a more critical, relational approach to place, and the meanings, values and attachments associated with places. However, looking back to the studies discussed in section 2.2.2, it has become clear that it is not just these meanings and values associated with places that matter; instead it was found that public responses are shaped by the interplay, or 'fit', between these interpretations of both place *and* place change. These forms of place change have often been energy developments, as is the case in this thesis, which considers ORE developments as instances of place change. Therefore, the ideas outlined in the previous section need to be complemented by a further set of ideas that permit a better understanding of the ways in which interpretations and understandings of particular place changes, such as potential ORE developments, emerge in a social context. Social representations theory (SRT) will be used for this – an approach that shares several tenets with a more relational approach to place.

SRT is a diverse set of ideas associated with the work of Serge Moscovici, beginning in the 1960s. Since then, SRT has developed into a broad collection of concepts and approaches, rather than a single, uniform theory. It has been described as *"a social psychological framework of concepts and ideas to study psychosocial phenomena in modern societies"* (Wagner et al., 1999, p.95). Within this framework, the central concept is the 'social representation', which is understood as *"the collective elaboration of a social object by the community for the purpose of behaving and communicating."* (Moscovici, 1963, p.251 in: Wagner et al., 1999, p.96). Social representations are continuously re-constructed discursively and through behaviour, constituting an object for a particular social group. Particular social representations are shared across groups and clarify the group's identity and distinguish the group from others that do not share the social representation (Wagner et al., 1999). In other words, social representations are understood to reside within *and* across rather than solely within individuals, and are used to understand and communicate phenomena. However, the term not only refers to the *outcome* of social processes, but also to the *process* of social representation, where individuals and groups actively 're-present', and thereby interpret and alter earlier 'presentations' of phenomena (for example from media sources or conversation), and in doing so contribute to the continuous reproduction and modification of social knowledge about phenomena.

Although the theory is usually positioned by its scholars in a disciplinary sense as part of social psychology, at the same time it has been stressed that SRT is very much concerned with 'resisting' the move within mainstream social psychology towards a focus on the individual rather than the social (Howarth, Kalampalikis & Castro, 2011; Wagner & Hayes, 2005). Indeed, the approach has not been an exclusively psychological endeavour, but has been adopted and developed across many different disciplinary and lingual communities, such as social psychology, technology, health, environmental and political sciences (Howarth et al., 2011). SRT's interest in knowledge and 'sense making' as collective, socially produced and negotiated constructs and processes does not imply there is no role for individuals within the theory. Instead, individuals actively engage in 're-presenting' and thus shaping social knowledge, as part of dynamic and multiple social groups. In other words, a social representational perspective gives agency to the cognitive and individual, as well as to the social and interpersonal. Therefore it could be seen as an approach that stands in between individualistic, cognitive approaches dominant in social psychology (e.g. Huijts et al., 2012), and more structuralist theories of social practice that have emerged from sociology (see Shove, 2010).

SRT has been commonly used to examine ‘lay theorising’ and understanding of socio-technical innovations and ‘unfamiliar’ techno-scientific concepts, such as climate change (Olausson, 2011; Smith & Joffe, 2013), energy (Fischer et al., 2012), synthetic meat (Marcu et al., 2014), fracking (Jaspal & Nerlich, 2014), emerging infectious diseases (Joffe, 2011a), economic recession (O’Connor, 2012), and natural resource management (Buijs et al., 2012). These topics reflect the interest of a social representational approach in ‘common sense’; the multiple ways in which non-expert individuals and groups make sense of new concepts through everyday discourse and lived experience.

A number of key SRT concepts can be used to further illustrate the approach. First, the idea of *cognitive polyphasia* refers to the notion that different, sometimes conflicting kinds of knowledge and rationalities may co-exist side-by-side within individuals or collectives. The specific context and the purpose of the representation subsequently determines which set of ideas is used in a particular situation (Voelklein & Howarth, 2005; Wagner & Hayes, 205). This notion of multiple knowledges co-existing peacefully could be positioned in contrast to knowledge deficit models of ‘the public’ (Sturgis & Allum, 2004), where individuals or collectives may be labelled ‘irrational’ or ‘inconsistent’, and ‘wrong’ public knowledge thus needs to be replaced by ‘right’ (expert) knowledge. For instance, individuals who support wind energy in principle, but at the same time oppose a specific local wind energy project are portrayed as irrational or ignorant within NIMBY thinking (Devine-Wright, 2009). According to SRT, social knowledge or representations can never be ‘irrational’ – it may be different from expert knowledge, but as a way of seeing and representing the world for a particular social group it can never be ‘wrong’. Instead, SRT is interested in understanding the ‘common sense’ underlying ‘lay’ representations of objects or concepts, without imparting any value judgement on those understandings (Wagner & Hayes, 2005).

Two concepts from SRT that have been proposed to be useful specifically within the place-based approach to local energy acceptability are anchoring and objectification (Devine-Wright, 2009), which describe processes of connecting new ideas to familiar knowledge (anchoring) and the concretisation of abstract ideas (objectification). Devine-Wright (2009) suggests that these concepts can aid the understanding of interpretation of place change. Through being (re)presented in talk and action over time, social representations are argued to become shared and maintained by a majority in a social group, where it fulfils its function as a means of understanding and communicating in everyday life. For instance, one study found that wind turbines were objectified by local residents through comparisons with Blackpool Tower, in order to illustrate the size of the turbines (Devine-Wright & Howes, 2010). Another study observed that local residents anchored an unfamiliar landscape element (wind turbines) in a familiar concept (ongoing landscape change) (Fast et al., 2015).

A further concept is that of *themata*, which refers to dualisms, 'source ideas' or 'focal points' that form a fundamental basis for social representations, or play a 'generative role as potential content' (Marková, 2000; Moloney, Gamble, Hayman & Smith, 2015; Moscovici, 1993). Themata have been described as *"mutually interdependent oppositions (…), [that] structure how people view the world"* (Marková, 2003) – an approach that is also referred to as a dialogical perspective to social representation. To illustrate, previous studies have found particular sets of themata to be relevant across different settings; for example 'self/other', 'natural/unnatural', and 'certainty/uncertainty' in the context of global warming (Smith & Joffe, 2013); and 'health/disease', 'risk/safety', 'benefits/problems' and 'nature/culture' in the context of genetically modified organisms (Castro & Gomes, 2005). These 'constants of human experience' (Wagner & Hayes, 2005) may be drawn on by individuals and groups to frame and understand novel phenomena, and can play an important role in structuring common sense thinking. Such notions of fundamental dualisms mirror human geographical thinking on how meanings are derived from an 'other' or opposite, and the 'industry/nature' dualism found to be relevant in the acceptability literature.

SRT and local energy acceptance

SRT has already been argued by scholars to offer a theoretical tool that can be a central part of place-based approaches (Batel & Devine-Wright, 2015b; Devine-Wright, 2009). However, it has only to a relatively limited extent been adopted across only a few subsequent studies. In the studies that did mention the approach, it often remains unclear to what extent the approach has informed the study's fundamental epistemological approach. Instead, only some concepts such as anchoring and objectification are sometimes mentioned briefly but without consistent integration into the overall study (Anderson et al., 2013; Devine-Wright & Howes, 2010). Batel and Devine-Wright (2015b) argue that instead, SRT should be more fully assumed as an epistemological approach, which could enable research to better understand the socio-psychological processes underlying public responses to local energy development. This contrasts with earlier research that highlighted project, process and personal aspects but not the linkages between these within their social context (e.g. Devine-Wright, 2013a). In other words, they suggest that rather than considering the 'end product' of social processes as the key factors shaping public responses (e.g. place attachment, trust in developer, representation of project, at a given moment in time), the focus needs to be on the underlying social processes themselves. According to Batel and Devine-Wright (2015b), this implies conceptualising renewable energy development within a much broader context, where it is seen as a historically contingent socio-technical innovation process in contemporary societies, rather than as something which only becomes relevant through isolated projects to which responses are formed independently. In other words, such an approach needs to fully acknowledge social representations as *"socially elaborated (thus culturally and historically contingent) systems of values, ideas, and practices that are used by social groups"* (Buijs et al., 2012).

Such a focus on societal processes implies a greater interest in the negotiation and contestation between different public actors (individuals, collectives, media, developers, policy makers), the underlying power relations, and the interests that are served. This contrasts with the predominantly individualistic approach to public engagement with RE, and aims to bring together the individual and the collective levels of analysis by examining how individual talk and action constitute sets of shared or conflicting collective knowledge. In terms of conceptualising place attachment, this implies adopting an understanding of attachments as active political objects, which are able to include and exclude, build identities and contribute to place making (see section 2.3.3). In summary, a focus on social processes means that *"responses to [renewable energy technologies] need to be examined as social representations, that is, as co-constructed, relational, contextual, dynamic and rhetorical meaning-making, rather than as individual endeavours, that is, individual, cognitive and universal information-processing tasks"* (Batel & Devine-Wright, 2015b, p.318). As such, SRT has influenced this research at a rather abstract level, by steering the research to expressly treat participants' statements and actions as inherently social 'things', rather than socially neutral products of individual minds. It is not one of the primary goals of this research to further develop theoretically the use of SRT as an interpretative tool in local energy acceptability studies. Instead, the underlying principles of the approach will be used throughout the thesis (e.g. interpreting participants' statements as *social representations*), rather than its specific concepts (like themata for instance).

One shortcoming of SRT research is that it has typically examined social representations *"as societal or cultural phenomena, and neglected how social re-presenting happens at other, smaller scales, intertwined with representations of more specific spaces and places"* (Batel & Devine-Wright, 2015b, p.321). This is reflected in the universalist tendencies of studies examining non place-specific representations of generalised 'objects', such as climate change or synthetic meat. Only few studies have adopted case studies of specific communities and how place change is made sense of from a (partly) social representational perspective (Anderson et al., 2013; Devine-Wright & Howes, 2010). Therefore it could be argued that a weakness of SRT is that it has tended to overlook notions of spatiality and place, and has neglected theorisation of the intertwining of place and technology in public sense making of place change (Batel & Devine-Wright, 2015b). As argued by Devine-Wright (2009, p.430), adopting a place-based approach that is informed by SRT *"has the potential to extend the theory of social representations, which to date has typically neglected the 'emplacement' of social phenomena (Gieryn, 2000)".*

Synergies with human geographical thinking and limitations

In conclusion, this discussion of a social representational approach has presented a set of ideas that mirrors some of the human geographical thinking outlined in section 2.3.2. Both approaches dismiss notions of boundedness and isolation in favour of a more contextual, relational ontology. Both the construction of place and the construction of social knowledge around place change are seen to be social, embedded, relational processes shaped by wider contextual powers such as unequal power relations. Such a relational, post-structural and non-essentialist approach to meaning as presented in section 2.3.2 is echoed by the argument that individuals re-present objects dialogically, or *"in relation with the Other, imagined or real, present or distant – other individuals, communities, groups, culture"* (Batel & Devine-Wright, 2015b, p.317). So, the adoption of a social representational perspective offers various synergies with thinking about place and people-place bonds relationally – the next section will draw together these and other ideas that have been discussed in this chapter so far, in order to outline the overall approach taken in this research.

2.5 Synthesis: Developing an 'upstream', relational, place-based approach to understanding local energy deliberations

So far, this chapter has focused on three distinct research areas: place-based approaches to local (energy) controversies, human geographical thinking around place, and social representations theory. Each of these has been critically reviewed, and elements of an alternative approach to understanding public responses to local energy development have been outlined. In this section, these elements will be brought together in order to outline the conceptual approach adopted in this thesis: an upstream, relational place-based approach to understanding local energy deliberations.

It was argued in section 2.2.4 that the energy acceptability literature can be characterised as fairly homogenous, in need of a move away from a narrow focus on single, downstream developments, and benefitting from moving beyond an unreflective pro-wind bias that reinforces the marginalisation of local knowledge and experience. The relative isolation in which specific local energy developments have been studied to date was argued to risk an overlooking of the role of wider historical and energy context in shaping public responses (Batel & Devine-Wright, 2015b). An upstream approach was proposed as an alternative, which instead is more comparative in nature and aims to understand the broader (local) context within which energy deliberations play out (Barry & Ellis, 2011). Such an approach was also argued to enable a move away from a focus on opposition (Aitken, 2010), and the associated attempts to increase renewable energy deployment rates by overcoming local opposition, by focusing on the full spectrum of values and meanings that may be relevant in shaping local energy acceptability (McLachlan, 2009; Devine-Wright, 2009). Moreover, it implies a move away from passive conceptions of local communities 'accepting' or 'responding to' top-down developments, towards an acknowledgement of the value that local knowledge, experience and values can play in shaping local sustainability beyond accepting large top-down developments (Barry & Ellis, 2011): a focus on 'local energy deliberations'.

The studies reviewed in section 2.2.2 have demonstrated the value of a place-based approach, wherein place-related meanings, values and attachments are central to the research design (Devine-Wright, 2009). These symbolic people-place bonds have been demonstrated to predict or explain public responses to a variety of different local (energy) developments across different cultural contexts in section 2.2.2 (e.g. Devine-Wright, 2011b). Also, a focus on geographical context was argued to be appropriate given that the significance of most (project and person-related) factors underlying acceptability was found to vary depending on this geographical context. However, these place-based approaches were critiqued as at times being overly individualistic and not being able to grasp more fully the social processes that lie at the heart of local communities making sense of their energy futures (Batel & Devine-Wright, 2015b; Devine-Wright, 2009). It was argued that the concept of 'place-technology fit' is best suited to exploring the full depth of local energy deliberations (rather than a narrower focus on strength of place attachment alone; e.g. Brownlee et al., 2015), as it was seen to be open to the emergence of a much wider range of relevant historic, cultural, contested place-related values, meanings and narratives. Also, some studies (e.g. Stedman, 2002) were weakened by a romantic and reactive conception of local attachment, which was problematised by a reading of human geographical approaches to place in section 2.3.2. This subsequently informed a more relational place-based approach, which is mindful of the social contestation, power relations and porosity of place boundaries that underlie place-related meanings, values and attachments (Cresswell, 2004). These arguments, focused on the concept of *place* initially, were in section 2.4 extended to apply to both sides of the 'place-technology fit' through a reading of SRT (Wagner & Hayes, 2005). This added an interest in place change (in this thesis in the form of ORE technologies), and social knowledge and representations associated with such place change. This suggested the value of viewing public discourse through the lens of social representations, which implies an active agency for those employing the language, rather than using more individualistic terms like 'perceptions' or 'interpretations'.

As such, an upstream, relational place-based approach is not only relational in how it understands place and people-place bonds, but also in its reading of representations of place change. In section 2.2.1, it was already found that public attitudes towards particular technologies depended on the wider energy system context (Parkhill et al., 2013; Westerberg et al., 2013). It has also been argued – in line with post-structural and social representational thinking – that *"one cannot really understand one discourse (pro or anti) without also understanding its relation to and discursive co-dependence on its opposite"* (Barry et al., 2008, p.93). Therefore, this research has an interest in how different potential place changes (i.e. different kinds of ORE development) are evaluated in relation to each other within a locality. This also addresses the call for more comparative studies made in section 2.2.4, and sits well with an upstream approach to local energy deliberations, as opposed to examining responses to one specific instance of place change in isolation.

All this implies an increased interest in the wider *context* of local energy development – something which addresses existing calls for more contextualised social psychological research (Clayton et al., 2015). This interest in context attempts to position local energy development within its broader historical and energy system context (Batel & Devine-Wright, 2015b) – and as such adopts a broader framing of the ways in which local sustainability can be achieved (Barry & Ellis, 2011). It can thus be argued to represent a more constructive, 'action orientated' perspective (Whitton et al., 2015), replacing a more reactive focus on 'responses' to top-down energy developments. Such an approach can be argued to be more constructive in the sense that it does not only focus on why a project in a given place was objected to (and leave it at that), but that it also aims to understand what other alternatives may be more acceptable from the array of locally-available options. This kind of approach therefore offers potential to construct or identify local contributions to sustainable energy system change. This contrasts with the current energy acceptability literature, where important questions have remained unasked, such as: 'would a different technology have represented a better 'fit' in this place?', or 'would this technology have been more acceptable had it been sited differently within this place?'. It is argued here that achieving more acceptable energy development requires a better understanding of the answers to such questions. This suggests the value of a comparative, relational conceptualisation of meaning, as derived from opposites or constructed 'others' (Batel & Devine-Wright, 2015b; Cresswell, 2013). One such explicitly relational representation of place has previously been found to be relevant in one case, where a representation of place as 'up north' (contrasting with the more urbanised south) was a relevant predictor of acceptability of place change (Stedman, 2002).

The approach outlined here also values a greater focus on the everyday, emplaced, lived experience. Previous studies within the local energy acceptability literature have not always been able to capture this, due to a focus on the elicitation of individual notions of place attachment (e.g. Brownlee et al., 2015; see 2.3.1). Also, local energy controversies can be heated and polarised, and many studies have focused on the extremes (vocal supporters and vocal opposition; e.g. McLachlan, 2009), and are therefore unlikely to have captured place-based experiences in greater depth beyond those place narratives employed in the immediate context of a specific, controversial development. By contrast, within an upstream approach, there is no imminent place change (i.e. a controversial development) to focus research on. As such, the social construction of place, place meanings, and the parameters of acceptability of change within place, are expected to provide a productive starting point for in-depth understanding of local energy deliberations – which could offer richer insights into how wider emplaced practices and experiences are influential in shaping public evaluations of local energy projects. This replaces a focus on individual attachments to place with an interest in the wider place-related meanings and experiences that are used by individuals and groups to inform deliberations of local energy system change. The emphasis is therefore less on the case-specific debate surrounding a particular project, and more on wider ideas and narratives surrounding a place's energy future, allowing the emergence of a much broader set of discourses about local energy development.

Drawing on the notion of place-technology fit (McLachlan, 2009) and a social representational approach to local energy acceptability (Batel & Devine-Wright, 2015b), in this thesis the term 'place-technology representations' is used to refer to representations that simultaneously represent both place and technology in a particular way (e.g. the notion of wind energy 'industrialising' a place that is 'natural' implies particular representations of both place and technology).

Finally, three further opportunities are offered by such an upstream, relational place-based approach. First, its upstream context offers a chance to contribute to greater methodological diversity within the energy acceptability literature, which has commonly (though not exclusively) relied on interviews and survey research within single, downstream case studies. In particular, this research explores the potential of more visual research methodologies (Rose, 2007) to better understand how individuals and groups make sense of potential future place changes. Second, the approach offers the opportunity for a more theoretically-informed understanding of local energy acceptability and deliberations, which is needed as the literature to date has been characterised as lacking sufficient theoretical basis, and generating descriptive rather than explanatory findings (Devine-Wright, 2005; Ellis et al., 2007; Wiersma & Devine-Wright, 2014). Third, such an approach offers a chance to further develop understanding of ORE acceptability, from a perspective that considers the offshore as representing potentially meaningful places itself.

The basic tenets of the conceptual approach of this thesis have now been outlined. In the next section, a small number of energy acceptability studies are reviewed which have already adopted certain principles of this approach.

2.6 Previous comparative studies of local energy acceptability

It was argued above that there is merit in contributing to a greater plurality of research designs within the local energy acceptability literature, which has been overly reliant on single case study research designs. This section reviews three sets of studies that have done so, by focusing on the acceptability of multiple local energy projects in one place (see first section below), on the acceptability of multiple locations for one particular energy project (second section), and by opening up broader public deliberation of energy futures.

Studies exploring the relative acceptability of several developments in one place

To the author's knowledge, only one study has been conducted to compare the relative acceptability of two specific *local* energy projects within a place. This case study examined public perceptions of two local developments in a rural Swedish village: a planned wind farm and drilling which could lead to a uranium mine (Pedersen & Johansson, 2012). A quantitative survey was administered to nearly the entire population, yet the overall sample remained small (N=61). It aimed *"to consider similarities and differences between developments related to two separate ways of generating electricity."* (p.314). The study concludes that the wind farm was expected to have a positive impact on the village, while the uranium drilling was expected to have a negative impact. Positive perceptions of the wind farm were predicted by young age, high education, being an ordinary rather than a committed recycler and having attended a meeting about the wind farm. Negative perceptions of uranium drilling were predicted by individuals who valued closeness to nature, recycled, and had attended the uranium meeting. Although it was also reported that *"no association was found between the perception of the wind farm and of the uranium drilling"* (p.315), the study did not fully address the potential linkages between public appraisal of the two projects – instead it treated both projects independently within its research design, rather than as two related options to make a local contribution to wider energy system change (Barry & Ellis, 2011). As such, the study missed an opportunity to try to understand whether support for each project was influenced by the presence of the other project. For instance, did attitudes towards the wind farm become more positive after the introduction of the uranium drilling project? This thesis aims to more explicitly explore such links between local support for several alternative local energy options through a focus on local energy deliberations (as outlined in 2.2.5).

Warren and McFadyen (2010) examined public attitudes to several onshore wind farms in a region of Scotland to test the hypothesis that community ownership would lead to greater public acceptance of windfarms. They compared attitudes on a small island with a small 3-turbine community-owned wind farm (Gigha) with attitudes on the nearby Kintyre peninsula which has several larger, private sector-owned wind farms, using a small sample (N = 106) of both local residents and tourists. The authors report that attitudes towards wind energy in general and towards local wind energy projects are consistently more positive on Gigha than on the Kintyre peninsula, suggesting that community-owned local projects may be more acceptable. This study is weakened by its small sample, and also does not compare attitudes towards several different options within one and the same place – instead it compared attitudes in two different places towards developments in those places. As such, although making useful suggestions on the importance of community ownership, the study has comparatively little to say on the broader local energy deliberations which this thesis aims to open up.

Fast and Mabee (2015) also employed a comparative research design but across a larger geographical area; they examine public responses to five wind farms within 50km of each other in Canada, using interviews with stakeholders and local residents. The study aimed to understand how certain policy choices shaped public responses to the wind farms, to evaluate the impacts of different policy options. It concludes that requiring local-level planning approval is better than doing this at a national level in navigating ‘inevitable’ controversy in local host communities. The study is novel in its comparative case study approach, considering multiple developments within the same region. However, its usefulness here is limited as its focus was mainly on policy choices within a regional context rather than a focus on local energy deliberations with a view to understanding acceptability of multiple options within a local context.

Other studies that have considered the acceptability of multiple energy technologies within one sample have usually looked at (national-level) attitudes towards technologies in general, rather than at specific, local projects (e.g. DECC, 2015A/B). For instance, Reilly, O'Hagan and Dalton (2015) surveyed attitudes and perceptions of impacts and opportunities of fishermen based in ports near to planned offshore wind, wave and tidal energy developments in Ireland. However, the study did not measure attitudes towards specific projects, as instead it measured attitudes towards local marine renewable energy development in general. As such, apart from some speculation that projects which cover more km^2 of sea space may be less acceptable to fishers, the study is thus not able to comment on the relative acceptability of different types of local projects which employ different ORE technologies. Other studies have similarly focused on attitudes towards multiple technologies on a national level: for instance, Cherry and colleagues (2014) compared acceptability of wind energy and carbon capture and storage using a national-level sample in Norway. Ansolabehere and Konisky (2009) asked a national sample of US residents *"How would you feel if a new natural [natural gas / coal-fired / nuclear / wind power plant] were built within 25 miles of your home?"*, and found the highest levels of support for the wind farm option, and lowest for the nuclear and coal plants. Although comparative in the sense of considering multiple technologies within the same study, such studies remain unable to shed further light on the comparative acceptability of *specific* local energy alternatives in a *specific* place – and on whether asking such upstream questions can contribute to a more developed understanding of what makes local energy projects (un)acceptable. In sum, few energy acceptability studies to date have commented on the relational interaction between public evaluations of several specific local energy alternatives *within one and the same locality*, or how views on one alternative may affect views on another local energy option. This is a key gap addressed by this research.

Studies exploring the relative acceptability of multiple locations for one development

A greater number of studies have in some way explored the relative acceptability of multiple locations for a particular energy development within a locality. These studies provide a useful contrast to previous single case studies, which have usually taken for granted the location of specific local energy developments, without opening up the question whether other locations in the proximity may have been more acceptable.

A number of studies have taken an economic evaluation approach, adopting methods such as choice experiments, to compare different distances from the coast for hypothetical offshore wind developments (see section 2.2.1; e.g. Knapp & Ladenburg, 2015; McCartney, 2006; Veidemane & Nikodemus, 2015). These studies generally found sites further away from shore to be preferred over sites closer to shore. However, these studies are weakened by their focus on distance as the only relevant siting parameter, which is grounded in an assumption that reducing the visual impact of wind energy is the best way to make such developments more acceptable (e.g. see Knapp & Ladenburg, 2015). However, the diversity of factors shaping the acceptability of offshore locations, beyond their distance to the coast, has been shown by Wolsink (2010). This survey study asked members of a regional environmental group to evaluate the acceptability for the siting of wind turbines across 19 specific land- and seascape types in the Netherlands. It found that some (e.g. dunes, 'nature areas' and the environmentally sensitive Wadden Sea) are widely objected to as sites for wind farm development, while others are supported more widely (e.g., industrial and military areas, harbours, the North Sea and along the Afsluitdijk causeway). Wolsink thus demonstrates that landscapes can be both opposed and supported as sites for local energy development regardless of their distance to the shore and regardless of whether they are onshore or offshore. In other words, a sole focus on distance from the coast overlooks other potentially important meanings associated with potential ORE sites.

An alternative approach that has been under development is the use of spatial decision support systems (SDSS) or public participation GIS (PPGIS), where spatial data is presented to stakeholders as part of a negotiation process, or as a tool to engage local residents at an early stage of spatial decision making processes, for early consensus building between different local (professional) communities. However, papers focusing on the development of PPGIS decision support systems for public engagement in wind farm siting decision-making have developed tools and interfaces without empirically applying these, and have thus not generated any insights into the relative importance of considering alternative locations (e.g. Brewer, Ames, Solan, Lee & Carlisle, 2015; Mekkonen & Gorsevski, 2015; Simao, Densham & Haklay, 2009). Also, their contribution to the objectives of this thesis is limited as such approaches tend to adopt a spatial science approach, which is interested in the distribution of physical, measureable aspects across space, rather than the ways in which specific places are meaningful in specific ways. These approaches thus contrast strongly with a place-based approach and are unable to add to understanding of whether local siting variation can contribute to enhancing local acceptance of energy developments.

A further set of quantitative studies with an interest in spatial patterns of acceptability have instead compared support for hypothetical wind (Khorsand, Kormos, MacDonald & Crawford, 2015) or solar (Carlisle et al., 2014) energy projects across different countries or regions. However, due their non-local scalar focus and lack of interest in locally-relevant place meanings, such studies cannot capture the richness and diversity of place-specific meanings, values and attachments that inform judgements of places as (un)acceptable for energy development.

To date, one study has bucked this trend of a purely quantitative appraisal of the spatial variation in acceptability across countries or regions, and has instead focused on the acceptability of several locations for tidal energy in one locality, informed by ideas from work on SDSS (Alexander et al., 2012; see also Jansen, Arciniegas & Alexander, 2015). In this study, two deliberative focus group workshops were organised with local stakeholders (representing fishing, sailing, diving and tourism interests) in a Scottish coastal community. It aimed to identify potential conflicts between users of sea space and to develop an approach for gathering spatial data on potentially contested 'user values' (meanings ascribed to local sea space) in the context of siting a small tidal energy array. An interactive touch table and GIS software were used during the workshops. The workshops were successful in producing maps that captured 'marine place meanings' by assigning values from 1–10 to a grid of squares representing 500 x 500m of sea space. These value scores were based on the extent to which areas were used and valued by participants for activities such as fishing, sailing, diving and navigating. Stakeholders subsequently agreed on an optimal site for a future tidal energy array, after negotiating these values. Although weakened by its limited analysis of participant dialogue (e.g. conflicts, rhetoric employed) and small sample size, the study shows the value of participatory approaches which map local knowledge and enable the comparison (and understanding) of the relative acceptability of multiple locations for a local ORE project. It also shows that different parts of the sea are valued to varying extents for different reasons, suggesting the importance of more fully opening up the values ascribed to offshore settings beyond their visual appeal from the coast (section 2.2.3). Similarly, some studies have used PPGIS methods to map place meanings and attachments spatially – though without linking this to deliberations on local energy project development – and thus suggest the relevance of opening up in more detail the spatial variation of place meanings (Brown, 2013; Brown, Raymond & Corcoran, 2015).

However, an important weakness of almost all of the studies reviewed in this section is that they have considered public preferences for siting ORE projects in isolation from other factors that are known to determine local responses (e.g. trust, procedural justice, etc). Therefore, although useful in suggesting that finding the 'right' location may be important in principle, this body of work has been unable to comment on the *relative* importance of such preferences, in comparison to other explanatory variables. This research aims to address this shortcoming by integrating such questions on the locational preferences into a more comprehensive account of local energy deliberations.

Local energy futures studies

The third line of research that is to some extent similar to the upstream, relational place-based approach adopted in this thesis has an interest in what could be termed local energy futures. Such studies have an interest in visioning exercises carried out by or with local communities, to deliberate what local energy supply and demand should or could look like in the future (see Whitton et al., 2015 for a review). Such *“citizen-based planning processes, in which different sectors of a community collectively determine a desired future state and coordinate a plan of action”* (Lachapelle, Emergy & Hays, 2010, p.176), have long been used among energy practitioners such as community energy groups (see Barry & Ellis, 2011; Hopkins, 2008) and beyond (e.g. for tackling local poverty; Lachapelle et al., 2010). However, within the local energy acceptability literature, engaging communities with their local energy future more broadly has not been adopted as a method to better understand how acceptance of particular local options may be constructed. Instead, questions around public engagement with energy futures are often posed at the national rather than the local level (e.g. Ashworth, Littleboy, Graham & Niemeyer, 2011; DECC, 2015c; Demski et al., 2015; Parkhill et al, 2013).

One such recent study at the national scale examined public views on whole energy system change (Demski et al., 2015; Parkhill et al., 2013), using deliberative workshops and a nationally representative survey in the UK. It identified six overlapping thematic clusters comprising a ‘public value system for energy system change’ (p.63), which represents normative public beliefs about how things *should* be. The six clusters were labelled *‘efficient and not wasteful’* (referring to the importance placed on an efficient energy system in its widest sense, including reducing energy use and not wasting natural resources or producing waste), *‘environment and nature’* (the ideal that the energy system should avoid producing pollutants or contributing to climate change and should ensure the health and wellbeing of society), *‘security and stability’* (referring to the safe and reliable delivery of energy to all), *‘social justice and fairness’* (describing the relevance of fairness, transparency, honesty, and an even distribution of costs and benefits), *‘autonomy and power’* (which relates to a desire for maintaining personal and national freedom of choice and autonomy) and *‘process and change’* (referring to any changes being done to achieve long-term interests, and a concern that any changes should not affect quality of life). These values were found to explain public acceptance of particular technologies; for instance, solar energy and wood-burning fires were viewed positively because they were seen to afford a form of self-sufficiency and autonomy (or the theme ‘autonomy and control’). Similarly, public objections to a reliance on energy imports were found to be, in part, underpinned by concerns about autonomy. Moreover, as already touched upon briefly in section 2.2.2, the authors *"found that public preferences towards various technologies or proposed changes are conditional on the way they might interconnect with other aspects of energy system change and wider social and economic life"* (p.66). For instance, it was found that technologies like CCS were not widely supported, as they do not fit well within wider energy transitions envisaged by 'publics':

> *"Publics place high importance on considering overall changes and trajectories with regards to energy system change, rather than short-term solutions. As such, it seems that the trajectory we are perceived to be on is paramount in informing public acceptability more generally, and that specific preferences or responses might play out depending on whether publics see it fitting in with a desirable long-term vision. From this we propose that public acceptability in the short- or medium-term is likely to be contingent on evidence of long-term trajectories towards a broader vision of a sustainable future underpinned by the outlined value set."* (Demski et al., 2015, p.67)

These findings thus reaffirm the value of a broader approach to local energy acceptability, and suggest relational, contextual thinking might aid our understanding of the ways in which local communities evaluate local energy projects.

Demski and colleagues (2015) took a relatively novel approach of conceptualising public perspectives on energy system change by exploring the values that underpin public responses. This thesis takes a similar approach, but rather than considering such generic values on a national level in the context of achieving support for societal energy transitions, it explores such wider values using a place-based approach that focuses on the local. This is important, as – important though this work is – it is well-established that general support for a technology rarely translates into local project support.

So, despite the existence of approaches for engaging communities in their local energy future, such approaches have not been used within the energy acceptability literature in order to understand the construction of support for particular local energy options. In this thesis, such an approach is taken forward to better understand, in an upstream context, and from a relational perspective, the multitude of values, meanings, rationales and knowledges that may influence local energy development preferences.

2.7 Research aims

Five research aims are proposed for this thesis:

1. To develop and examine the value of an upstream, relational place-based approach to understanding local energy deliberations and public support for local energy projects.

A key aim of this research is to develop an alternative approach to understanding local energy deliberations – an approach that is able to understand local acceptability beyond single, top-down projects. The approach proposed here has several tenets, as it is 'upstream' rather than 'downstream' (Whitton et al., 2015), relational as well as territorial (Jonas, 2012), and values rather than marginalises local knowledge and lived experience. This research aims to reflect on the potential contribution of such an approach to the energy acceptability research field; first of all, to contribute to a better understanding of public evaluations of local energy developments, and secondly to contribute to the achievement of local actions towards more sustainable energy systems.

2. To understand the ways in which a (lack of) 'fit' between representations of place and technology shapes public evaluations of offshore wind, tidal and wave energy.

This aim is informed in particular by place-based approaches, and the concept of place-technology fit in particular (McLachlan, 2009), and relates to a research approach which foregrounds place as *meaningful space* (Devine-Wright, 2009). Rather than emphasising the strength of bonds between people and place – a popular approach within the local energy acceptability literature (e.g. Brownlee et al., 2015; Carlisle et al., 2014), a focus on place-technology representations is expected to open up the wider diversity of local perspectives on meanings associated with places and technologies. 'Place' in this research refers to multiple scales, as the research is open to participants' multiple definitions of meaningful places, both onshore and offshore, and at different scales. The other part of the 'fit', technology, refers to both the idea of the three technologies in general (offshore wind, tidal energy, wave energy), as well as to specific proposals using one of these technologies. In adopting the concept of 'place-technology fit' as a conceptual framework, this research also aims to contribute to refining this concept, as it has been noted above that the concept has been used fairly ad hoc and without theoretical grounding.

3. To enhance understanding of the role of technology choice and site selection as factors shaping support for local energy projects.

One key aspect of a broader focus that captures multiple technologies and place-related values, meanings and attachments at multiple scales is its suitability to explore local energy deliberations relationally, or comparatively. An upstream approach can thus contribute to a different kind of understanding of local energy acceptability, which is arguably better equipped to contribute to the development of locally acceptable sustainability actions. Such a broader understanding of relational acceptability is expected to make an important contribution to existing acceptability research in its innovative comparative focus.

4. To better understand public acceptability of offshore renewable energy technologies (offshore wind, tidal energy and wave energy).

The study of ORE developments (in particular wave and tidal energy) has been a growing but relatively minor part of the energy acceptability literature. The human dimensions of this novel set of offshore energy technologies are therefore understood less well than those linked to for instance onshore wind projects; a gap which this research aims to address through the exploratory investigation of social representations of these novel technologies. Also, this research aims to more fully explore the ways in which offshore settings may become meaningful to coastal communities beyond their visual value as experienced from the land.

5. To develop (visual) methodological approaches that fit an upstream place-based approach to local energy deliberations.

Current methodologies used in the energy acceptability field (e.g. surveys, interviews) are well-suited for studying single case studies of externally-conceived, top-down implemented energy projects. This thesis aims to develop and test methodologies that are suitable for the upstream place-based approach adopted in this chapter. In particular, it aims to use and develop methodologies that are able to capture the richness of the human lived experience in place and the diverse ways in which places are imbued with meaning. For this, it explores a number of visual methodologies which have not been used before within the energy acceptability literature. In doing so, this research aims to address the lack of methodological diversity in the energy acceptability field.

Chapter 3. Methodology

3.1 Introduction

The previous chapter explored the topic of public engagement with energy infrastructure, reviewed literature within this field and two related fields (human geographical approaches to place and social representations theory), and identified a number of gaps within these literatures. Based on this, an upstream, relational place-based approach and five corresponding research aims were proposed. This chapter presents the methodology that is employed in this thesis to address these aims, and its ontological and epistemological underpinnings. To conclude, this chapter then outlines the case study context (Guernsey) and reflects on the ways in which this research was co-produced with a very engaged external stakeholder.

3.2 Methodology

3.2.1 Overall approach

Overall, this research adopts a mixed method approach, combining qualitative and quantitative research methods. This approach has been used previously in a number of energy acceptability studies with a similar emphasis to this thesis (e.g. Devine-Wright & Howes, 2010; Devine-Wright, 2011b). Such an approach enables triangulation of results, which offers greater certainty, representativeness and depth of research findings, as these can be corroborated across methods. The combination of qualitative and quantitative methods also offers the opportunity to offset the weaknesses associated with each approach (e.g. lack of depth associated with quantitative work and the potentially limited representativeness and generalisability of qualitative approaches). Finally, it enables a more comprehensive account of the subject matter, while at the same time utilising the potential of each approach to answer different kinds of research questions (Bryman, 2006; 2012; Walliman, 2006).

A mixed methods approach was judged to be the most suitable approach in light of the research aims outlined in the previous chapter, as qualitative methods are suited to better understand and explore complex phenomena (such as local energy deliberations), while quantitative methods allow a more focused investigation of specific relations and hypothesis, and allows generalisation to wider populations (while also being the external stakeholder's method of choice – see section 3.4). Greater use of mixed method approaches has previously been advocated for the energy research literature (Devine-Wright, 2005; 2009; Haggett & Toke, 2006), while it has also been used frequently within social representation research (De Rosa, 1993). Moreover, the adoption of a mixed method research approach has been a distinct, innovative element of place-based studies of local energy controversies (e.g. Devine-Wright & Howes, 2010) within the overwhelmingly single-method energy acceptability literature (e.g. Gee, 2010). As such, a mixed methods approach is consistent with the theoretical and empirical focus of this research. The mixed methods approach in this thesis consists of two qualitative studies (see chapters 4 and 5), and one quantitative study building on these qualitative studies (chapter 6; see Table 3.1). The qualitative studies were conducted first, because this allowed the qualitative findings to inform the design of the quantitative study, which plays to the exploratory strength of qualitative research and the confirmatory qualities of quantitative methods.

Moreover, in order to allow triangulation of findings – and thereby build a more robust understanding of local energy deliberations in Guernsey – a combination of interview and focus group methods was selected. These two methods were selected as they are able to capture different kinds of data and are thus able to complement each other; the in-depth interviews used in study 1 are well-suited for exploring individual place bonds, and eliciting an in-depth personal narrative. By contrast, the focus group methodology adopted in study 2 is better suited to opening up the socially constructed and contested dimensions of place meanings and place-making (Bryman, 2012).

Study	**Methods used**
Study 1 (chapter 4)	Auto-photography & interviews (N=28)
Study 2 (chapter 5)	Deliberative focus groups (N=22)
Study 3 (chapter 6)	Questionnaire survey (N=468)

Table 3.1. Overview of studies carried out for this research

The previous chapter identified and objected to a continued reinforcement of a top-down model of renewable energy implementation within the energy acceptability literature, which reifies local individuals and communities as obstacles rather than as knowledgeable actors willing to contribute to sustainable energy system change. This rather negative conception of the role of local residents was argued to limit the contribution offered by such studies to wider energy system transitions beyond the acceptance of single (wind) energy projects. This argument has two key implications for the methodological approach adopted in this research.

First, it calls for a research approach which attempts to empower participants to allow them to express more fully their range of local knowledge and wider local energy system beliefs and preferences; valuing instead of marginalising such wider viewpoints (e.g. Barry & Ellis, 2011). Here, this is proposed to be accomplished by adopting an approach that is not purely researcher-led, but instead attempts to empower participants through a more participatory and deliberative research approach. This contrasts with a more positivist approach where research represents an 'information extraction' exercise where participants are mere 'respondents'. This more participatory approach has especially informed the qualitative, explorative part of this thesis (studies 1 and 2); the ways in which those studies are designed to be participatory and empowering is described in more detail in chapters 4 and 5. Study 3 instead takes a more confirmatory approach, based on the findings from study 1 and 2. It should be noted that the adoption of a participatory approach does not imply an idealisation or overlooking of the potentially conflicting different local values and knowledges (Cooke & Kothari, 2007). Instead, in this thesis the interest in local values is coupled with an interest in the contestation and (re-)production of local knowledge and meaning which is inherent in the politics of place making, a process which imparts values and excludes others and other views (Cresswell, 2004).

Second, a place-based approach that has an interest in the knowledge, values and beliefs associated with particular places stands to gain from a more explicit focus on the local everyday lived experience within such places (as outlined in chapter 2). Such an interest in the everyday is consistent with social representational approaches to ‘lay sense making’ and rationalities (Wagner & Hayes, 2005). It was already argued that the mainly survey and interview-based studies that dominate both the energy acceptability and the place-based research fields have some limits in fully drawing out the richness of the human experience in place. It was also observed that the elicitation of place-based values and meanings (let alone local knowledge) was not often a central component of the research design – instead studies used sets of place meanings predefined by the researcher or uncritically copied from unrelated previous studies. This may therefore not have been able to comprehensively represent the multitude of local experiences, beliefs, values and knowledges that may be important for achieving greater local sustainability. In this research, it is argued that the use of visual research methods can be one way of addressing such limitations and to acknowledge and capture this abundance of place-specific context (see chapter 4). Some studies within this field have used visual imagery already – in case including a drawing task (Devine-Wright & Devine-Wright, 2009) but usually by including visualisations of hypothetical offshore wind farms in questionnaire studies (e.g. Dalton et al., 2008; Krueger et al., 2011; Lilley et al., 2010). However, such studies could be critiqued for not including the visualisations within published work and for being unclear on their production method. Moreover, this provision of visuals to participants represents only one way of engaging research participants visually, which does not offer any participation or co-production on the participants’ behalf, which can be an important advantage of using visual methods (Rose, 2007; see for a good example Alexander et al., 2012, which is discussed in section 2.6). This thesis therefore aims to further explore a more participatory use of visual methods.

3.2.2 Ontological and epistemological considerations

This research adopts a constructionist ontology, within which social reality is seen as a constantly shifting product of perception (Burr, 2015). This contrasts with a realist or objectivist ontology, which conceptualises social reality as objective, external fact, which constrains individuals and groups without those individuals and groups having any role in shaping these realities. Such a constructivist stance is compatible with an interpretivist epistemology, which posits that individuals and groups constantly interpret and (re-)produce their own social realities. Consequently, social realities are conceptualised as multiple, subjective and ever-changing, and can therefore never be objectively measured by the researcher (Bryman, 2008; Burr, 2015; Walliman, 2006). An interpretivist position rejects positivist approaches to social science, such as the notion that research should be based on principles from the natural sciences, the assumption that an objective, measurable external reality 'exists', and that knowledge generated is objective and value-free. There are obvious parallels between the approaches outlined in the previous chapter and the constructionist and interpretivist approach to social science adopted in this thesis. For instance, an interest in the social construction of reality (e.g. of place and technology meanings), and in the notion of continuous production and reproduction of this reality, is shared by human geographical approaches to place, social representations theory and a constructionist, interpretivist stance.

3.3 Case study context: Guernsey

This research adopts a comparative research design, using the British island of Guernsey to explore public representations of multiple ORE development in this context. Through connecting this case study to wider methodological and theoretical debates, its findings are intended to provide generalizable conclusions that are relevant beyond the confines of Guernsey.

Visits to Guernsey

The researcher visited Guernsey on nine occasions during the research, totalling over seven weeks spent on the island, as summarised in Table 3.2. The external stakeholder helped to make these visits very immersive by helping to arrange meetings with diverse local residents and stakeholders, including tours of the island by car and boat. During each of these visits different parts of the island were visited, using all modes of transport (foot, bicycle, car, bus), visiting during different times of the year, and speaking to local residents wherever possible, while continuously following Guernsey news when away from the island. This ensured that the researcher was able to become very familiar with Guernsey and get a good sense of values and cultures in Guernsey (something that was further developed by the methodology of study 1, see chapter 4).

Dates	Purpose of visit
15-16 May 2012	Introductory visit prior to the start of the PhD
17-20 Jun 2013	General preparation of PhD fieldwork Presentation to RET board (Guernsey policy makers)
17-21 Oct 2013	Study 1 pilot Presentation at Inter-Island Environment Conference
2-13 Nov 2013	Study 1 data collection
20-22 May 2014	Preparation study 2 Presentation of study 1 findings to RET board
9-17 Jun 2014	Study 2 data collection
24 Jan – 2 Feb 2015	Study 3 pilot Study 3 data collection (round 1)
7-9 Mar 2015	Study 3 data collection (round 2)
30 Nov – 1 Dec 2015	Separate follow-up research
Total time spent in Guernsey	**50 days**

Table 3.2. Overview of visits to Guernsey by researcher and total time spent on the island

Introduction to Guernsey

Guernsey is one of the Channel Islands, a group of British islands near France, and is located about 115 km south of England, and 50 km west of Normandy. The map in Figure 3.1 shows Guernsey and the key coastal places mentioned throughout this thesis. Despite measuring only 63 km^2 (25 square miles), 63,000 people live in Guernsey (States of Guernsey, 2015a); a population density of 995 people/km^2 (the U.K. has 262 people/km^2). This population is concentrated in Guernsey's capital, St. Peter Port, and in the north-eastern part of the island, in the parishes of Vale, St. Sampson and Castel. By contrast, the western and southern parts of the island are less densely populated. Guernsey is wedge-shaped, with cliffs along its southern coast and extensive beaches and rocky shores in most other areas. The island of Guernsey is the largest island in the Bailiwick of Guernsey, an administrative unit comprising the three separate jurisdictions of Guernsey, Alderney and Sark (States of Guernsey, 2015b), which each have their own elected parliament. The jurisdiction of Guernsey includes several smaller islands, including Herm (a quiet island popular for day trips) and Lihou (an unpopulated nature reserve accessible via a tidal causeway). Other key places that are included in Figure 3.1 include a number of bays and beaches (Rocqaine, Vazon, Cobo, Portinfer, Ladies Bay, Pembroke, Shell Beach, Belle Greve and Moulin Huet) and headlands (Pleinmont, Grandes Rocques, Chouet, St. Martin's Point and Icart). Additional places that were mentioned frequently by participants throughout the research include the Hanois lighthouse (which is built on a reef a few kilometres southwest of Guernsey), the Humps (an area north of Herm characterised by its many rocks and reefs), the Little Russel (the straight between Guernsey and Herm) and the Big Russel (the straight between Herm and Sark).

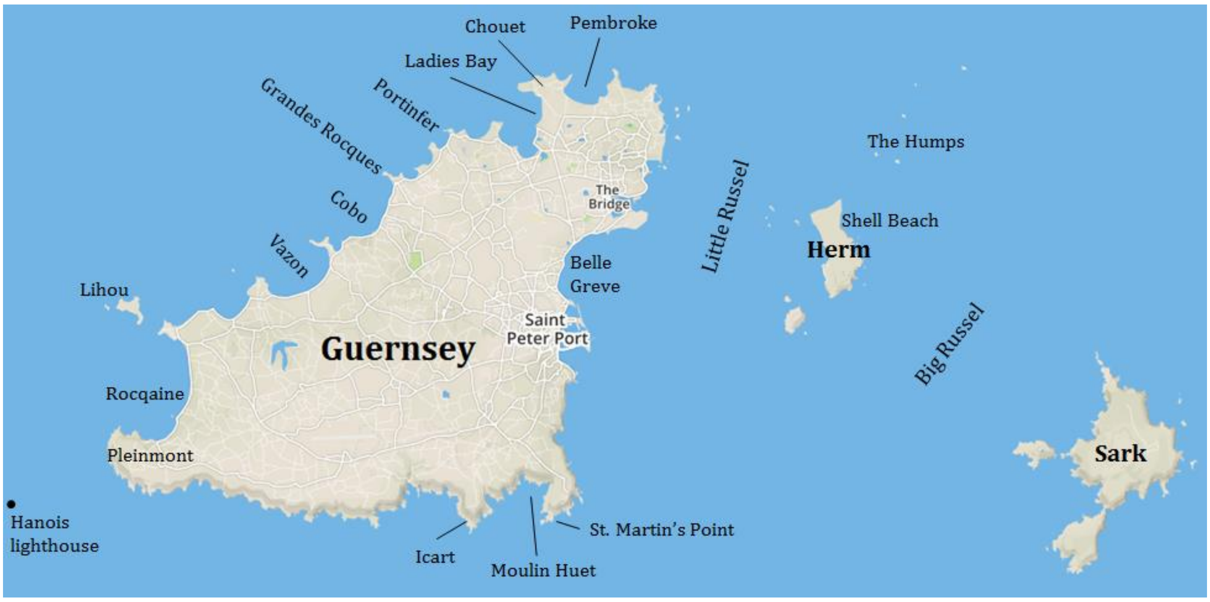


Figure 3.1. Guernsey, its surrounding islands and key places talked about throughout this thesis

The Bailiwick of Guernsey is not part of the U.K., but is a British Crown Dependency (like Jersey and the Isle of Man). Crown Dependencies are not recognised internationally as sovereign states but as *"self-governing dependencies of the Crown"* (Ministry of Justice, undated, p1.). This means each Crown Dependency has its own directly elected legislative assemblies, administrative, fiscal and legal systems and courts of law, and no representation in the UK Parliament. Historically, the Channel Islands were a part of the Duchy of Normandy, which conquered England in 1066. When the English Crown subsequently struggled to maintain its territory in France, the Channel Islands pledged allegiance to the English Crown in 1204, in return for greater autonomy (States of Guernsey, 2015c).

Although the Guernsey government (called the States of Guernsey) and its parliament (the States of Deliberation) are autonomous entities, the U.K. is responsible for Guernsey's immigration policy, international relations and military defence. However, certain controls are in place (e.g. right to work, right to housing) which in practice restrict immigration to the island. For instance, two housing markets exist in Guernsey: an open market and a local market. Access to the local market is restricted, and governed by personal circumstances and time lived on the island (States of Guernsey, 2015d), while the open market is open to anyone. In terms of international relations, Guernsey cannot sign up to international treaties – only through the UK – with the exception of some agreements related to for example taxation (Ministry of Justice, undated). Guernsey is also not a member of the European Union, though it is part of the customs territory of the Union (Ministry of Justice, undated). This has enabled Guernsey to establish a substantial financial sector on the island, as there is no corporation tax (with a few exceptions). International banks, fund managers and insurance companies provide 23% of direct employment and 40% of GDP (States of Guernsey, 2015e). By comparison, only about 1% of jobs are provided by agriculture, horticulture, quarrying and fisheries combined. There are also no capital gains, inheritance or value added taxes payable in Guernsey, while income tax is a flat rate of 20% (States of Guernsey, 2015f). Guernsey is economically prosperous, with very low unemployment levels (1.1%) and a median gross income of £29,640 (States of Guernsey, 2015g). Consequently, the average local market property sells for around £450,000, a figure which is around £1m for open market properties (States of Guernsey, 2015h).

Guernsey citizens are British citizens with full access to the U.K. and Ireland's Common Travel Area. However, not all Guernsey citizens have the right to work in the EU: individuals from Guernsey whose parents and grandparents were also all born in Guernsey have 'Islander Status'. This means they have an endorsement in their passports stating: 'The holder is not entitled to benefit from EU provisions relating to employment or establishment' (States of Guernsey, 2015i). Furthermore, some (but not all) UK universities treat Guernsey citizens as non-EU students, which means higher tuition fees. Queen Elizabeth II is Guernsey's Head of State, who needs to formally approve all bills that pass through the States of Deliberation (Ministry of Justice, undated). The UK Crown Estate – a body historically linked to the English royal family, which owns and manages a property portfolio for the UK Treasury – owns the seabed around Guernsey from the high water mark to up to 12 nautical miles offshore. In Jersey's case, ownership of the seabed has recently passed from the Crown Estate to the Bailiwick of Jersey; in Guernsey the risks and benefits of this are currently being investigated (Royal Central, 2015).

Culturally, Guernsey can be characterised as rather British: English is the dominant language (almost no French is spoken), most shops and supermarkets are British, the TV channels are British (e.g. BBC, ITV), the pubs look British and serve the typically British food and drinks, there are several fish and chip shops, and at the airport almost all flights connect to the UK and the other Channel Islands. On the other hand, many other elements of everyday life in Guernsey are quite different; for instance some road junctions are governed by a unique 'filter' system (where no-one has priority and traffic merges in turn from all directions), flagpoles around the island fly the Guernsey flag, cars bear black license plates, many streets and houses are named in French, in various places in the streetscape distinctly local names appear (such as Le Page and Le Poidevin), while the architecture of older buildings seems more similar to that of Normandy and Brittany than that of Britain. Also, the local currency is Pound Sterling, but cash machines often only dispense Guernsey pounds – a local currency which, despite bearing the Queen's image, cannot be used in the UK. Each coin bears an locally distinct image, including Guernsey cattle on the 2 pence coin, tomatoes on the 10 pence coin (a reference to the time when tomatoes were a major Guernsey export – the island still has many abandoned and overgrown greenhouses or 'vineries'), freesias on the 50 pence coin (after the decline of tomato exports, the growing of freesia plants became a particularly successful use of the greenhouses), Guernsey's maritime setting (a crab; a yacht) and other locally familiar symbols (Guernsey's flag; a map showing only the island's shape). Also, across Guernsey there are German bunkers and watchtowers, remnants from the German occupation of the

Channel Islands during the Second World War. Although, as noted above, the UK is formally responsible for the military defence of the Channel Islands, the islands were left undefended by the British military in June 1940. Consequently, a rushed evacuation of two-fifths of Guernsey's population (mostly children) was carried out – meaning many islanders spent part of their youth away from the island and sometimes away from their families. Guernsey was subsequently occupied and heavily fortified by the Germans until the island was liberated on the 9th of May 1945 (which is still celebrated as Guernsey's Independence Day every year).

Cars in Guernsey sometimes bear a small sticker of a donkey that stubbornly kicks its rear legs into the air. This is a reference to inhabitants of Guernsey being nicknamed 'donkeys', which derives part of its meanings from Jersey inhabitants being nicknamed 'crapauds' (French for 'toads'). A stubborn donkey is in this way used as a symbol for 'real' localness – a theme that will return in the empirical chapters. This rivalry between Guernsey and Jersey illustrates that, although known under the collective name of Channel Islands, distinct identities are associated with each of the islands (including Alderney and Sark). However, contrasting with this seemingly prominent local identity, many Guernsey residents also seem to simultaneously identify to some extent with England and Britain. For example, one study visit to Guernsey took place during the 2014 football World Cup. Guernsey was not represented by its national team, as it does not have one. Instead, from speaking to local residents, the England team was widely supported during the short time that it participated in the tournament. Football also provides one final example of Guernsey's peculiar geo-political position: having the British nationality, any exceptionally talented Guernsey footballers can choose which of the United Kingdom's four national teams to represent (this has happened once, when Matt Le Tissier played for England).

In short, throughout this brief introduction to Guernsey, narratives of independence and local distinctiveness, as well as of interconnection with other parts of the world are prominent. Guernsey's specific local context will be discussed in much more detail, through local residents' eyes, in the empirical chapters.

Guernsey's energy system

One final area which embodies Guernsey's independent yet intertwined relation with the outside world is its energy system. Guernsey's energy system could be characterised as very independent; there is only one electricity company (Guernsey Electricity Ltd), which is entirely owned by the States of Guernsey. Also, the single local (oil-fuelled) power station, which is located in St. Sampson in the northeast, can provide the entire island with electricity. The States of Guernsey even own their own oil supply ship(s), to ensure a secure supply (similarly, several other businesses are States-owned, including an airline (Aurigny), to ensure direct connection to London Gatwick). Gas is only provided to homes within the most urbanised parts of Guernsey, through a single privately-owned utility (Guernsey Gas Ltd). Homes off the grid use energy sources such as oil for heating. Since 2000 Guernsey has been able to import comparably cheap electricity off the French grid, through a 40MW[4] subsea cable to Jersey, which currently has two operational cables to France. A contract with EDF (Électricité de France) guarantees Guernsey's electricity supply until 2023, providing 70% nuclear and 30% hydro energy (States of Guernsey, 2011). Until 2011, the cable provided between 70 and 90% of Guernsey's electricity use – during peak times these electricity imports still needed to be complemented by local power generation. Recently, several cable faults have forced an increase in the proportion of electricity being generated locally. For instance, in 2012/2013, over two-thirds of the electricity used in Guernsey was generated locally (Guernsey Electricity Ltd, 2015), which increased local electricity prices and carbon emissions. Local generation from renewable sources is negligible; Guernsey has no wind turbines and very few solar panels, which is perhaps unsurprising given an absence of government incentives and the complex local arrangements of selling this electricity back into the grid.

At present Guernsey operates an 'N-2' energy policy, which *"requires that the supplier should maintain sufficient plant and importation facilities such that the island maximum demand can still be met with the two largest sources of*

[4] Maximum electricity demand in Guernsey is around 85MW (weekday evening in winter); minimum demand 23MW (early morning in summer) (States of Guernsey, 2014).

electricity simultaneously unavailable." (States of Guernsey, 2014, p.6). Clearly, this policy emphasises security and reliability of electricity supply on the island. Recent investment has focused on installing and planning additional import capacity by adding extra cabling between Guernsey and Jersey and between Jersey and France, as well as installing a new, additional generator at the local power station (States of Guernsey, 2014). The recent Electricity Strategy and the existing Energy Resource Plan effectively hold off the investment in renewables, choosing to wait for technologies to become commercially available (States of Guernsey, 2011; 2014), while noting that the likely timescale for large scale renewables is likely to be early in the 2020s (States of Guernsey, 2014). This priority placed on importing electricity has also been emphasised by Guernsey Electricity Ltd. by stating that *"our long term strategy is to invest in undersea connections to Europe."* (Guernsey Electricity Ltd, 2014).

Renewable energy in Guernsey

The above makes clear that renewable energy currently plays a marginal role in Guernsey's energy mix and short-term policy priorities. This is despite substantial resource availability locally for the generation of tidal, wave, wind and solar energy. Guernsey's tides stand out especially, with strong tidal currents in the Big Russel and the Little Russel, as well as around its south-western and south-eastern corners (St Martin's Point and Pleinmont – see Figure 3.1 on p.98). Although Guernsey also has a significant tidal range (between 3 and 10 meters in height), it lacks the estuaries needed to effective utilise this resource. In 2008, a government working group, now called the Renewable Energy Team (RET), was set up, tasked with *"enabling marine renewable energy development within Guernsey waters"* (Renewable Energy Team, 2015), partly in response to questions why Guernsey was not following Alderney's perceived success in preparing for tidal energy generation locally. RET's present remit is 'to investigate the potential for, facilitate and consent the development of, macro offshore renewable energy projects' (Renewable Energy Team, 2015). In other words, the current focus is on scoping the potential and preparing the ground for development of macro renewable energy in Guernsey, with a particular focus on offshore wind, tidal and wave energy. No specific proposal for any offshore renewable energy development is in place currently.

RET currently has 1.5 FTE (Full Time Equivalent) members of staff, while the RET board also includes two elected politicians, representatives of Guernsey Electricity Limited and of a cross-departmental government department called the Policy Council. Within this context, RET made the decision to fund 50% of this PhD research, alongside the 50% provided by the ESRC (Economic and Social Research Council), with the aim of better understanding the human dimensions/acceptability of large (at least in the context of Guernsey) offshore energy developments. The next section reflects on the ways in which RET's involvement as an external stakeholder has co-produced the research.

3.4 Reflections on a case-funded PhD studentship

This section reflects on the influence of the collaborative nature of this PhD research, and the presence of a very engaged and hands-on external stakeholder, from my personal perspective as a researcher, based on field notes and a research diary that was kept throughout the research. It intends to use these experiences to reflect on an increasingly common model of funding PhD research (a collaborative studentship award, involving significant match-funding from a non-academic stakeholder). It should not be read as criticism on the individuals employed by the external stakeholder, who have been helpful, constructive and open to new ideas throughout the three and a half years. Instead, this section is intended as a reflection on the practicalities of working within a field that is increasingly being transformed by an 'impact agenda' (Martin, 2011), within which collaborative, practitioner-focused research is increasingly valued (Colley, 2014). In particular, it aims to do so from the perspective of early career researchers (or even, researchers in training), who are in trajectories that are intended as a learning period (i.e. PhD research) increasingly confronted with pressures for publicly-funded academic research to be impactful beyond academia.

Prior to my personal involvement with the PhD, a research proposal was prepared by the external stakeholder and the main PhD supervisor. This detailed proposal was required to obtain funding from the ESRC, and outlined a three-study mixed method approach to studying acceptability of ORE in Guernsey. After this funding bid to the ESRC was successful, the PhD position was advertised and I was successful in applying for the role. In other words, the external stakeholder has been involved from the very start of this PhD – even before the PhD student was. Throughout the entire process of this research, the external stakeholder has maintained an active interest in the research. This close working relationship with the external stakeholder is illustrated by the frequency of phone and face-to-face meetings in Exeter or Guernsey across the three and a half years: a total of 35 formal contact events took place across the three and a half years – usually between the researcher, main supervisor, and two government officials employed by the external stakeholder. Although this represents an average of liaising once a month, in the first year the frequency was lower, while around fieldwork phone meetings were usually held every other week. In addition, I have, on the external stakeholder's initiative, presented my (planned) research to the external stakeholder's board in Guernsey on several occasions, produced summary reports to be published on the external stakeholder's website (www.guernseyrenewableenergy.com), and have engaged with local media (BBC Guernsey, Guernsey Press) alongside a representative from the external stakeholder to talk about the research.

Why was the external stakeholder so closely involved?

Reflecting on working with the external stakeholder throughout the three and a half years, and on their close involvement with the research process, my personal impressions suggest that a number of different factors may have contributed to the external stakeholder being so hands-on throughout the research. First, the external stakeholder worked with a very small budget, and funding this PhD took up a significant chunk of this budget. Therefore, making sure that this money was well-spent (by remaining closely involved with the work) was a logical priority for the external stakeholder. Second, throughout the research it became apparent at multiple occasions that the decision to fund this PhD was not supported unanimously within the external stakeholder's board. As such, our contact at the external stakeholder to some extent needed to justify this decision internally. This provided another incentive for continued engagement with the research to ensure it would deliver outcomes that would demonstrate good value for money. Third, throughout discussions with the external stakeholder across the three and a half years, it became clear that a key worry for them was that the research activities would somehow cause public controversy, especially around wind energy. Such controversy had already been caused before, when the Guernsey Press published visualisations of wind turbines off popular Cobo Bay, leading to mistrust of the local newspaper (Guernsey Press) by the external stakeholder, evident in phrases like ‘I can already see the Press headlines’, or ‘what if the Press gets a hold of it’. Therefore, extensive efforts were made to liaise with the media (Guernsey Press, BBC Guernsey) about this PhD research taking place, and the publication of certain results of the research on the external stakeholder’s website was carefully considered, in an attempt to manage public perceptions. A logical consequence of these concerns was a kind of ‘risk management’: a close involvement with the research activities, so as to spot any potentially controversial or misleading elements and thus prevent any unwanted local controversy. This was particularly evident in the third empirical study, as discussed below and in chapter 6. Fourth, it also became clear from early meetings and later communication that the external stakeholder had strong notions of what the research needed to deliver. These objectives were fairly instrumental and policy-focused; in one early meeting they were specified as both making sure that everyone affected by ORE in Guernsey is better informed, and better understanding local support for ORE and the conditions for support. Later it became evident that an additional key external stakeholder objective was to obtain firm and independent evidence (meaning quantitative data) that would justify the development of renewable energy locally (i.e. proof that the majority is in favour), and could be used to counter any controversy. To ensure this latter outcome was achieved, the external stakeholder continually emphasised that to them a large, representative survey study was the key output of the research. This represented another instance of the external stakeholder taking a hands-on approach to safeguarding their investment in the PhD. Finally, and perhaps most crucially, there was no written or verbal agreement on the exact outcomes of the research for the external stakeholder. Although there was a research proposal at the start of the PhD which described one possible research design, it was also continually emphasised to the external stakeholder that within PhD research the researcher needs to be completely flexible and responsive to findings from each study, to re-evaluate the appropriateness of any pre-planned follow-up study, and to consider alternative pathways. This implied that there was a possibility that there would be no quantitative study at all – though this was never actually specifically discussed. This situation may have reinforced a sense of uncertainty for the external stakeholder over the usefulness of the eventual PhD outcomes, again reinforcing a keenness to stay closely involved and to 'manage' the overall progress and specific elements of the PhD across the three and a half years.

Reflections on close external stakeholder involvement

This very close relationship with the external stakeholder has benefited the research in a number of ways. It provided access to a wealth of expertise on the specific local Guernsey context, renewable energy technologies generally and their potential local deployment. This expertise has been drawn upon in especially the design of information provided to participants in study 2 and 3 (see chapters 5 and 6). The external stakeholder also played a key supportive role in delivering the fieldwork, including in participant recruitment through local networks and sharing local knowledge (e.g. on suitable locations for participant recruitment or focus groups). The external stakeholder also contributed substantial additional funding for conducting the fieldwork, without which the same extent of fieldwork could not have been completed. Also, having a captive audience for the research outcomes has been a great opportunity to influence policy and achieve impact. Throughout, it has been very stimulating to work together with applied stakeholders, to learn from each other, and to know that the research will be useful beyond academia.

On the other hand, a number of limitations of intimate involvement of external stakeholders in PhD research can also be outlined. First of all, the external stakeholder's involvement provided various added pressures throughout the research process. A key one has been time pressure, as the external stakeholder was keen to agree a timetable for the PhD's fieldwork, and based on this timetable repeatedly emphasised that each study should not fall behind the agreed timetable too much – conflicting with the more fluid approach required for PhD research. Some of the studies would potentially have been carried out slightly later in the absence of this external pressure to start delivering fieldwork. Also, the constant contact, and suggestions that the external stakeholder's board would want to see some progress from this work, added pressure on delivering the fieldwork and findings soon and in such a way that would be ‘useful’ to the external stakeholder (i.e. quantitative, representative findings). Such pressures added to existing requirements of academic research to be rigorous and independent, and thus made the PhD more complex and difficult.

Second, coming into a project which had already been ‘designed’ by supervisor and external stakeholder and funded (by external stakeholder) to achieve particular aims was challenging at times. These existing agendas and expectations may potentially represent a limitation on the time and space available for the research to develop in a truly independent manner. Due to this background, a sense of ownership of the PhD was not apparent from the very start of the research. There was an ongoing process of exploring the expectations and wishes of everyone involved – a process that was never finished but continued to play out across the three and a half years. Also, in a practical sense, it meant that the PhD was expected to study public acceptability of ORE in Guernsey – in other words, to study acceptability of renewable energy in a place with no existing or proposed renewable energy projects (in 2012, when funding for this PhD was sought, it was not clear that no development would occur). This restricted the research questions that could be asked within the research, as no public responses to an existing or proposed project could be investigated. Although the ‘upstream’ approach adopted by this research is one of its merits, the choice of adopting this approach is the consequence of both its appeal as a conceptual tool as well as of practical constraints imposed on the research by the way it was funded. Overall, the combination of a pre-existing research proposal and set of expectations, a very close involvement of an external stakeholder, and clear communication on the external stakeholder’s behalf regarding the importance of quantitative data thus created a context which was more conducive to particular research pathways than others. On reflection, this may have inhibited greater consideration of alternative research approaches that – in my personal experience – may be less palatable to non-academics (e.g. other qualitative methods), and deviated more from the initial research proposal. Personally, I believe the mixed method approach adopted including a quantitative element is a very suitable way to study this particular topic. The point here is that during this PhD research, at times there have been pressures to continue down a particular path, and choosing to take a different path would make the entire research process much more difficult. It could be questioned whether this is a good thing, within the context of what should essentially be a learning trajectory of how to do high-quality, independent academic research.

Third, the amount of time spent on external stakeholder communication, on the phone but also by travelling to Guernsey on several occasions, limited the amount of time available for student-supervisor meetings. Time was not only spent in meetings with the external stakeholder, but also on discussing our relation with, and management of, the external stakeholder. This is an important consideration in a context where academic staff members are under increasing time pressures.

Example of external stakeholder influence

One example can be drawn upon here to illustrate these dynamics and complexities of closely working together with an external stakeholder. During the run-up to the third empirical study, in autumn 2014, we cooperated very intensively, including a visit to Exeter by the external stakeholder, on the design of the questionnaire and the survey methodology. After some time, it had been decided that a drop-and-collect distribution methodology would be the best way to achieve a representative sample – something valued highly by all involved. It also became clear that sample size was a key concern for the external stakeholder for this study, chiefly because of their interest in obtaining firm evidence to defend future policy decisions against public scrutiny. A survey study with an insufficient sample size was seen by the external stakeholder as threatening the legitimacy of themselves and of any future ORE project, and as providing ammunition to any detractors. Although the original research proposal did suggest a questionnaire survey would be conducted, it did not specify sample size. Therefore, the external stakeholder asked the researcher-supervisor team to define a threshold number that would signify a 'big enough' sample, so as to not leave them open to any criticism over this. Taking into account that there is not a 'magic' number and that minimum sample size depends on many factors (e.g. research question, the margins of uncertainty one is willing to accept), a sample of 600 respondents was concluded as acceptable to all (see section 6.2.1)

In order to reconcile a time-intensive distribution method with the aim of achieving 600 valid responses, a strategy was chosen where survey distribution was done with the help of local volunteers. Using existing contacts at two secondary schools, this strategy involved recruiting 14 Sixth Form students to deliver 1,000 questionnaires (presuming a 60-70% response rate observed in other studies using this distribution method). However, for various reasons (bad weather, students running out of time or falling ill), not all questionnaires were delivered by the students and a total of just over 250 valid responses was received. This was a sample size that permitted all the statistical analyses that were planned to be conducted as part of the PhD research. This meant that, from the point of view of the PhD, there was no immediate incentive to return to Guernsey for a second round of data collection. However, for the external stakeholder, the number of responses clearly fell short of the 600 mark and was therefore not satisfactory.

This presented an interesting situation. It foregrounded questions which had, underneath the surface, already been central to communications and negotiations up to this point: What rights exactly does an external funder have, based on the 50% contribution made to the cost of the PhD research? Are they entitled to certain outcomes? What obligation does a PhD student have to meet external funders' expectations? To what extent should external funders be able to shape the research to ensure a sufficient 'return' on their investment? Who is ultimately in charge?

In the end, as described in chapter 6, a second round of data collection was carried out costing a total of about six weeks, which brought the total number of responses up to 468 (at which point no further resources (e.g. time, money) were available to set up a third round of data collection). The fact that this second round of data collection was carried out – even though it was not required for the PhD – reflects the significant amount of influence that the external stakeholder has had throughout this research. What it makes clear is that this PhD thesis is not simply the product of my own research interests, skills, and judgements about what was appropriate at each stage. Instead, it is a co-produced effort, which is ultimately the product of a process of negotiation of a diverse set of interests. Throughout this thesis, particular instances of how the research has been shaped by this process will be highlighted.

Recommendations

In conclusion, this PhD research has been shaped by a sometimes tricky process of balancing the need for rigorous and independent research with strong external stakeholder pressure and involvement in co-shaping the research. This added further complexity to developing and conducting original and rigorous PhD research – which of course is already quite a difficult undertaking in itself. Such added complexity and the implications for the researcher could be used to echo arguments that *“the research ‘impact’ imperative is one that encroaches on academic freedom; and that academics need to find collective ways in which to resist it”* (Colley, 2014, p.660). However, such arguments would overlook the potential benefits of this type of PhD studentship. For instance, stimulating (early career) academics to think about how their work may benefit society as a whole can hardly be a bad thing, while it is quite fair for external funders to expect some return on their investment. Also, the impact-oriented and collaborative skills that can be developed through collaborative PhD projects can only help in a future academic career, where demands to achieve impact will be stronger. What the experiences described in this section suggest, is that – possibly because of this collaborative funding model for PhDs being relatively novel – there is a lack of structures in place to facilitate the successful production of impactful PhD research, which may endanger the potential benefits of such work.

Therefore, as long as such structures are not in place, there is a need for a critical stance towards the dynamics of case-funded studentships, where external stakeholders may come to expect and enforce the achievement of ‘impactful’ outcomes. This is particularly pertinent given the strong present discourse of the need for publicly-funded academic work to be useful beyond the academy, and cuts in overall research funds available, which make it conceivable that research councils in the future will aim to fund more PhD research in a collaborative way. Therefore, some recommendations can be made for the benefit of future PhD studentships following the same model, to safeguard the interest of all involved. For instance, it may be beneficial to develop a standard document to guide those who are seeking to set up a collaboratively-funded studentship, which guides both the supervisor and the external funder on what they can and cannot expect. This could guard the external funder against unrealistic expectations on the amount of influence they can expect to exert on the direction and outcomes of the subsequent research. Any outcomes that are particularly important to the external funder can be included and formalised to ease subsequent external stakeholder incentives to become overly hands-on throughout the research process in attempts to ensure relevant outcomes. It could simultaneously protect supervisors' valuable time, as early agreement on such terms may remove the need for extensive negotiation at later stages. Also, it could be a way to formalise the complete freedom of the PhD researcher, potentially galvanising the PhD researcher to develop more radical and innovative research paths if deemed appropriate. By making clear at the start what exactly (if anything) is expected by the external funder, then this provides certainty and clarity for all parties, preventing such interests to crystallise only during later stages of the research, by which time accommodating them may be more difficult.

Furthermore, if research councils are keen to fund more PhDs in this way, then it may be important to think about ways in which impact can be included within the criteria against which PhD research is judged during the viva. This could be helpful by more explicitly formalising and clarifying in what ways PhD students are expected to work towards an impactful programme of work, and how such collaborative efforts are rewarded. This would contrast with the present situation where the relation between PhD research and the world of 'impact' is relatively fuzzy, and efforts to achieve impact may detract from delivering what is considered an excellent piece of PhD research (e.g. innovative, independent). As long as impact is not a criterion for defining 'good' PhD research, and for deciding whether or not such a training process in preparation for an academic career has been completed successfully, there will be conflicting pressures on PhD students that may be obstructive and make completing such a research project overly complex.

Suggestions like these may be helpful in better defining from the very start what is expected from a PhD researcher in a collaborative studentship, while at the same time potentially enhancing the impact made by collaborative PhD research in the future.

Chapter 4. Exploring place and energy technology representations in Guernsey: An auto-photography study

4.1 Introduction

This chapter presents the first of this thesis' three studies, which took a qualitative, exploratory approach to examining representations of place and (energy) technology in Guernsey. It aimed to understand the variety of ways in which such representations are used to frame arguments around the acceptability of diverse local ORE technologies. The study was designed in response to three specific shortcomings of previous place-based studies of energy acceptability. First, the elicitation of locally-relevant place meanings has often been a marginal part of previous place-based energy acceptability studies (section 2.3.1). Such studies have for instance relied on less in-depth quantitative instruments to elicit these meanings (e.g. Gee, 2010), or simply copied place meanings from other contexts without scrutinising their relevance to the case study context (e.g. Carlisle et al., 2014). Second, previous studies have commonly focused on place meanings associated with specific coastal settlements (e.g. Devine-Wright & Howes, 2010; Brownlee et al., 2014), without critically reflecting on how such choices exclude other 'communities' at different scales, and therefore potentially overlooking ways in which local energy projects may simultaneously be represented as 'fitting' place at one scale (e.g. the region), but not another (e.g. the local town). There is a need to understand the different places and scales at which 'local communities' may be affected, before proceeding to define which is the 'appropriate' community, which is a decision fraught with complexity (Woods, 2003) – potentially even more so in offshore settings (Soma & Haggett, 2015). Third, previous work on acceptability of ORE has usually focused on the (visual) meanings associated with coastal settlements; this represents a land-based perspective which has overlooked the ways in which specific offshore places are meaningful to local communities (Alexander et al., 2012; Conway et al., 2010).

Auto-photography

Consequently, place-based investigation of local energy developments needs to foregrounds the in-depth elicitation of meanings of multiple (onshore and offshore) places at multiple scales. Therefore, this study employed a methodology that has been found to enable an in-depth understanding of the lived experience of place but has not been used in the energy acceptability literature before: auto-photography (Johnsen, May & Cloke, 2008; Lombard, 2013). This method is also known as 'self-directed', 'solicited', 'elicited', 'visitor-employed', 'resident-employed' or 'host-employed' photography (Brickell, 2012; Johnsen et al., 2008; Lombard, 2013; Stedman, Beckley, Wallace & Ambard, 2004), as well as 'photo-elicitation' (e.g. Radley & Taylor, 2003), though this term is understood by others to refer to the general principle of using visuals as interview stimuli (Harper, 2002; Rose, 2007). Participant-generated images are also central to a more action-oriented type of auto-photography called photovoice (Baldwin & Chandler, 2010). Whatever the label used, within such approaches participants are usually given instructions (and cameras) to produce a particular set of photographs, which subsequently form the basis for in-depth discussions during follow-up participant interviews.

Visual methods like auto-photography have been argued to enable a more effective exploration of participants' unconscious – giving participants a means to reflect on aspects of their lives that may usually by taken for granted (Rose, 2007). They are also commonly suggested to provide a more emotional, affective way of engaging people – contrasting with text-based methods like questionnaires, which instead are typically used as a cognitive method of engagement (e.g. Harper, 2002; Sheppard, 2005; Stedman, Amsden, Beckley & Tidball, 2014; Van Auken, Frisvoll & Stewart, 2010). It has been argued that visual methods engage parts of the brain that are older in an evolutionary sense – as basic emotions evolved relatively early compared to conscious processes such as language (Holmes & Matthews, 2010) – and therefore offers a fundamentally different engagement method. Especially coupled with verbal methods (e.g. in-depth interviews), visual methods thus have the potential to provide richer and different data than by using verbal or text-based methods alone (Rose, 2007).

Auto-photography has also been argued to be especially suitable for use with marginalised groups, as the method has been used to better understand how the less powerful see their place in the world through giving such groups a voice (Johnsen et al., 2008; Lombard, 2013). This interest in revealing the heterogeneous nature of place suits this thesis' interest in multiple (both dominant and marginalised) representations of place. Moreover, auto-photography has been situated as an approach which reverses the usual researcher-participant relationship by positioning the participant as the 'expert' (Lombard, 2013). Similarly, Harper (2002) emphasises the 'collaborative potential' of photo elicitation, as the very situation of two people discussing the meaning of photographs together redefines who possesses 'expertise' in such a context. By potentially giving greater agency to the participant, the approach has also been positioned as having the potential to stimulate engagement in local affairs (such as local energy development), and to empower participants' involvement in local community planning, development and management (Van Auken et al., 2010). Moreover, creative methods like auto-photography allow participants a certain amount of time to reflect, before and while carrying out a task, which could lead to more considered responses, contrasting with the more instinctive responses elicited with conventional 'on-the-spot' methods such as interviews or questionnaires (Gauntlett & Holzwarth, 2006). On the other hand, auto-photography has also been described as a very time-consuming method, potentially in part because of the time involved in participants taking photographs and talking through elaborate background stories behind the photographs (Johnsen et al., 2008; Van Auken et al., 2012). Finally, some studies noted that participants very much enjoyed taking part in auto-photography research (e.g. Stedman et al., 2004), which may help in reducing drop-out rates and enhance research outcomes – although 'overzealous' participants taking too many photographs could simultaneously risk participant or researcher fatigue and the research moving away from its intended focus (Van Auken et al., 2012). This suggests the success of the method may be dependent on participant instructions.

Auto-photography has been argued to be well-suited for the study of place meanings and attachments (Stedman et al., 2014). Indeed, multiple studies from several disciplines have adopted the method to understand place-related meanings and place attachments, in contexts as land management (Beilin, 2005; Sherren, Fischer & Price, 2010), climate change adaptation (O'Neill & Graham, under review), place attachment (Stedman et al., 2014), place-making or the experience of communities in urban environments (Johnsen et al., 2008; Lombard, 2013), and social group identity (Harper, 2002). Some of these studies are briefly reviewed below, to illustrate the use of auto-photography to studying people-place bonds and to outline some of the challenges and limitations associated with this method.

Van Auken and colleagues (2010) adopted auto-photography to examine perceptions of landscape and community change in Norway and the US, exploring the views of both professionals (e.g. mayors, municipal planners) and 'everyday participants in community life'. They asked participants to photograph places or objects that they valued, but also places that detracted from quality of life, have changed, or should be preserved or redeveloped. By comparing these auto-photography interviews with conventional, verbal interviews, they find that the photography task, combined with follow-up interviews, led to particularly rich, 'thick description' around a wide range of topics. However, the authors also comment that one drawback of this approach was that their participants were more likely to take photographs of valued places, rather than of places of concern, suggesting auto-photography may be most useful to capture the positive and valued rather than the negative. They also conclude that using auto-photography to research 'elites' (i.e. politicians, civil servants, business leaders) and their views is challenging, as in this study these groups are described as less willing to engage in taking photographs – suggesting the method is most suitable for research outside professional contexts.

Lombard (2013) instead used auto-photography as a means of exploring residents' perspectives of place meaning in Mexican urban neighbourhoods. Participants were asked to take photos of both positive and negative aspects of their neighbourhood, residents' achievements in the neighbourhoods, and special characteristics of the neighbourhood. The author concludes that this methodology *"was effective in presenting both the mundane and the extraordinary nature of 'ordinary spaces' in the urban setting"*, and suggests a key advantage of the approach is its ability to emphasise the heterogeneous and constructed nature of place. As noted above, this is consistent with the interest in multiple and contested representations of place in this thesis and suggests the suitability of auto-photography as a method in this research. However, the study also highlighted some important ethical questions – which have been noted to be particularly pertinent in methods like auto-photography (Rose, 2007). In particular, Lombard (2013) observes that participants may put themselves at risk by photographing certain contested places, such as those (illegally) used for squatting. This raises ethical questions over the use of photographs in research which shows recognisable faces, as well as over the position that participants are placed in as a consequence of being part of the research project. Similar critical points are made by Johnsen and colleagues (2008), who gave cameras to 17 homeless people for a week, to photograph places they utilised in daily life and/or that were in some way important to them. The study found that the images generated provided new windows into the world of this particular group – offering access to previously 'hidden' spaces, and offering a new perspective on spaces already 'known' by the academic literature in the area. However, working with this particularly vulnerable group was found to be very challenging by the authors: not least in a practical sense, as several cameras were lost (or potentially sold) by the participants, while many of the participants dropped out. Ethically, the authors raise similar concerns to Lombard (2013) in terms of how to deal with recognisable faces in the photographs, and of the participants' safety in terms of taking photographs of particular places: for instance, it was noted that some participants had chosen not to take photos in some spaces for fear of potential reprisals. Also, Johnsen and colleagues (2008) note that giving valuable items like cameras to vulnerable participants may make them a target for criminals – putting their safety at risk. Finally, the authors raise an important point over the ownership of images – although it is standard social science practice for participants to be anonymised, some participants were disappointed that they would not be credited for the photographs they had taken, which they took considerable pride in.

In other words, these studies suggest that auto-photography can be a productive way to address some of the methodological shortcomings of the place-based studies to date (as outlined above), if carefully implemented to take into account its potential shortcomings. The studies above suggest it is well-suited to explore people-place bonds in greater depth, and to multiple places simultaneously. It has been shown to offer intimate and rich insight into participants' lives and reveal some of the hidden or taken-for-granted places, objects or concepts that are treasured or in some way important. As such, it may offer a way of going beyond an emphasis on the physical, visual place meanings sometimes highlighted by energy acceptability studies (e.g. Knapp & Ladenburg, 2015), to capture the diversity of locally-relevant values and meanings. It also fits well with a social representational approach in the sense that it shares an interest in both talk and action – an interest in the everyday lived experience – as shaping social representations. Through incorporating participants' photographs into the research, representing place becomes an act that is not merely verbal, but also represents participants' *being in place*. Following a social representational perspective, photographs could thus be considered a tool to help participants in *objectifying* locally-relevant values – or making potentially abstract ideas around what is important about places more concrete (Devine-Wright, 2009). Moreover, an auto-photography approach can help in empowering participants, as – even though instructions are typically given to participants on what to photograph – they are given a greater freedom and more time in constructing their personal narratives than in most methods (e.g. questionnaire surveys). The method thus seems well-suited to exploring place and technology meanings in greater detail and at an early stage of public engagement, and to better understand local energy deliberations. It has not been used within the energy acceptability field before, and this study therefore aims to understand the potential of such a methodology for capturing the full depth of the ways in which a variety of places at different scales are (argued to be) meaningful in some way, and how these arguments are used to construct a narrative of (lack of) 'fit' between such places and the technologies that may be developed in them (see Table 4.1 on p.123).

Public understanding of ORE technologies

So far this introduction has emphasised the 'place' part of the concept 'place-technology fit'. Although the focus in this study is very much on those representations of place, a second objective of the study is to explore the ways in which local residents understand and represent ORE technologies. In particular the focus is on the potentially diverse public understandings of the novel technologies of tidal and wave energy, which have been largely overlooked by previous work on public engagement with these technologies (e.g. DECC, 2015b).

Although the focus of this thesis is on tidal *stream* technology (as well as wind and wave energy), two previous studies on tidal *barrage* technology provide some insight into how public actors make sense of such novel marine energy technologies. Studies employing interviews (Butler et al., 2011) and mixed methods (SDC, 2007) to study public engagement with the UK's long-discussed Severn tidal barrage have highlighted the diversity of public sense making of such a novel technology. These studies report diverse public understandings of tidal barrage technology—disagreeing on what it may look like and confusing it with wave and wind power—problematizing public responses to the proposal. The research also highlights how such emergent understandings may be linked to unstable, changeable attitudes towards the technology, as a first round of interviews elicited mainly positive attitudes, but after allowing more time for deliberating, a second round of interviews instead captured more negative views. It was furthermore illustrated that in a context where local residents have no material experience with the technology (because of the absence of an operational tidal barrage), individuals drew heavily on social and media sources in making sense of these technologies. Participants also connected such new ideas to familiar knowledge (*anchoring*; Devine-Wright, 2009), relying on general notions of the tide's dependability, associations with naturalness, and comparisons with familiar objects like the Thames Barrier, in attempts to make sense of the technology. Such studies thus reveal the complexities involved in the formation of public evaluations of such developments; lay audiences may draw on many different sources and ideas to make sense of such technologies, and subsequent imaginaries of such technologies may be very dissimilar to experts' understandings – with potentially important implications for public acceptability. In this study such processes are opened up around potentially unfamiliar ORE technologies in Guernsey using the social representational processes of anchoring and objectification (Devine-Wright, 2009).

Previous studies on public understanding of tidal and wave energy technology have focused on the (positive and negative) expected impacts of these technologies opportunities (Alexander et al, 2012; Bailey et al, 2011; Devine-Wright, 2011b; McLachlan, 2009; Simas et al., 2012; Stokes et al., 2014). These studies found concerns to include impacts on wildlife, surf wave quality, noise, threats to fishers' livelihoods and safety, lack of local economic benefits and industrialisation of natural marine environments. Positive expected impacts included wave and tidal energy's contribution to climate change mitigation, enhanced energy security, enhancing a place's standing or profile, benefits to tourism, and employment. Although useful as a general overview, this summary of findings comes from a very diverse set of case studies of very different projects (e.g. single tidal energy converter, wave energy test facility, proposed tidal energy farm) in different development stages (e.g. hypothetical, proposed, installed), and thus this list offers limited predictive potential in terms of the concerns that may emerge around future developments. This leaves a clear need to better understand how potentially diverse public understandings of tidal and wave energy technology may shape their local acceptability.

Research questions

Summarising the above, this study aimed to use auto-photography to capture the ways in which onshore and offshore places (at multiple scales) and technologies (offshore wind, wave and tidal energy) are represented by Guernsey residents, and how such representations are discursively used to construct arguments on the 'fit' between place and technology. This interest in the deliberation of multiple local energy technologies in multiple locations, is broken down into four research questions, which are summarised in Table 4.1.

RQ1	❖	How are Guernsey and its marine and coastal places represented by local residents?
RQ2	❖	How are current electricity technologies and potential future ORE technologies understood, represented and evaluated by Guernsey residents?
RQ3	❖	In what ways are these representations of places and technologies combined to position such technologies as (not) 'fitting' in Guernsey, at different scales?
RQ4	❖	What potential does an auto-photography methodology offer for investigating discourses of place-technology fit?

Table 4.1. Research questions study 1

4.2 Methodology

Sample

The sampling strategy aimed to obtain a diverse (though not necessarily representative) sample that reflects a variety of voices within the community, including from those with a strong interest in the marine environment (e.g. sailors, surfers) and those who did not necessarily share this interest. Therefore, participants were recruited in several ways, including through local media coverage (local newspaper, radio, and TV), gatekeeper contacts, snowballing, at local events, and through on-street recruitment. Participants were incentivised to participate by offering a chance to win £200 in vouchers in a prize draw. In recruitment, the study was positioned as a photography study that offers a chance to share their views on Guernsey (a flyer that was used read: "I am looking for participants to tell me about what they value about Guernsey's coast and sea"). Renewable energy was not mentioned in recruitment, apart from in media coverage, which was done in conjunction with the external stakeholder. Therefore, this study attempted to avoid the bias found in some studies (e.g. McLachlan, 2009) towards focusing on those with particularly strong views on renewable energy development.

The methodology was piloted by four participants, which resulted in no major changes to the methodology, as the participant instructions and interview protocol worked as expected. The data from these four participants was used in the analysis. The final sample of 28 participants is described in Table 4.2, which illustrates the diversity of the sample in terms of gender, age, place of residence and whether or not participants were born in Guernsey. Figure 4.1 represents the spatial distribution of participants' residences, and shows that some areas of Guernsey were relatively underrepresented: in particular, few participants lived in the relatively densely populated south-eastern (St. Martin) and north-eastern (Vale and St. Sampson) parts of the island. Bearing in mind that, broadly speaking, the north-eastern half of Guernsey is mostly built-up while the south-western half is less densely populated, the participants represent both more urbanised and rural parts of Guernsey. All participants signed a participation consent form (Appendix A) and a photograph reproduction consent form (Appendix B) to consent the use (some) of their photographs in future publications and presentations.

Gender	**Age**	**Parish of residence**	**Place of birth**
Male (18)	18-29 (5)	St Peter Port (8)	Guernsey (13)
Female (10)	30-39 (4)	Castel (4)	Other (15)
	40-49 (7)	St Peters (4)	
	50-59 (4)	Vale (3)	
	60-69 (7)	Torteval (2)	
	70+ (1)	St Sampson (2)	
		St Saviour (2)	
		St Andrew (2)	
		St Martin (1)	
		Forest (0)	

Table 4.2. Characteristics of study 1's 28 participants

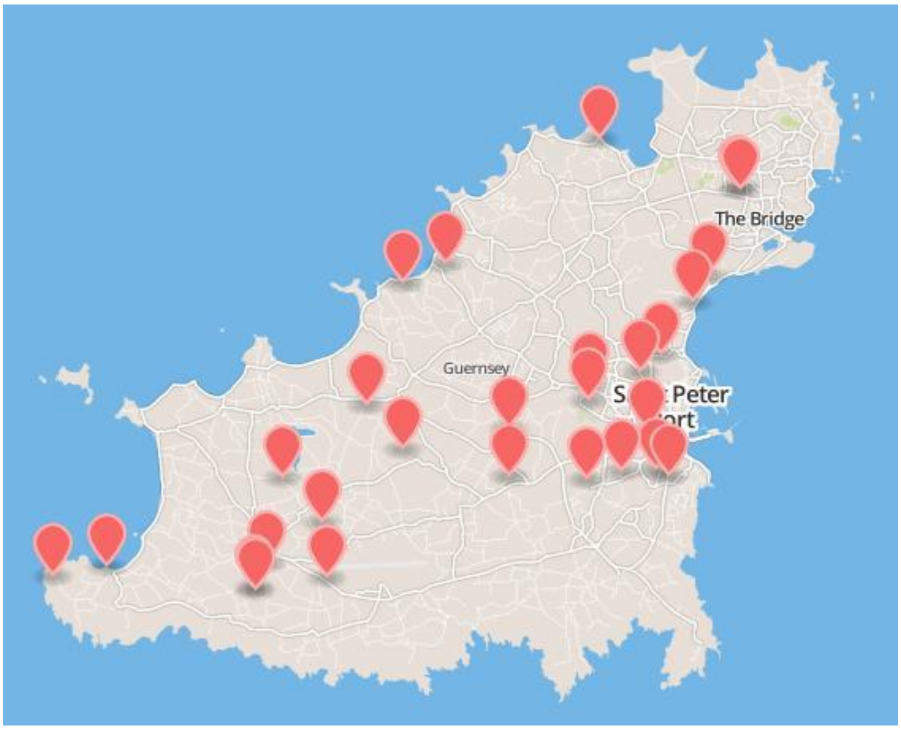


Figure 4.1. Place of residence of study 1's 28 participants

Procedure

Each participant was briefed to produce a set of up to ten photographs of 'what you value about Guernsey's coast and sea'. This wording was deliberately chosen over asking for photographs that show 'valued places', to allow participants the freedom to photograph and talk about any locally-relevant object, concept, experience or social relation beyond the photography of physical places. Although not all auto-photography studies limit the number of photographs taken by participants (e.g. Lombard, 2013; Van Auken et al., 2010), it was decided to impose a limit to ensure time remained to discuss other topics. The number of ten was chosen as other studies have used similar figures (e.g. Beilin, 2005; Stedman et al., 2004). No cameras were distributed to participants, as each owned a suitable digital camera (no-one chose to use the one camera that was available). Participants were given at least one week to create a set of photographs and were told that this could include both new and pre-existing photographs. The autumnal weather during this period of fieldwork (late October - mid November 2013) may have contributed to several participants opting to browse through old photographs, rather than going out and taking new ones. Participants were subsequently interviewed about their photographs – a vital stage in clarifying what photos taken by participants mean to them (Rose, 2007). The researcher did not see the photographs before the interview, and participants chose the order in which to discuss the photos. The interviews took place in a venue of the participants' choice (their home, place of work, or a public venue).

The interviews followed a semi-structured format, and were guided by an interview protocol that focused on representations of place and technology (see Appendix C). This first part explored participants' connection to Guernsey through a series of general questions ('How would you describe Guernsey to me?'; 'Is there anything or anywhere you don't like in Guernsey?'). Next, participants were encouraged to talk about their photographs in their own terms, giving participants the freedom to construct a particular narrative of their choosing ('Could you tell me about this photo?'). After discussing the photographs, participants were asked for any additional valued places, objects or concepts which they did not photograph, and the reasons for this. After this discussion of place meanings, the next part of the interview explored participants' awareness, understanding and evaluation of Guernsey's current electricity system ('Thinking about the electricity you use every day, where do you think this electricity comes from?') and offshore wind, tidal and wave energy. In this way, this research attempted to open up participants' potentially diverse understandings of energy technologies; this is important given that previous studies have not always taken into account the fact that novel technologies like wave and tidal energy may be unfamiliar to individuals, and that individuals may not have given them a great deal of thought before participating in the research (see section 2.2.3). At the same time, opening up this question also avoids simplistic and erroneous presumptions of an altogether uninformed public, instead giving participants the opportunity to express the ways in which they understand particular technologies, and subsequently using this in analysis of how judgements of acceptability are formed. The researcher did not immediately introduce the terms 'offshore wind', 'tidal energy' or 'wave energy' into the discussions, but instead talked about the possibility of using devices for generating electricity that are in or near the sea in Guernsey ('Have you heard of this at all?'). This aimed to capture participants' awareness and understanding of the three ORE technologies. If any of the three ORE technologies were not mentioned, then the researcher introduced these concepts into the discussion to elicit understandings of these technologies (‘What image springs to mind when thinking about wave energy?’). Finally, participants’ ideas of the suitability of different places around Guernsey for the development of offshore wind energy were discussed. The interviews on average lasted about one hour.

Four participants did not take any photographs; three of these indicated when being asked to participate that they never took photographs, suggesting they were more comfortable expressing themselves verbally. These participants were included to further diversify the variety of coastal experiences captured by the study. One other participant did not take any photographs because everything he wanted to talk about was under water and no equipment was available to photograph in such an environment – this participant decided to print several maps instead to highlight the places he wanted to talk about. The other 24 participants produced a total of 200 photographs.

The researcher positioned himself to participants as an ‘outsider’ to Guernsey, by asking questions such as ‘how would you describe Guernsey to me, as an outsider?’, but also materially through having a foreign name and speaking with a non-British accent. This positioning was experienced as helpful throughout the research, as people were found to be keen to talk about and share ‘their’ place with someone who was unfamiliar with the island (by participating in the research and talking about Guernsey – usually very positively, as outlined below). It also helped because participants took their time to explain in detail what they meant during the interviews in ways that may have been less extensive if talking to someone who is presumed to already know Guernsey well; this benefited both the researcher’s familiarity with the island and the richness of the data that was collected.

Analytic procedure

All interviews were recorded and transcribed, and uploaded into the qualitative analysis software NVivo (v10), along with the 200 photographs. As the follow-up interviews are vital to understand participants’ interpretations of their photographs (Rose, 2007), the verbal and visual data were analysed together in a thematic analysis (Braun & Clarke, 2006; Joffe, 2011b). During this analysis, relevant material was marked under various (sub-)codes, which emerged and evolved as the researcher went through all the data. The resulting set of relevant codes (or coding scheme) is represented in the themes that are discussed in the results section. Both verbal data and photographs were coded within the same coding scheme; the photographs were only coded under certain codes when interpretation of the accompanying verbal data suggested the photograph represented a particular theme. By interpreting the photographs along with the verbal interview data, the photographs were kept within their context, in order to ensure the researcher's interpretation of the data reflected participants' narratives. In the following results sections, due to limited space, some themes will be developed in more depth than others. For this reason, the depth and richness of some participant quotation are not always made full use of, in order for the chapter to focus on developing a limited number of main themes.

4.3 Representations of place

Throughout the participant photographs and interviews Guernsey and its coast and sea were represented in many different, typically very positive ways. In response to the opening question on how they would describe Guernsey, participants described Guernsey in very positive terms, as a *"wonderful"*, *"lovely"* or *"nice place to live"* (Nicole, Geoff, Paul, Hank), or "*paradise"* (Linda), while several participants stated that they "*love Guernsey"* (Julie, Michelle). The island was also represented as very safe and *"a good place to bring up children"* (Michelle, Walt, Mike). Attempts to define the essence of Guernsey were often explicitly relational, through comparison with 'other' places, such as London, the UK, France, or Jersey, which often positioned Guernsey as unique:

> **I (Interviewer):** ***"So how would you describe Guernsey to me?"***
> Michelle: *"Erm, better than Jersey [laughs] (…) I love Guernsey. I love the sea. I love being able to look out and see for miles. When I lived in Oxford I found that really hard that I couldn't just look out. And people say don't you get claustrophobic, living on an island? I found it much worse in a city. And I craved going down to the coast to just look and see. I think it's having the sea around you, and Guernsey feels like a safe community."*

Here, reference to both Jersey and personal history in a place in the UK (Oxford) is used to argue Guernsey is a unique place in the world. This importance of personal histories in defining place relations returns in some participant photographs and quotes below (e.g. Photo 4), and reaffirms the value of treating people-place as dynamic over time (see Bailey, 2015). The island rivalry suggested by describing Guernsey as 'better than Jersey' was a wider theme that will return at several points in this thesis (notably section 5.5).A representation of Guernsey as a unique place in the world was a key theme that returns at several places throughout this section. Such notions of uniqueness resonate with one of the principles of place identity: distinctiveness, which refers to the idea that living in a particular 'kind of place', which is distinct from other places, may contribute to a person's identity (Twigger-Ross & Uzzell, 1996). This distinctly relational argument has been suggested to be associated with local support in the case of a tidal energy convertor which was found to enhance the distinctiveness of the nearby village, by putting it 'on the map worldwide' (Devine-Wright, 2011b).

Nevertheless, responses to this opening question also highlighted some negatives, including the notion that Guernsey is crowded and has too many cars, perceptions of increasing wealth inequality and Guernsey's government being *"corrupt"* (Dean), overly focused on the short-term and ineffective:

> Michelle: *"I get frustrated with the politics. I think sometimes there's too much going in circles, they waste money, they waste time, and don't keep their eye on the bigger picture. Instead of just backbiting and pointscoring. Nobody takes brave decisions, everyone's worried about the next election."*

> Walt: *"I don't think it's a very well run island. I think the people that make the decisions are sadly not necessarily capable of making the decisions. So I don't think that the right decisions get taken."*

Such issues of (mis)trust are well-known reasons for opposition (e.g. Barry et al., 2008), and suggest that local (energy) projects instigated by Guernsey's government may not be widely supported. This issue will return in chapter 5, where local ownership (including other forms of local ownership like ownership by the local electricity company or community ownership) is discussed in more detail.

Photographs were taken across many different places on the Guernsey coast, as well as offshore and on Herm and Sark, rather than being concentrated in a single part of the island (see Figure 4.2), thus representing virtually all parts of the coast as meaningful in one way or another. Nevertheless, there is a visible concentration of photographs at the southeast and (north)west coasts, while fewer photos were taken in the northeast and the eastern half of the south coast, suggesting these latter two places are less central to local residents' representations of what is valued about Guernsey's coast and sea.

Figure 4.2. Approximate locations of participant photographs (Note: for some photographs the location was not known – these were excluded from this map.)

Place meanings represented by the photographs

The photos were used to represent multiple dimensions of the ways in which places become meaningful – identified previously to include physical, social and experiential aspects of places (see Manzo & Devine-Wright, 2014; Stedman et al., 2004). The social dimension of place as meaningful was present across many photographs and the associated stories, where places were represented as becoming meaningful through shared social experiences, and being part of everyday family life or family traditions (Photo 1):

Figure 4.3 - Photo 1. Walt: “*This is a bench up at Pleinmont, and this is Christmas Day, this is where we go to on Christmas Day, and it doesn’t matter what the weather is. And one of the things that, our children love being outside and being up on the cliffs and so on. You know you always get the kind of complaint about going for a walk or whatever, but as soon as we get outside they just come alive. And you could argue that is something to do with the coast but I think, because of where we live, we’ve just got a real access to the outdoors and the coast and so on. All our best pictures are kind of us outside and stuff.”*

Photo 1 is thus not only used to represent the social value of coastal places, but also to frame Guernsey as offering very good access to coastal, outdoor activities. This representations of the Guernsey coast and sea as valued for offering access to a range of leisure activities was also apparent throughout many others’ stories and photographs (e.g. Photos 3, 6, 8 & 9), which captured many different leisure activities, including walking, rock climbing, swimming, surfing, boating and many more. This argument was one of the ways in which participants constructed a narrative of Guernsey as a unique place in the world, through contrasting Guernsey with other places that are portrayed as fundamentally different, for instance as an outdoor-focused place that is ‘back to basics’, contrasting with more materialistic places like London:

Lisa: "*[living in Guernsey] really kind of gives you perspective on life, because it's so easy, particularly living in London to get caught up in things and possessions and what other people are doing, and actually in Guernsey, particularly when you're out there and enjoying the weather and the scenery and all of the elements, it strips everything back to being back to basics, back to nature, it's a really good place to be."*

Other photographs represented the experiential dimension of the ways in which places can become meaningful (see Manzo, 2005) by referencing particular significant life events, such as childhood memories, where participants met their partner, or where they had their first experience of the sea – again reinforcing the importance of opening up historical dimensions of people-place relations (Bailey, 2015; Photo 2).

Figure 4.4 - Photo 2. Michelle: *"This is the Venus Pool in Lihou island (…) this is on the other side of the causeway at Lihou, there's a tiny little pond that has been cemented in at one end, I think it's about two meters long. That's where my dad taught me to swim. And at the time it felt like this one was really huge, but I remember he just had a hand under my stomach. And that was kind of my first experience of the sea, the beach."*

Other photographs instead highlighted physical dimensions of Guernsey's coast and sea; for instance almost all participants represented it as possessing a unique natural beauty, by describing the coast as beautiful, picturesque, scenic, rugged and unspoilt (Photos 3, 4, 10) – descriptions previously found across other coastal settings (e.g. Wales; Devine-Wright & Howes, 2010).

Figure 4.5 - Photo 3. Emily: *"This is Icart, overlooking Petit Port and Moulin Huet to St Martin's. I just love this place, because it's very scenic, really coastal. And I do a lot of kayaking and coasteering on the South coast. It's got lots of caves and things like that so it's a really interesting place. A beautiful place to be."*

Photo 3 illustrates that while places may be considered beautiful, they are often also meaningful in other ways, for instance as spaces where participants are intimately familiar with in terms of the opportunities offered for leisure activities. This is illustrative of how many images represented in terms of beauty embody much more than merely a judgement on a place's aesthetics (see also Figure 4.7). That place meanings other than visual beauty are important in shaping responses to ORE projects in such places is a key point developed further throughout the next sections.

Some parts of Guernsey's coast were more widely represented as places of natural beauty than others – which is illustrated in Figure 4.6 (see next page), which maps where photographs that represented particular themes (including natural beauty) were taken by participants. When compared with the map showing the location of all photographs (Figure 4.2 on p.130), this suggests that the south-eastern corner is a place that is relatively commonly seen as a place of natural beauty, while other popular parts (like the west coast) are less so. The implications of this spatial variation in place-related meanings for the acceptability of ORE project across these different parts of Guernsey is discussed in section 4.5.

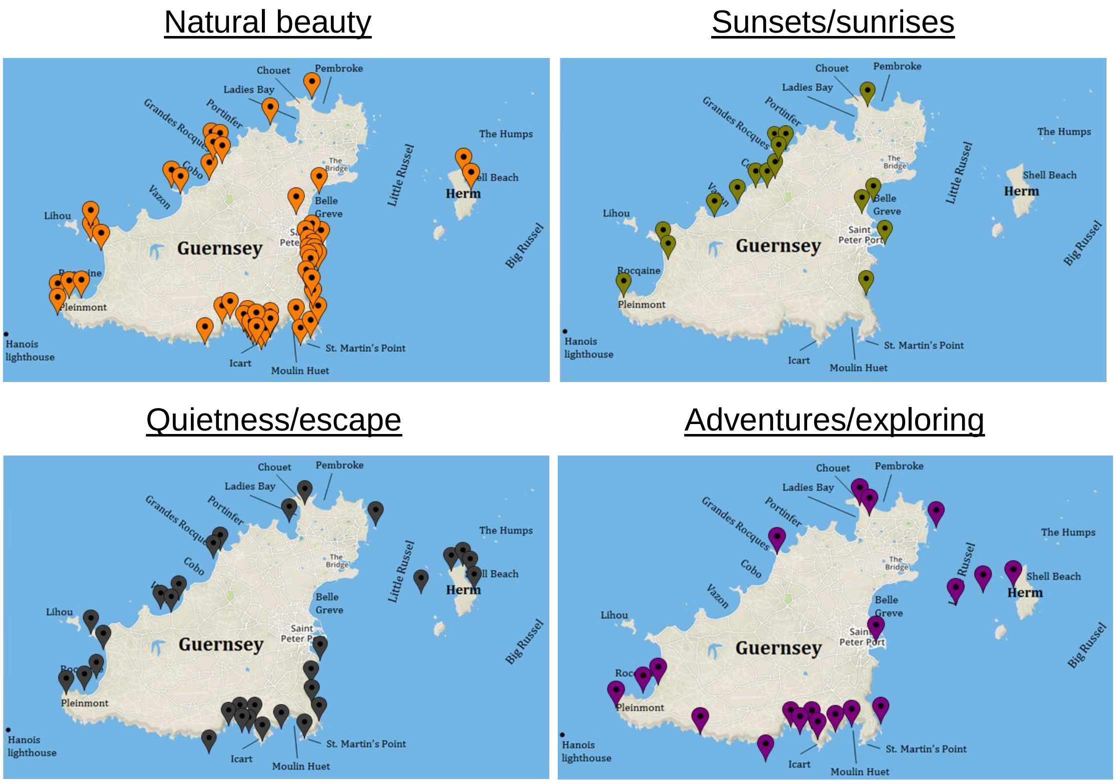


Figure 4.6. Maps showing the locations where photographs representing four particular themes were taken.

One element that was a common part of representations of Guernsey as possessing a unique natural beauty were its sunrises and sunsets, which were included in 21 photographs overall (10 sunrises and 11 sunsets), such as Photo 4.

Figure 4.7 - Photo 4. Hank: *"That, to me, says 'Guernsey coast'. It just is. (…) I don't think anyone would fail to recognise where it was, particularly. And it's, you know, we have these beautiful sunrises in Guernsey, it's not every day, but the right time you catch one, it's absolutely stunning, it's unlike anywhere else in the world, we're so fortunate, we get the sunrise, we get the sunset – it goes across the island, we got them both. There's lovely natural scenery and I think the architecture of old forts and things add to it. And again that's just our coast, it's got our history in it, it's got the modern, it's got the golf course driving range – although you can't particularly tell it is – it's just a classic Guernsey scene. I just think it's beautiful."*

However, this quotation is not just about sunsets and sunrises, as the beauty of this scene is also described to lie in its recognisability as 'classic Guernsey' and the fact that it shows the history of Guernsey. Such notions of historical continuity being important to the ways in which people connect with places (Twigger-Ross & Uzzel, 1996) has previously been suggested to contribute to support for local projects if those projects are seen as contributing to such sentiments (Devine-Wright, 2013b).

Although the sunrise and sunsets are clearly important in a visual sense (as 'beautiful'), they were also employed as another element within participants' narratives of Guernsey as a unique place (highlighting its distinctiveness; Twigger-Ross & Uzzell, 1996). For instance, in Photo 4 Guernsey sunrises were said to be 'unlike anywhere else in the world', a point that was also made to represent Guernsey sunsets as uniquely beautiful:

> Andy: *"One of the things I first noticed when I came to Guernsey is there's a clarity about the light here that is genuine, I don't think it's a touristy promotion thing. And that's reflected in some of the amazing sunsets we have here."*

> Amy: "*Particularly on the west coast, the sunsets are just as good as they are in the Caribbean or in Thailand or anywhere."*

This second quote furthermore illustrates how particular places on the Guernsey west coast (especially Cobo Bay, but also Grandes Rocques and Pleinmont; see Figure 3.1 on p.98 for a Guernsey map) were particularly associated with sunsets. This is also confirmed by the map of photographs representing sunsets and sunrises in Figure 4.6 (p.134) – the implications of this for local ORE development are discussed in section 4.5. Guernsey's sunrises and sunsets were thus represented as a very important part of life in Guernsey. In the words of one participant, the spaces where the sunsets take place are even 'sacred' to Guernsey people:

> Charles: "*I know at school (…) when you get the kids to draw you a landscape of Guernsey, or paint, or photograph, you always get sunsets. And then you think of the Hanois lighthouse, all the way to Cobo, Vazon, all the beaches. And so, I think in the local psyche, I assume I believe that setting is probably the heart and soul for a Guernsey person. (…)There's a reason why a child would paint you a sunset, if you take a child from Switzerland, it would probably paint you a mountain, so to speak, that's what they experience. But for a Guern, I'm coming to the realisation that, you know, that space where the sunset takes place is very sacred to them."*

Here, an appreciation of Guernsey's sunsets and sunrises is talked about in intergenerational terms, suggesting it's not just the (potentially visually-oriented) participants in this study who appreciate the sunsets, but that it is a more widely-shared aspect of Guernsey culture and identity. Using terms likening this affection for sunsets/sunrises to religion to strengthen this argument ('sacred' spaces), it is implied that anything that alters such a locally treasured part of Guernsey life – like ORE projects – may be unlikely to be supported.

Also, the way in which these parts of the west coast (Hanois, Vazon, Cobo) were associated with enjoying Guernsey's sunsets illustrates that many of the values ascribed to Guernsey's coastal environment were often talked about in reference to specific places or parts of the coast.

A further set of photographs were used to illustrate how coastal and marine environments were treasured for their wildlife and ecosystems. For instance, one participant said all three of his favourite places in Guernsey were underwater; all three were favourite (scuba) diving spots valued for their wildlife. This participant did not have any photos of these places, but instead provided maps on which the specific places that were valued for their marine wildlife were circled (Photo 5):

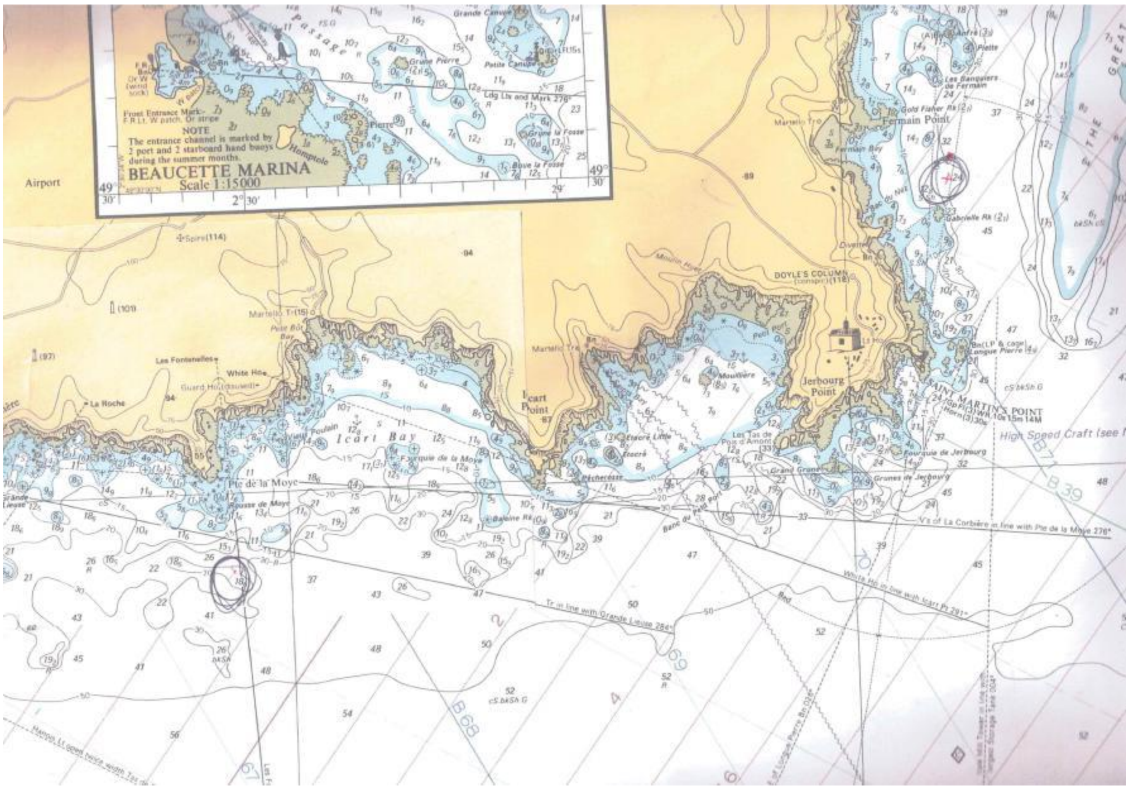


Figure 4.8 - Photo 5. Gus: *"Here is a place we call the Elusive Reef. Because it's all sand and mud, and before we had GPS navigation, when you're using landmarks, it was always difficult to find. Reef in the middle of nowhere, but when you do find it and dive there, it was always full of crayfish, and there were scallops around and lobsters, and dover soles, and flatfish, always something interesting. Because the rock is in the middle of nowhere, and with the tide, the fish always like to shelter out there, and it's always something interesting there (…) So that is one of my favourite places."*

Photo 5 makes clear that Guernsey's coast and sea is meaningful in different ways than merely in a visual sense, as a scenic backdrop to land-based activities. Instead, specific offshore places, both on and under the surface, were represented by participants as valued for various reasons. For instance, specific offshore places were described as favourite spots for fishing trips with friends, for seeing seals and dolphins, for kayaking, as well as offering particular opportunities for sailing and photography:

> Mark: "*I mean, because of the tidal stream that rips through here, the whole place is interesting. You get up around here and here [draws on map], and here, we get huge overfalls [where] there's a lot of underwater rocks and you get these massive upwellings, which just cause huge currents to come up and through. And some places, you know, Alderney has got some of the best ones, you end up with what we call a standing wave, basically a seven or eight foot wave which is just permanently there because of the tide. So you just fall through the top of them, very dramatic from a photo perspective.*"

As such, specific parts of the sea were portrayed as meaningful in ways that go beyond their value as a visually valued natural space. Participants' detailed knowledge of where specific wildlife (e.g. seals around the Humps, puffins around Herm's east coast, dolphins in parts of the Big Russel, mackerel off St. Martin's Point, migratory birds on the west coast) and particular marine phenomena (such as currents, overfalls and standing waves) can be found suggests that offshore 'places' are not just meaningful for key marine stakeholders such as fishers (Alexander et al., 2012), but also for the wider community. It also raises the potential contribution made by such local knowledge to the planning of local energy scheme, and the need to critically consider the 'expert'-'lay' distinction (Wynne, 1996). Also, such 'offshore' ways in which coastal or marine places derive their meaning contrasts with the meanings highlighted in previous studies of ORE development (e.g. Devine-Wright & Howes, 2010; Ladenburg & Lutzeyer, 2012), which mainly revolved around the (visual) ways in which ORE projects may affect coastal places. The variety of visual and non-visual offshore meanings represented by the photographs in this study suggests a complete understanding of the relevant place meanings and attachments needs to move beyond such a land-based geography.

A further prominent representation of Guernsey's coast and sea framed this space as highly valued for the quietness and escape it offered from the busyness of the land. These values are key to restorative environments and experiences (see Hartig, Mang & Evans, 1991; Kaplan, 1995) and have been found in previous studies of public responses to local developments (Collins & Kearns, 2010). The coast was represented relationally, in immediate contrast to the land, as offering a chance to "*get away from the fact that there are more cars here per person than almost anywhere else in the world*" (Edward), providing an open, empty space that offers relaxation and tranquillity (Photo 6):

Figure 4.9 - Photo 6. Jesse: "*[this photo illustrates] kind of like getting away. I imagine over here [on the land] everyone is kind of stuck over here, this is just kind of like freedom to me, I think. You know, there's nothing here, there's just emptiness, you can just do whatever you want. (…) It just makes me think of relaxing really. Although I think it was freezing cold and you don't really notice it you know. [this photo illustrates] being able to get away from everything else. On such a small island, to have all that open space to yourself.*"

Figure 4.6 (p.134) shows that most photographs used to illustrate the quietness and escape offered by the coast were taken in the southeast and around Herm, suggesting this quality of the coast is mostly found in these areas. Photo 6 also frames having 'all that open space to yourself' as even more special because Guernsey is 'such a small island'. This was a very common way of talking about

Guernsey, usually through referencing its physical size (*"we are only a small island"* - Emily) as well as suggesting Guernsey is insignificant, invoking imagery of the island as just one of many 'rocks' (*"we are a rock surrounded by a million rocks"* - Walt). Such representations were used as a frame in talking about ORE development in several ways (see section 4.5).

Not only was Guernsey portrayed as 'crowded' (see above), also its physical appearance, characterised by ribbon development and high stone walls, was said to add to a sense of claustrophobia, which the coast offered escape from (Photo 7), echoing previous findings on how the sea is valued for its openness (Devine-Wright & Howes, 2010; Gee, 2010):

Figure 4.10 - Photo 7. Rebecca: *"When we first moved here, the island felt quite closed in, with the tall granite walls and coming from the Lake District, you know, where there are big mountains, fells, and I lived right next to the lake, so everything was always really open. So it did feel quite claustrophobic, and so I'd always go to Grandes Rocques and just go walk on the beach and sit, around by the fort, and it just gives you that sense of openness that I think is missing from a lot of the island."*

However, the quote about Photo 7 is not just an objective description of the island ('closed in'), but lends further meaning to the photograph by referencing personal life history (having lived elsewhere). Indeed, it suggests that Grandes Rocques may be associated with altogether different meanings for those who have lived in Guernsey all their lives, and are used to such 'claustrophobic' spaces. This mirrors arguments used previously to highlight how place meanings are shaped by personal experiences or 'life-place trajectories' (Bailey, 2015; Manzo, 2005).

A further argument that contributed to the representation of Guernsey as a unique place positioned the historical buildings found on Guernsey's coast as a central part of Guernsey's coast because of the distinctly local story they tell. Buildings such as forts and towers were thus used to contribute to a discourse of local uniqueness, for instance through describing Guernsey as 'the only occupied British territory' during the Second World War (Photo 8).

Figure 4.11 - Photo 8. Hank: "*So many of these German influences on our coast. And that, to me is a big, a huge part of our heritage. We were the only occupied British territory for five years, and my grandparents lived through the war, had children during the war – I've been lucky to get quite a bit of information out of them about it. (…) I think, I heard visitors say to me – I used to work in all the tourist attractions when I was younger – and they used to say to me: 'why don't you knock them down?'. No, you know, it's a reminder of what*

we went through and in their own way they're quite beautiful I think. Now they're no longer used what they were used for but again, it's a part follow-on from the previous photo, there's more adventures to be had in this one, you can still get in quite a few of them."

Photo 8 not only represents an element of Guernsey's distinctiveness, it is also positioned as symbolic of the participant's historical familial links to the island, as something that connects him with past generations. This reflects how places may represent a sense of 'continuity over time' (Devine-Wright, 2009) and may thus contribute to a sense of identity (Twigger-Ross & Uzzell, 1996). Another way in which such continuity with the past manifested itself throughout the interviews was through common reference to last names typical for Guernsey (*"our surname is a very common Guernsey name, so that's going back years"* – Lauren), providing a sense of historical connectedness to Guernsey:

> Hank: *"Our family name, my cousin researched it all. In a nutshell, how many hundreds of years ago, there was a guy who murdered this corporal, in the army in France. And he was sentenced to the galleys, a ship, for the rest of his life. That was shipwrecked off the west coast, and he was the only survivor. And he swam ashore and married a Guernsey girl. And that's how [my family] ended up [in Guernsey]."*

Photo 8, and the way it suggests historic buildings may be considered beautiful ('in their own way they're quite beautiful'*)* contrasts with the discourse of Guernsey as a place of natural beauty, which was widely portrayed through a dehumanised version of the coast and sea (i.e. images such as Photo 3 and Photo 10 typically included no human elements, like buildings, roads or boats). So, elements that provide a sense of continuity with the past – despite being so visible – were not represented as 'out of place' in the coastal environment, suggesting the relevance of continuity over time within place identity processes (Twigger-Ross & Uzzell, 1996).

Photo 8 was also one of many photographs that represented Guernsey's coast and sea as a place for *"adventures"*; as an *"interesting place"* (Photo 3) that offers opportunities for exploring new places and new experiences (e.g. finding and exploring new beaches, caves, intertidal zones; see Photo 10). Other participants' stories similarly positioned the opportunities offered for (re)discovering new or old places as a key feature of Guernsey's coast and sea, through stories of challenges some participants had set themselves to rediscover Guernsey, for instance by swimming at 50 different local beaches in 50 days, 'scrambling' around the entire island in the intertidal zone, and walking around 50 different local islands and islets in a given year. Figure 4.6 (p.134) – showing where photographs representing this theme were taken – suggests that in particular the south coast is an area that is used for exploring new places and having 'adventures'.

Such narratives to some extent resemble what has been labelled as an 'active' variety of place attachment (Lewicka, 2011; see section 2.2.2) – which is measured using questions such as 'From time-to-time I discover my city anew' and 'I like to wander around my city and discover new places'. Therefore, these participant stories suggest their attachment to Guernsey may be of a more 'active' variety, as opposed to an unself-conscious 'traditional' attachment, or non-attachment (Bailey, 2015; Lewicka, 2011). In this study, those with such an active interest in the coast and sea were typically more supportive towards ORE than those with a less active interest (see quotes below; this will be returned to in study 3).

Such a representation of the coastal environment as a 'place' to be used and explored contrasted with a representation of this environment as a 'landscape', which is predominantly valued in a visual sense. The difference between such terms is fundamental: according to Cresswell (2004), 'landscapes' are inherently visual, they are 'looked at', which contrasts strongly with 'places' which are *"very much things to be inside of"* (p.10). As such, the discourse of Guernsey's coast and sea as a 'place' that is used, changeable and meaningful, contrasts with the visually-oriented narrative of Guernsey's coast and sea as a beautiful 'landscape' to admire. Examples of the latter discourse can be found in representations of the Guernsey coast and sea as *"tranquil"* (see Photo 10), offering beautiful vistas, sunsets and an open horizon, as evident in photographs which portray the sea as vast, empty spaces. By contrast, the converse discourse of the coast and sea as 'place' represented this space as offering opportunities for use (e.g. exploration), by stating that 'everybody's using the sea' or talking about 'utilising' the environment by people:

> Mark: "*the fishermen – it's a commercial harbour – string their lines out, I mean it could be 100, 150 meters, and when we come [sailing] back in sometimes, you know, you may end up snagging their fishing line. (…) But it's a commercial harbour at the end of the day and (…) we try and keep out of the way, there's an understanding that everybody's using the sea, everybody's got to get on."*

> Lauren: *"I think people should have a right to be able to enjoy the landscape, and I think there needs to be a balance between ecology and protection of the environment, but also enabling an environment to be utilised for the use of people. Like there's no point in something just sitting there without someone enjoying it."*

This emphasis on 'utilising' the coast and sea 'for the use of people' also reflects a 'utilisation' perspective towards the environment – which has been identified by psychologists as one of two higher-order dimensions underlying ecological values – contrasting with a perspective that emphasises 'preservation' (Milfont & Duckitt, 2004; Wiseman & Bogner, 2003). Similar contrasting visions have previously been found in relation to the rural; as a utilitarian space of production versus the rural as a 'natural' space to be preserved (Anderson et al., 2013; Mulvaney et al., 2013; Woods, 2003). Such contrasting ways of representing the coast and sea will be returned to in section 4.5 to illustrate how such ideas were drawn upon to position ORE development as 'in place' or 'out of place'.

One final example of this discourse of the coast and sea as a 'resource' to be utilised was illustrated by Photo 9, which depicts the Guernsey tradition of *ormering* – foraging the intertidal zone for an endemic species of edible sea snail.

Figure 4.12 - Photo 9. Lauren: "*This is my two friends with me down at Lihou, around the shale bank here. And this is on one of the year's ormering tides, which is one of the really low tides, going ormering. And I just find it interesting that you don't normally see this sort of long kelp and everything dried out. And we were down there trying to find ormers for the year, and found I think no ormers but we found a dogfish that had been washed up, which was really interesting, it's nice to see all the different bits and bobs.*"

Photo 9 also illustrates one of the many ways in which the tides were framed as being a big part of Guernsey life, in this case by depicting an activity that is only possible during relatively rare very low tides ('ormering tides'). This close interconnection between local life and the tides was something that permeated many participant photographs and narratives. These often spoke of instances where people had personally experienced the power of the local tides, from swimming and getting caught in the tidal current to sailing in the Big Russel, or talked about their affective connection with the local tides (Emily: *"it's high tide at the moment, which is my favourite state of tide"*). Others talked about the tidal causeway that connects to Lihou Island, and an annual beach event which needs to be planned around the tides entirely because the beach disappears at high tide (Rocqaine Regatta). Others shared stories which represented a familiarity with the tides as a distinctly local kind of knowledge:

> Mark: "*We had people across from work a couple of years ago and went to one of the restaurants, and when we went in, it was high tide so if you looked from the restaurant all the boats were just there, and the guy was facing this way, and around three hours later he turned around and: 'everything's gone!',*

> *'bloody hell!'. Everything had just disappeared. 'Oh where did they all go?!'. I mean for visitors it's quite nice, I mean it's pretty unique to the island, just how big the tides are, people love to see it."*

Here, a familiarity with the tides is talked about as something that defines 'insiders' or 'locals' (although not using those terms specifically), as opposed to 'outsiders', who do not share this understanding of something 'typically Guernsey'. The implication – which returns at various points throughout the thesis – is that if the tides have such a special place in shaping local identity, then making use of such a locally distinctive resource may fit well with such cultural sentiments, potentially making tidal energy projects well-supported.

A final important theme in how participants represented Guernsey's coast and sea focused on the differences between different places; one place in particular was portrayed negatively within this discourse: 'the north' (referring to the St Sampson and Vale parishes[5]). Frequently, the characteristics ascribed to Guernsey and its coast were noted to be absent in the north – through such frames the north was positioned by participants (who did not live in the north) as a fundamentally different 'other'. Participants often referred to as 'the industrial north', which was described as *"very built up"* (Marie), *"industrial"* (Emily), *"urbanised"* (Andy), *"horrible"* (Emily), *"bandit country"* (Dean), *"not somewhere I'd want to live*" (Edward) and *"ghastly"* (Edward). As such, both physical and social characteristics were invoked to create a notion of 'the north' as the least desirable place on the island, a symbolic 'other' (Batel & Devine-Wright, 2015b) – something returned to in section 4.5.2 and study 2 and 3. The key themes that emerged around participants' ways of valuing Guernsey's coast and sea are summarised in Table 4.3.

---

[5] Although these parishes are largely built-up, there are no high-rise buildings and there is very little industrial activity within these parishes, aside from the local power station (at the Bridge – see map in chapter 3) and landfill site (at Chouet). Nevertheless, to the visitor, these parishes may seem largely quiet and pleasant areas of the island with a mostly undeveloped coastline – hardly an 'industrial' area.

❖ Spending time with family and friends (e.g. photos 1, 9)
❖ Opportunities for leisure activities (e.g. photos 1, 3, 6, 9)
❖ Local distinctiveness (e.g. photos 4, 8, 9)
❖ Significant life events (e.g. photos 2, 5)
❖ Natural beauty (e.g. photos 3, 10)
❖ Sunrises and sunsets (e.g. photo 4)
❖ Wildlife (e.g. photo 5)
❖ Quietness, openness and escape (e.g. photos 6, 7)
❖ Local history (e.g. photos 4, 8)
❖ Utilising the coast (e.g. photos 8, 9)
❖ Tides as a part of everyday Guernsey life (e.g. photo 9)

Table 4.3 Key themes in participant representations of Guernsey's coast and sea

In summary, Guernsey and its coast and sea were represented by participants as meaningful in a wide variety of ways. These are both visual and non-visual, and in many ways represented Guernsey and its coastal environment relationally by emphasising its distinctiveness (Twigger-Ross & Uzzell, 1996) – a theme that emerged throughout this research. What was valued about Guernsey coastal environment was not uniform across its entire coast; instead, different parts of the coast were valued in different ways (as summarised in Figure 4.6 on p.134), which has important implications for the locations that may be acceptable as sites for ORE development – as discussed in section 4.5 and study 2 and 3. Moreover, narratives of meanings were constructed at many different scales. Previous place-based studies were noted in chapter 2 and in section 4.1 to have usually focused on one or two specific places at a single scale (usually settlements/towns) – often without critically reflecting on which place and scale may be the most relevant to consider place meanings or attachment, despite the importance and complexity of such a decision (Woods, 2003). In this study, places at multiple, different scales were construed as meaningful by local residents' photographs and stories. This diversity is illustrated by participants ascribing meaning to anywhere from Guernsey as a whole, to specific bays or headlands (Photos 3 and 7) and even specific rockpools (Photo 2) and benches (Photo 1). A geographical unit often conceptualised as a centre of meaning in previous studies (the town or village of residence; e.g. Devine-Wright & Howes, 2010) was used very rarely to structure arguments about meanings of Guernsey or its coast and sea. Instead, coasts (e.g. the west coast) and bays (e.g. Cobo Bay) were commonly used geographical units to structure narratives of local meaning. For instance, the 'west coast' as a place was commonly represented as a sociable place for leisure and sunsets, while the 'south coast' was typically portrayed as a place for quietness and exploration, and 'the north' as a less-loved, industrial place that is fundamentally different from the rest of the island. Such geographical units would not be immediately apparent to 'outsiders' such as the researcher, and thus confirms the value of critically opening up such locally-relevant places and scales through a bottom-up and participatory research design. Also, Guernsey as a whole was often discursively represented as participants' 'place in the world': when using the words 'we' and 'our', participants almost always referred to Guernsey, rather than their neighbourhood, town, the Channel Islands, Britain or any other 'place'. This suggests that subsequent study of place meanings and attachments in Guernsey should focus on Guernsey as a whole, as well as specific parts of the coast, rather than on specific towns or parishes as the appropriate scale at which meanings become relevant.

Finally, the different places that were represented as meaningful were often not near participants' homes or towns – instead they covered the entire island (see Figure 4.2 on p.130). This suggests that a NIMBY-like focus on individuals' homes or home towns as the main meaningful 'place' that people may feel protective about is inappropriate, at least in this context. Instead, participants talked about many meaningful places at various distances from their homes, as well as about Guernsey as a whole, again suggesting physical proximity to energy developments is unlikely to be an important explanation of public responses to ORE development (see section 2.2.1).

4.4 Representations of energy technologies

This section discusses how participants understood and represented the current electricity system (4.4.1) and ORE technologies (4.4.2). Section 4.5 will then consider how representations of place (4.3) and energy technology (4.4) are combined to symbolically position technologies as ‘in place’ or ‘out of place’ in Guernsey.

4.4.1 Representations of the current electricity system

When asked where electricity on the island comes from, almost all participants accurately identified the two main electricity ‘sources’: the local power station in St. Sampson and the cable link to France. However, Guernsey’s reliance on cable imports was commonly overestimated, as local generation was often (incorrectly, see chapter 3) represented as merely a back-up to cable imports:

> Hank: *“As far as I’m aware, we’re buying this in now, from France. However, if that goes belly up at any point, they fire up the generators here now.”*

Almost all participants knew that the local power station used fossil fuels, often using references suggesting a visual familiarity with the power station’s chimneys *“pumping out all sorts of gunge”* (Amy):

> Lauren: *“when the power station is running at full power generation there is a brown cloud across the whole island, and it’s just hideous. Apparently it was under EU regulations and stuff but I don’t really care what regulations say, if I can see some brown smoke I’m not particularly interested in it being around.”*

Through such references Guernsey’s current electricity system was portrayed as *“polluting”* (Dean), *“dated”* (Walt) and *“old tech”* (Lisa). Fewer, but still a majority of participants, correctly stated that the cable imported nuclear energy, while only some mentioned it also imports hydropower.

A further key structuring theme in talk about the current electricity system positioned this system as vulnerable, and framed this reliance on ‘others’ as a threat to Guernsey. This positioned Guernsey as a place that needs to become more independent, more self-sufficient, and thus less vulnerable by getting its 'own power'. Within this discourse, the current system was portrayed as *"hanging on by its fingernails"* (Daniel), and the cable link as an *"umbilical cord"* (Daniel) – an instance of objectification (Devine-Wright, 2009) that portrays Guernsey as a vulnerable and dependent entity reliant on the continual 'feeding' of electricity through the cable link. This importance placed on both 'autonomy and power' and 'security and stability' have been identified before as public values underlying public evaluation of whole energy system change (see section 2.6; Demski et al., 2015). This *"risky"* (Lauren) local situation of *"relying on the mainland continent"* (Lauren) was exemplified by referencing power cuts and increased energy prices:

> Marie*: "What I had only realised recently was – I thought the line came straight from France to Guernsey and on to Jersey, but I don't think that's the case, I think it goes to Jersey first, and then comes on to Guernsey. So there's two potential areas for a power cut. And this has happened in the past, so you know, if we could get our own power, I'd be delighted!"*

Discourses of (in)dependence and self-reliance were not only invoked when discussing Guernsey's energy system, but also permeated representations of place. Participants referred to a wide range of areas beyond the energy system to reinforce this representation, such as military defence (referring to the UK's abandoning of Guernsey in the Second World War), Guernsey's politically vulnerable position ("*Politically, Guernsey is on its own"* – Mike), law and education (arguing Guernsey uncritically copies UK policies and laws), and the island's reliance on food imports (referencing the recent closure of Guernsey's bakery):

> Michelle: "*I think that we're far too dependent on the outside world. Things like when the power cable goes, that's a big problem. You know suddenly we have to be getting the oil and then they say the boats that they use – we've had to buy two boats, especially to be able to transport the fuel. The more independence we have, the better. It's like losing our bakery, that to me is crazy that we can't produce enough bread. Or for the island, or that we don't store any food on the island, it's just it comes into the supermarkets now with no warehouse."*

In other words, the current electricity system was represented as not 'fitting' a place that already needs more independence and self-sufficiency. However, a converse narrative to this notion that *"it's always better to produce than import stuff"* (Tim) instead represented this dependence as being an inherent, inevitable part of being an island, which frames electricity imports as unproblematic:

> Edward: *"We are always reliant, we are reliant on everybody, this island couldn't exist without anybody else. The Channel Islands are 100% reliant on food from the UK, with a little bit coming from France. The fact that we're reliant on electricity from France, I have no problem with that."*

A third key representation of Guernsey's electricity system framed it as supplying overly expensive electricity. Although some disagreed by stating that *"Guernsey is not a cheap place to live, and electricity is just another part of it"* (Hank), others framed it as being due to Guernsey's electricity market lacking competition (there is only one, States-owned electricity company), which leaves consumers with no choice of suppliers:

> Julie: *"You know we get these phone calls all the time – because this is people's jobs on the mainland or wherever they are, saying that they can save us money on our gas and electricity, and I say to them 'no, you can't, this is Guernsey, our electricity comes from our power station, and our gas comes from Guernsey Gas'. We have no choice about that. We can't go the other companies, we can't choose a power company and save a fortune on our bills."*

In short, understandings of Guernsey's current electricity system vary, with the cable link and the local fossil fuel-operated power station familiar to most, but the imported hydropower largely less well-known. This system was represented through three dominant themes, positioning it as polluting and old-fashioned, vulnerable and contributing to Guernsey's dependence on 'others', and as providing expensive electricity – themes that relate to support for ORE in multiple ways (see section 4.5).

4.4.2 Representations of ORE technologies

After discussing the current electricity system, participants were introduced to the notion that Guernsey's seas may be used in the future for energy generation, and asked if they had heard of this at all. In response, participants commonly brought up offshore wind energy and tidal energy, while only a few participants spontaneously mentioned wave energy, suggesting local residents are not equally aware of all three technologies.

Overall, the concept of energy generation from the sea was represented as *"clean"* (Julie), *"green"* (Gary) and a *"high-tech solution"* (Lisa) that is *"better for the environment"* (Nicole) and *"helping the planet"* (Andy). However, the three individual ORE technologies were represented in very different ways. Representations of offshore wind energy tended to portray wind turbines as *"big"* (Photo 10) and *"obtrusive"* (Andy). For some this meant wind turbines were an *"eyesore"* (Charles) that does not fit Guernsey (see section 4.5), though others instead said they were beautiful. A second prominent theme in discourse around wind energy in Guernsey was that participants – unprompted – widely represented it as being unacceptable to the Guernsey community, regardless of whether they personally supported it or not:

> Rebecca: *"The incinerator for example, when that was going to be built, there was an absolute uproar, so many people on the island went out to protest against it, and I think the same thing would happen if we did get wind. But people aren't protesting now because they don't think it's actually going to happen. I don't think they feel like there's anything to protest against."*

> Frank: *"And I know there would be an enormous backlash of the visual impact. But it wouldn't bother me."*

Such a notion of local people objecting to place change, such as wind energy, was sometimes framed as a uniquely local trait (again highlighting Guernsey's distinctiveness; Twigger-Ross & Uzzell, 1996), portraying Guernsey residents as *"insular"* and *"narrow-minded"* (Julie), and 'stubborn donkeys' (a reference to a local nickname, see chapter 3):

> Lauren: "*Guernsey people don't like change, they're renowned stubborn donkeys"*

By contrast, expectations of public opposition were never expressed in relation to wave and tidal energy, while almost all participants expressed highly supportive personal views on wave and (especially) tidal energy (see section 4.5). Lay theorisations of wave and tidal energy - explored in more detail by asking whether participants had any particular image that springs to mind when thinking about wave or tidal energy devices - were found to be very diverse, and many familiar ideas were drawn upon to ‘anchor’ (Devine-Wright, 2009; Wagner & Hayes, 2005) and concretise these technologies. Similarly, participants employed diverse vocabularies when referring to what the researcher consistently termed ‘wave energy’ and ‘tidal energy’ – for instance using terms like *“hydro-electric power”* (see below) or *“deep sea turbines”* (Lauren). This suggests a lack of consensual, normalised understanding of these novel concepts among Guernsey residents. Participants often expressed being unsure and lacking relevant knowledge when describing ORE, and did often not distinguish between tidal and wave energy:

> Marie: “*Is [wave energy] different from the barrage in La Rance in France? That’s a sort of hydro-electric power scheme isn’t it? I tend to lump them all together, so if there is a distinction between the two – and if the technology is significantly different - I’m not really aware of how they’re different. I lump it all together as ‘energy from the sea’.”*

This reference to the La Rance tidal barrage in France illustrates how participants commonly anchored wave and tidal energy by referencing barrages (another example is the Thames Barrier) when concretising such technologies. Others instead imagined wave energy to take the shape of ‘big, tubular buoys’, ‘large, metal pontoons’, ‘a floating sausage’ (possibly referencing the Pelamis wave energy device), or swimming pool filters:

> Jesse: “*I don’t know. I kind of imagine like – you know when you’re in a swimming pool and there’s the like pool where the water goes in at the end of the pool, the filter, I kind of imagine like a huge one of those, with waves kind of going into it, and that kind of hitting some turbines or something, I don’t know, and generating some power. That’s what I imagine, but I don’t know.”*

Similarly, representations of tidal energy were characterised by great diversity and uncertainty. Some descriptions were very similar to existing tidal energy devices (in this case the Open Hydro tidal technology), for instance describing “*a big jet engine, planted on the seabed”* (Mike). Others imagined tidal energy to be *“like a net”* (Michelle), like *“vents on the top of vans”*, or *“dustbins”*:

> Gary: “*If you can imagine something with an S-shape, you know, like you see these vents on the top of vans, which spin when the van is actually moving. Something along those lines, because you have no directional need to direct the turbine blade into any specific direction. Because it will rotate whatever direction the wind is coming from.”*

> Marie: *“Like a dustbin, but millions of times bigger, under the water, pierced with holes, and paddles on it that twirl round as the tide comes in and out.”*

In other words, anchoring processes of making such largely unfamiliar technologies more concrete drew on both marine (e.g. buoys, barrages, pontoons, nets) as well as non-marine ‘anchors’ (e.g. jet engines, dustbins), while only few analogies used energy-related metaphors (e.g. tidal barrages, jet engines). Also, the infrastructure was sometimes imaged as ‘big’ or ‘large’ – yet unlike for wind turbines (Photo 10), such representations were not associated with objection to wave or tidal energy (see section 4.5). Embedded within these imaginaries were particular presumptions about tidal and wave technology, such as whether such a device would sit on the surface, on the seabed, or somewhere in between:

> **I: *“So what does that [tidal energy] look like?”***
> Dean: *“I suppose like a tube, proportionally sort of that diameter, and that long with some propellers in it I suppose.”*
> **I: *“Yeah. And that would be on the seabed?”***
> Dean: *“It would be underwater, whether it would be on the seabed? There must be an optimum level, it probably wouldn’t be the seabed, but where the water is fastest, more reliable, steady and stuff.”*

> Charles: *“Why not go tidal? You know, it’s beneath the water, yeah you don’t see it and yet it’s there working for you. I mean it’s less obtrusive on the landscape anyway, it’s on the seabed.”*

Also, while some understood such technologies to be fixed (for instance to the seabed), others instead envisaged devices that would move with the tides, again illustrating the variety of ways in which tidal energy technology was imagined:

Andy: *"you hear periodically notions of tidal booms and things."*
I: "*What do you mean by that?"*
Andy: "*Devices that are put into the sea as semi-permanent devices that go up and down with the flow of the tide and create the energy in that shape or form."*

Similarly, wave energy devices were both imagined to be located offshore as well as on the coast. An understanding of wave energy as being located on the coast was often linked to notions that this is where the energy is available (Daniel: *"you only get the power when it throws against the shoreline"*) – an expectation that was often grounded in personal experiences of the power of the waves:

> Gary: "*I haven't heard a great deal [about wave energy], but certainly on the west coast of Guernsey, there was a little cave where the tide used to rush in, at low, medium tide even. And when the tide used to rush in, there was a little hole in the top of the cave, where it used to go [blows out air], no water, but you used to hear the air rushing out as the swell rushed in. And then it would suck back in, as the water went out. So if you can harness that sort of sucking and blowing, the vertical movement, you could actually harness energy from that."*

Like wave energy, tidal and offshore wind energy technologies were already associated with specific places around Guernsey within participants' theorisations, despite no such technology ever having been proposed in any specific location around Guernsey. For instance, imaginaries of tidal energy as a barrage were associated with a specific local bay (Belle Greve) which had been proposed previously to be filled in for urban development. Those imagining individual tidal stream devices instead often envisaged those to be located in areas with the strongest tidal currents (usually mentioning the Big Russel and Little Russel) which may have been a result of media coverage of the (proposed) use of such devices in Alderney's waters (also see chapter 5):

> Paul: "*You'd probably want it in the middle of the Russel, where the fastest streams are. (…) Big Russel, yeah, there's a lot of space there, I would have thought there's plenty of potential there"*

Such mentions of the Big and Little Russel were often framed in a personal, experiential familiarity with the tidal currents in this area, while places associated with the power of the waves were commonly mentioned when talking about wave energy – in particular beaches associated with surfing. This is illustrated by the quote below, which also illustrates the common discourse of place-technology fit (McLachlan, 2009), where support is conditional upon the fit between place and technology, or finding ‘the right place’ (discussed more in section 4.5):

> Hank: *“fine, go for it, if it’s in the right place – and I wouldn’t like to see it like where waves, I’m thinking waves at Portinfer and Vazon, the two surfing bays, where big waves come in, if anywhere.”*

Similarly, offshore wind energy was widely associated with Guernsey’s west coast, based on various assumptions around the need to avoid shipping lanes and the need for a shallow seabed:

> Daniel: “*I would imagine, for wind farms, I’ve always assumed they wouldn’t be in this area anyway [south coast], well you couldn’t really put them here [east coast] because of the shipping. But they would be in this area here I imagine, the west.”*

> Frank: “*I think that the obvious place obviously to put them would be offshore on the west coast, because it’s shallow.”*

Overall, discourse around tidal energy was distinct in that this technology was represented in very positive, optimistic terms. For instance, it was associated with the perceived presence of an enormous and globally unique local tidal energy resource (William: *“some of the strongest tides in the world”*). Section 4.5 discusses how this notion was used to argue tidal energy would fit Guernsey well. Another element of the positivity of tidal energy discourse was the notion that the tides, unlike the wind and the waves, are predictable:

> Frank: *“I think [tidal energy] has got the biggest potential really. Because it is totally predictable, the tides can be predicted for hundreds of years ahead, you know exactly when the tide is going to turn. It’s powerful because the currents are strong. And it’s invisible, which is a bonus for everybody else, and to me to some extent I suppose.”*

In addition, both tidal and wave energy technologies were widely represented as less impactful than offshore wind energy, environmentally but in particular visually (see various quotes throughout this section). Such a representation of tidal and wave energy as relatively impact-free was sometimes strengthened through a direct comparison with wind energy, suggesting energy technologies are considered relationally:

> Andy: "*I think the gut feeling is yes, because as I understand it, [wave energy devices] are less likely to impair our visual appreciation of the environment. (…). By harnessing the wave energy, I don't think you'll be impacting any another marine environment. So it kind of just makes sense to embrace wave energy. It's less obtrusive than wind energy as well."*

> Walt: *"To me it seems like [tidal energy devices] are massively lower in environmental impact, I may be completely wrong, but yeah."*

Although tidal and wave energy were sometimes represented as immature, expensive technologies, tidal energy in particular was also frequently portrayed as *"revenue-generating for the Bailiwick of Guernsey"* (Lisa), often by talking in very positive terms about the possibility of exporting tidal power:

> Frank: *"The opportunity to export [tidal] power down the cable is very inviting, isn't it? A really good idea. And the cable is there so it would have been nice if the alternative energy would come first and then the cable was there and we'd be selling it."*

Such a notion of tidal energy offering a potentially substantial income stream to Guernsey was represented by some within a local context of vulnerability – a perceived overreliance on the finance industry, and an expected need for income streams to fund climate change adaptation:

> Mark: "*It's going to be sea walls and rising sea levels which is going to have – not so much rising sea level, it's more the if there's an increased severity in the storms that come through, which is just going to beat the sea walls to death. You know only 65,000 people here, we haven't got an endless pit of cash to shore up all this stuff. Finance industry might not be around forever. I think the energy that's sitting around, especially on the tidal front, [unclear] generate excess power and export it.*"

In other words, tidal energy was represented very positively in terms of resource availability, reliability, the economic and export opportunity it offers, and its ostensibly impactless nature – aspects that were not usually equally positive in representations of offshore wind and wave energy. This optimism around tidal energy was also extended to the future, by expressing an expectation that the technology will become commercially available:

> Daniel: *"I figure if they can send 40 or 50 tonnes to the moon and going around the world, you're not telling me that the technology and materials aren't there to make a simple spinning wheel, which is all it is, to sit on the seabed [laughs]. We know it's a very difficult environment down there, it's taking a lot of wear and tear. But again, it can't be beyond the powers of man."*

Such expectations around the future of tidal energy were, by some, extended to renewable energy in general, which was portrayed as to some extent inevitable:

> Dean: *"renewable energy will come, whether most people want it or not."*

> Lauren: *"I can't envisage Guernsey – I'd be very surprised if in 50 years down the line Guernsey had not tapped into some of the natural energy resources that are available to it. I would be quite saddened actually if that was the case."*

Nevertheless, tidal and wave energy were also represented by some as potentially coming with several negative impacts, such as affecting local marine ecosystems, threatening fishers' livelihoods, affecting surfing conditions, and the perceived need for exclusion zones (as found before; e.g. Bailey et al., 2011; McLachlan, 2009).

In short, many different understandings of ORE technologies were expressed by participants, with varying implications for their expected physical manifestation, location, positive and negative impacts, and its future. Both tidal and wave energy technologies were made more concrete through reference to many more familiar or everyday objects through diverse anchoring processes (Devine-Wright, 2009). Tidal energy was especially represented in very positive terms, as highly acceptable locally, and as associated with many positive and few negative impacts. Discourse around wave energy was mostly characterised by uncertainty, while representations of offshore wind energy were characterised by negative expectations. This echoes earlier findings on tidal barrage technology in the UK, which suggested that different ORE technologies are often confused, that such novel technologies are made sense of in many different ways, and that no consensual understanding of the technology exists across different individuals and groups (Butler et al, 2011; SDC, 2007). As such, evaluations expressed about each of these novel technologies should be seen as tentative, conditional stances that may be highly changeable when details of such ORE developments become available. This observation casts doubts over the ways in which previous studies (e.g. DECC, 2015b) have measured public attitudes towards such technologies without opening up respondents' underlying presumptions about the technology. Instead, future studies of especially wave and tidal energy acceptability need to be careful in presuming public understanding of such technologies is uniformly expert-like – a point that has informed the design of subsequent studies in this thesis.

4.5 Deliberating local energy: The fit between representations of place and technology

This section brings together participant representations of place (4.3) and technology (4.4) by discussing the multiple ways in which notions of 'place-technology fit' were discursively constructed to position particular technologies as (un)acceptable in particular places. A key finding is that such 'fits' were constructed at multiple scales, namely by referencing Guernsey as a whole (understood in the thesis as the 'local' level; section 4.5.1), and by reference to specific places in Guernsey and its coast (the 'micro' level; relationally positioning several places in Guernsey in contrast to each other; section 4.5.2).

4.5.1 Place-technology fit at the scale of Guernsey

Multiple representations of ORE technologies (not) 'fitting' Guernsey were used, as summarised in Table 4.4 at the end of this section (p.167). One way offshore wind was represented as inappropriate to Guernsey was by representing wind turbines as 'big' and 'obtrusive' objects that would disrupt the visual, natural beauty and tranquillity of Guernsey's coast. Such framing of places as unused, empty 'landscapes' (rather than as dynamic 'places' or resources to utilise) has also been adopted frequently by local residents in other local energy projects (e.g. Devine-Wright & Howes, 2010; Woods, 2003). Such arguments around ‘green’ natural spaces being unsuitable for ‘green’ renewable energy developments has previously been described as ‘green on green’ conflicts (Warren et al., 2005). One participant used the photograph task to ‘prove’ this argument (Photo 10) – although the cruise ship also depicted in his image illustrates the subjectivity inherent in judgements of which ‘big things’ pose risks to tranquillity of naturalness.

Figure 4.13 - Photo 10. Daniel: “*Well this one, it’s are we looking out at Sark or at one of the Caribbean islands? [laughs] Again, just to prove, not to prove, but just to highlight how attractive just looking out to sea can be. So why rock the boat? This is my bit of green world, you know, it’s restful on the eye. (…) You would lose the tranquillity if you got big things there.”*

Arguments around the visual impact of wind turbines were often constructed relationally, by emphasising they would have an “*astronomic visual impact in Guernsey”* (Rebecca), suggesting their visual impact would be less intrusive elsewhere. As such, a representation of Guernsey as a unique place which offers natural beauty and tranquillity unavailable in other places like the UK or France (as outlined in section 4.3) was invoked to frame wind energy as ‘out of place’ (similar to representations of the Welsh resort town of Llandudno in Devine-Wright & Howes, 2010). In other words, offshore wind energy projects were represented as threatening Guernsey’s ‘distinctiveness’ (Twigger-Ross & Uzzell, 1996) and therefore represented as unacceptable:

> Hank: *"I think they could be a blot on the landscape, seascape, as well. And I think something that visible could hurt possibly the tourism side of things, where people are coming from the UK, France, wherever, see these bloody things, maybe don't like them, and they come to Guernsey to get away to this beautiful view, wind turbine there now."*

> Charles: *"I think for Guernsey it would be an eyesore, I mean there's so much harmony and so much peacefulness around"*

However, in a converse discourse, wind turbines were not considered eyesores but instead as 'beautiful' or 'interesting additions' as long as they were sited offshore – illustrating how the offshore was represented relationally relative to the land:

> Walt: *"Personally, on this island, I think they would look very, very out of place. In the sea, less so. I'm imagining you'd kind of see something, you know, that high out at sea or something like that. And in some respects I think it would be quite an interesting addition to the landscape."*

By contrast, participants did not represent tidal and wave energy as visually 'out of place' in Guernsey, partly because these technologies were expected to be underwater by many (see 4.4.2). Others presumed some elements of tidal and wave energy technology would be visible, but these visual elements were commonly represented as fitting in well visually with the existing constellation of similar objects already in the water (as found before in Devine-Wright, 2011b):

> Paul: *"Well, in my mind, most of the engineering going on, out of sight, under water, and just relatively small towers sticking out above the water. So again I think they're very acceptable, we've got plenty of those type of objects around us now in the sea anyway in terms of rocks, beacons, marking rocks and such like. So I would have thought that would be an extremely acceptable way of generating electricity."*

A second way in which tidal energy was represented as fitting Guernsey was by positioning Guernsey's tidal energy resource as both huge and unique – often by emphasising its perceived uniqueness on a global scale ("*we've got the biggest tidal range in the world, haven't we?"* – Julie). Personal experiential knowledge about the tides (which permeated many participant narratives about place; e.g. Photo 9) was commonly invoked when arguing the tides were an appropriate local energy source:

> Walt: "*To me on this island, having grown up on boats and surf and so, I'm just very aware of the tidal movement here. And four knot currents or whatever it gets up to up and down the Russel, I think a lot of Guernsey people would have been caught in that at some point on a boat, and again, it's a power you can really appreciate. To be able to harness that I think would just be phenomenal.*"

While this quote refers to tidal currents, others used Guernsey's tidal range to (optimistically[6]) quantify the magnitude of the local tidal resource at 'ten meters' or even '40 feet':

> Lauren: *"I don't know a huge amount about it to be honest, but I think if we're in the unique position that we have got ten meter tides, we should probably try and utilise it."*

> Marie: "*It seems to me, if the tide, you know if the moon can pull the tide up twice a day, 40 feet, there's a lot of unharnessed power there. And if that can be passed through some kind of turbine, and fed, out of sight, in a pipe, into the island, that would be great!"*

Evidently, this notion of Guernsey possessing a distinctive and strong local resource was often drawn upon to frame tidal energy as a technology befitting Guernsey; "*it just makes sense"* (Nicole). This contrasts strongly with representations of offshore wind as threatening Guernsey's local distinctiveness (and thus being opposed), and mirrors earlier suggestions that projects interpreted as enhancing local distinctiveness may be more widely supported locally (Devine-Wright, 2009; Devine-Wright, 2011b; Warren & McFadyen, 2010). One potential explanation for this may be that the idea of living in a distinctive place contributes to people's sense of identity (Twigger-Ross & Uzzell, 1996) – as such maintaining or strengthening such distinctiveness would be important to achieve locally supported place changes like local energy projects.

[6] In reality, Guernsey's tidal range varies between 3 and 10 meters (see Chapter 3)

Furthermore, the notion of Guernsey as 'a small place' (e.g. Photo 7) was used by some to suggest an important *condition for support* (Walker et al., 2010; Wolsink, 2007): that ORE projects would only be acceptable if done at a scale that fits Guernsey:

> Rebecca: *"We're a small island, I think there's already a lot of demands on our space, and I think if – I don't know, it would all depend on how much infrastructure was needed, and how much of an impact it would have on our island to create it here."*

> Nicole: *"I think as long as it's not a crazy amount everywhere, if it was in one place, then the good outweighs the negatives of how – whether it spoils the view or not."*

Guernsey's modest size was also used by some to argue that it is too small to afford ORE, and that there are already too many demands on Guernsey's limited space. Others instead argued that Guernsey is 'the perfect place to do it' *because* of its small size – explicitly contrasting Guernsey with other, bigger places:

> Tim: "*It wouldn't take too much for it to be pretty much self-reliant on those kind of technologies, whereas in England and the EU and other international settings, it takes so much for people to meet, like, estimates and forecasts, everyone's depressed – whereas Guernsey is small enough to do (…) I think it's one of the perfect places to do it."*

A key aspect of this argument is its suggestion that it is relatively straightforward for Guernsey to become energy self-sufficient by employing ORE technologies. Similar arguments were made by others to highlight an important condition for support: ORE project support in these arguments is constructed as contingent on the proportion of local electricity demand such a project would be able to meet; only if that proportion is sufficiently high the project would become acceptable:

> Daniel: *"If we were getting 75% or so of our electricity from there, I would swallow that, I'd say 'there we are, we've got to have it done'. But for 5% I can't see the point."*

> Lauren: "*But yeah I think as long as it was done in a way that could produce 100% of our energy, not a half-hearted job or anything like that"*

These arguments clearly link with representations of Guernsey as a place that needs to become more independent and reduce its vulnerability (see section 4.4.1). As such, ORE was not only represented as enhancing self-sufficiency, but also as improving the island's autonomy, resilience and security of supply – arguments that have been found before to be important in shaping public views both on a national (Demski et al., 2015) and a local level (Boyd & Paveglio, 2015):

> Mike: *"I believe the island should make every move to become more self-sufficient. And that [offshore renewable energy] takes us in that direction, it's another step in that direction"*

These were not the only arguments that were constructed in reference to the current electricity system: a representation of Guernsey's current electricity system as polluting and old-fashioned (see 4.4.1) was also adopted to frame ORE as green, clean and future-proof (see 4.4.2):

> Lisa: *"It's what you might call white, clean technology, it's a high tech solution, whereas burning things is quite old-school, quite old-tech"*

> Dean: *"I think that if it's sort of tidal power, surely that's never-ending, there's no pollution, and all this kind of stuff. Whereas fossil fuels, obviously they are going to run out, and just the petrol I'm putting in my car. And, you know, the emissions and pollution and stuff, it's not right."*

Optimistic representations of tidal energy as a problem-free, locally appropriate option were not only used to argue in favour of tidal energy development, but also to portray offshore wind energy as unacceptable. Such discursive strategies represent Guernsey as a *place with alternatives* in terms of future electricity supply – alternatives such as using tidal energy, or continuing to import electricity. Within such narratives, offshore wind energy is consequently less supported because of the perceived superiority of local alternatives. It follows that wind energy would only become acceptable if those alternatives, such as tidal energy and the cable link to France, would not be there:

Daniel: *"If somebody could prove, categorically, that under sea [tidal energy] is not a viable proposition and that wind turbines were the only real alternative, then I'd have to, wouldn't I, because we still want to turn the switch on [laughs], and we need it for work as well, we all need it, at a price we can all afford. So I would have to. But until somebody has proved that the other option, the undersea option, they would have to prove it is a much worse option than the above water one."*

Edward: *"My own view is that we would be absolutely stupid as an island to actually put wind turbines in the sea, within two miles, maximum three miles off the shore, when there are very good viable alternatives."*

These quotes illustrate the ways in which public evaluations of the use of one particular technology in a given place may be contingent on public evaluations of what are seen as other (more desirable) local alternatives. Such relational considerations of multiple locally available options was taken further by one participant, who positioned ORE as part of a broader, 'dated' centralised model of energy delivery, contrasting with a preferable, more decentralised model of delivery – a focus on independence at the individual, rather than the island level:

Walt: *"I think it's a very dated model, with the technology that's available now, for electricity to be produced centrally and distributed to individual homes, when I think that everyone has the capacity, if the planning was there and the right infrastructure and the right investment. (…) Because I don't like the way our electricity is produced (…) it's ridiculous that we're dependent on a completely different country to bring in our electricity. So my goal, as soon as possible, will be to be electricity, and ideally energy independent [as a household]."*

Such usage of broader energy system arguments by participants confirms that at the very least some local communities are fully willing and able to deliberate energy system change locally as well as nationally (Demski et al., 2015; Parkhill et al., 2013). It also suggests the value of giving such local communities greater agency in determining which technology (or behaviour) is the most locally appropriate way to contribute to sustainability – something that has been called for previously (e.g. Barry & Ellis, 2011). Moreover, the ways in which participants structured arguments about one technology in relation to other, alternative technologies also points to the potential value of understanding the notion of place-technology fit in a wider, more contextualised sense, rather than by focusing on single technologies in single locations.

These ways in which particular constructions of Guernsey and its sea as a place were adopted to frame ORE technologies as in place or out of place are summarised in Table 4.4.

Representations of Guernsey as a place	Representations of ORE technologies	Outcome
Sea as 'landscape' – a place of unspoilt natural beauty and tranquillity	Offshore wind energy as visually obtrusive, an eyesore	Opposition
	Tidal energy as invisible	Support
Sea as a place full of existing maritime objects	Tidal energy as just another (small) maritime object	Support
Guernsey as having a huge tidal resource	Tidal energy as utilising a distinctive local resource	Support
	Offshore wind energy as an inferior alternative	Opposition
Guernsey as a unique place	Tidal energy as enhancing Guernsey's distinctiveness	Support
	Offshore wind energy as threatening Guernsey's distinctiveness	Opposition
Guernsey as a small island	ORE as too big and expensive	Opposition
	ORE as being able to make Guernsey more self-sufficient and independent	Support
Guernsey as in need of becoming more independent and self-sufficient	ORE as contributing to independence and self-sufficiency	Support
Guernsey as a place with a polluting, old-fashioned electricity system	ORE as clean, green and healthy	Support
Guernsey as a place with multiple energy supply alternatives	Offshore wind energy as an inferior alternative	Opposition
Guernsey as a place with a 'dated' centralised energy system	ORE as a centralised energy technology	Opposition

Table 4.4: Representations of place-technology fit at the scale of Guernsey

Table 4.4, in a similar way to the 'symbolic logics of opposition and support' previously identified in a wave energy case study (McLachlan, 2009), shows how representations of place and technology combine to inform diverging stances towards ORE development. It should be noted that this table operationalises a rather simplistic binary representations of potential stances towards ORE development (only distinguishing ‘support’ or ‘opposition’), which does not reflect the variety of ways in which these representations of place-technology fit were used to discuss ORE beyond strictly ‘support’ or ‘opposition’. Nevertheless, it is helpful because this offers a useful way of summarising ways in which participants talked about these themes. Strikingly, the table includes many different rationales for support of a local ORE project, suggesting there were many potentially ‘place enhancing’ (Devine-Wright, 2009) narratives surrounding especially tidal energy development; participants expressed many ways in which such development would benefit Guernsey as a whole, both practically (e.g. increased self-sufficiency) and symbolically (e.g. enhanced distinctiveness). These arguments for support mirror similar arguments found in terms of the positive impacts that were expected of ORE projects in previous studies (Bailey et al., 2011; Devine-Wright, 2011b; Hall & Lazarus, 2015; Kempton et al., 2005; Simas et al., 2012; Stokes et al., 2014; Waldo, 2012; see section 2.2.1). This emphasis on local benefits in this case study represents a contrast with some previous local energy case studies, where opposition was found to emerge due to a ‘local-global disjuncture’, where the benefits of such a development are commonly mostly perceived to lie at the national or global scale, but the ‘costs’ are mostly local (e.g. Haggett, 2011). For instance, even environmental arguments, which are usually framed at the global scale (Warren et al., 2005), were in Guernsey made by participants at a local level by pointing to a possible reduction in pollution from the local power station.

This diversity of place-enhancing place-technology representations suggests the value of exploring locally-relevant values in an early, ‘upstream’ setting (Whitton et al., 2015) to identify such opportunities for ‘place enhancement’, which may inform subsequent design of local energy projects. Also, it suggests the value of academic research going beyond an emphasis on understanding opposition (Aitken, 2010), NIMBYism (Devine-Wright, 2009) or place-protective action (Stedman, 2002) towards understanding the construction of local support.

4.5.2 Place-technology fit at the scale of places on Guernsey's coast

Participants also rhetorically employed the notion of place-technology fit to represent specific parts of Guernsey's coast and sea as (un)acceptable for ORE development, building on photographs and narratives about what was valued about certain parts of the coast (see 4.3; Figure 4.6 on p.134). Such representations were elicited in the final part of the interview, by asking questions such as *"where would you (not) like to see offshore wind energy being developed around Guernsey?",* which participants responded to verbally and by pointing to areas on a map. This question was only explored for offshore wind energy, as many participants indicated they were too unsure about the specifics of wave and tidal energy to comment on its spatial acceptability.

A minority of participants represented all parts of Guernsey's coast and sea as equally (un)acceptable:

> Tim: *"There would be no preference for me. Anywhere. It could be out at my favourite lookout, or it could be Vale, or St Martin's, and I wouldn't mind."*

> Rebecca: *"I actually I can't think of a single place that I would want them. I really can't."*

However, most participants strongly distinguished between the acceptability of different places using diverse arguments to position offshore wind as 'in place' or 'out of place' in particular places (see Table 4.5 on p.172). Places that were represented as having the best views were often represented as unacceptable for offshore wind energy development:

> Paul: *"I wouldn't like to see those [wind turbines] probably in this area, you know, off the east coast, because the views of the islands are unsurpassed."*

For some, this visual narrative focused specifically on Guernsey's sunrises and sunsets – which were not only used to represent some areas as unacceptable, but also to portray other places as suitable for such offshore wind development:

> **I:** ***"Another area that might be suitable is north of Herm. Would you object to that?"***
> Julie: *"Well that wouldn't affect my sunrise or my sunset you see [laughs]."*

I: ***"You wouldn't mind that so much?"***
Julie: *"No. So it looks like those two corners [northeast and southwest] are the best."*
I: ***"Because they don't affect the sunrise and sunset?"***
Julie: *"Yeah [laughs]."*

Although such a focus on the enjoyment of views and sunsets may seem individualistic, this discourse was often framed in collective terms, by arguing in favour of placing offshore wind in places used less by the wider community:

George: *"Aesthetically, where you have few people and a barren coastline I've got no problem. Where there's a lot of people congregating on beaches, I think would be an eyesore."*

Other arguments used by participants to frame certain places as unacceptable focused on protecting favourite places, as well as valuing a sense of 'continuity with the past' (Twigger-Ross & Uzzell, 1996) – a similar emphasis on place histories as evident in for instance Photo 8 – by noting that a *"vista probably hasn't changed for centuries"*:

Dean: *"So personally, Shell Beach is my favourite beach out of anywhere on here. One of the things I like about Shell Beach is that it isn't developed, there is a kiosk there, but that's about it, and then from your viewpoint there you can see Sark, which again, certainly from that distance, five miles or something, you can't really see any buildings. And that vista probably hasn't changed for centuries. And I think I quite like space, the cleanliness of it, the unspoiltness, etcetera. So that would be a shame. So yeah, keep them up here [North of Chouet] [laughs]."*

The other key argument in the above quote portrays Herm as unspoilt, natural and clean; characteristics that are implicitly framed as contrasting with the essence of offshore wind technology, which thus would not fit such a place. However, this argument was not only used to portray the area near Shell Beach as unacceptable, it was simultaneously used to relationally frame another place (the north) as an acceptable location. This notion that the north is a *"working area"* (Marie), *"not very nice anyway"* (Dean) – or a symbolic 'other' (see 4.3) – contrasts with the supposed natural beauty of Guernsey's east and south coast.

As such, widely observed arguments (e.g. Devine-Wright & Howes, 2010; Woods, 2003) around avoiding the ‘industrialisation’ of ‘natural’ places were used to frame the north of Guernsey as ‘the right place’ for offshore wind energy.

Finally, some respondents implicitly or explicitly labelled themselves as ‘NIMBYs’, preferring the wind turbines to be located away from their own homes or favourite places – while implying this is what everyone else would do:

> Marie: *“Well obviously I would do what everybody else would do, and they want it in somebody else’s back yard. So I would say over that end of the island somewhere [the north]”*

Although this argument is reminiscent of classic ‘NIMBY’ responses to local energy projects (Burningham, 2000), it needs to be remembered that while such perspectives may exist, they have been found to represent a minority perspective (Wolsink, 2000). Also, rather than simply making her own argument, this participant tries to justify this argument by suggesting that ‘everybody else’ thinks the same way – an example of using NIMBY as a discursive resource to justify a particular stance (Batel & Devine-Wright, 2015c).

Moreover, it is relevant to note that this participant lived in the south-west of Guernsey, and had multiple places to define as ‘somebody else’s back yard’ (e.g. the southeast, east or north coast). The fact that she opted to highlight the north as her favoured place reflects that she also highly valued Guernsey south-eastern coast (despite not living nearby). This highlights the observation that participants talked about places all around Guernsey as highly valued (see Figure 4.1), and commonly suggested the coast offered things they could not find on the land itself (i.e. where they live), such as openness and quietness (e.g. Photo 6 and 7). This reaffirms the importance of acknowledging within research designs that people are not just attached to their homes or hometowns (e.g. see Brownlee et al., 2015; Devine-Wright & Howes, 2010), but often also highly treasure other, non-residential places away from the home – attachments which are also likely to inform public responses to proposed energy projects (Batel & Devine-Wright, 2015a).

These arguments that were used to position certain places, but not others, as fitting ORE technology are summarised in Table 4.5.

Representations of Guernsey's coast and sea	**Representations of ORE technology**	**Outcome**
As having beautiful views and sunsets	Wind energy as obtrusive, unnatural and disliked	Opposition
As unspoilt and natural		Opposition
As less used by people		Support
As a favourite place		Opposition
As industrial and disliked		Support
As historically unchanged	As a form of place change	Opposition

Table 4.5: Representations of place-technology fit at the scale of specific parts of the Guernsey coast

Although this study did not set out to quantify the differences in acceptability across different parts of the coast, some general patterns emerged that may be summarised visually to draw some broad conclusions. Participants' representations of certain areas as (un)acceptable are visually summarised in Figure 4.14, about which a few important caveats need to be made. First of all, although a map was used during the interviews to facilitate communication about places, Figure 4.14 is ultimately the result of the researcher's interpretation of which area was meant when participants verbally described places (e.g. 'the west coast'). Secondly, the map represents a simplified account of the preferences expressed by participants; the numbers should not be read as precise measurements of acceptability of specific locations, but as illustrations of general patterns of spatial variability in acceptability. Thirdly, the boundaries between the different coastal zones on the map suggest a very clear and abrupt change in acceptability between zones; however, they are merely a way of illustrating the differences between broad, rather than precisely defined offshore areas.

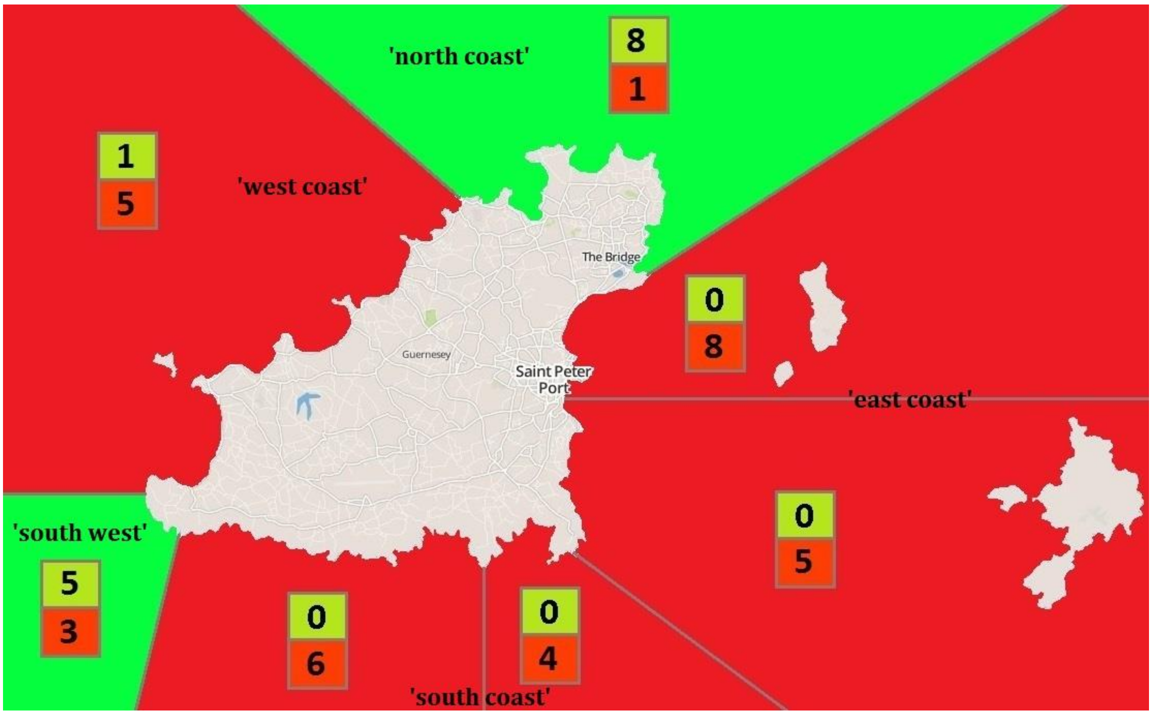


Figure 4.14: Spatial representation of (un)acceptable locations for offshore wind around Guernsey (the numbers in the green and red boxes represent the number of participants that mentioned a particular part of the coast as acceptable and unacceptable, respectively; the overall colour of each zone shows whether a majority supported (green) or objected (red) to each of the zones).

Nevertheless, Figure 4.14 clearly illustrates how different places around the Guernsey coast are to highly varying extents represented as (un)acceptable locations for offshore wind energy development. Drawing on the argument outlined above, five sea zones (coloured red in Figure 4.14) were represented as unacceptable by more participants than that represented it as acceptable. However, for two zones (those coloured green), more participants portrayed it as an acceptable zones than as unacceptable. Although due to space limitations this is not analysed in detail here, participants did not only talk about places near their homes as unacceptable (as 'NIMBYs' might do), but instead expressed preferences for a wide range of coastal places both close to home and further afield (as suggested by Batel & Devine-Wright, 2015a). This is illustrated by the fact that the south-eastern coast of Guernsey (where no participants lived nearby, as shown in Figure 4.1) was not represented as an acceptable place for offshore wind by any of the participants, while several indicated it would be an unacceptable location to them. On the other hand, the popularity of the north of Guernsey as a site for such developments may to some extent be explained by the relative lack of participants from this part of the island (this suggestion is developed further by using a spatially representative sample in study 3).

These findings suggest that previous studies' interest in increasing public acceptability by siting offshore wind further offshore (e.g. Knapp & Ladenburg, 2015; see section 2.6) needs to be complemented by greater investigation of how different (nearshore) coastal zones are to different extents acceptable for offshore wind development. It shows that spatiality is important beyond physical distance to the resident, but instead seems to be largely shaped by differences in place meanings ascribed to different parts of the coast and sea – an observation that is explored further in the next two chapters.

4.6 Discussion

This study aimed to capture the diversity of ways in which place-technology representations were used to frame particular ORE technologies as (in)appropriate for Guernsey. Throughout the participants' photographs and interviews, Guernsey and its coast and sea were represented as meaningful in many different ways (e.g. as visually beauty and 'natural', which suggested that offshore spaces are not merely relevant as visual backdrops enjoyed from the coast for their openness or emptiness (e.g. Gee, 2010), but become meaningful in many other ways too (Alexander et al., 2012). While this suggests the need for studying offshore places in more detail beyond the visual, at the same time the coastal environment was found to derive part of its meaning relationally from the contrast with the land (i.e. as a space offering escape from the busyness of the land). This suggests that future local energy acceptability research need to broaden their spatial scope, and consider places where local energy projects are proposed more explicitly as part of their wider spatial context, their relations with 'other' places. Guernsey's current electricity system and future ORE technologies were also represented in a multitude of ways, which suggested highly diverse ways of understanding especially tidal and wave energy technologies among local residents. These different representations of place and technology were frequently adopted by participants to construct arguments around the 'fit' between place and technology, at different scales, including the 'local' (Guernsey as a whole) and the 'micro' (specific parts of its coast). In particular, it highlighted that the choice of which technology to employ, and which location to use for it, are both highly relevant factors in shaping public evaluations of a specific ORE project.

These findings suggest that taking a place-based approach (e.g. Devine-Wright, 2009), which foregrounds the host location for an energy project as meaningful to its residents, is well-suited to understanding the variety of locally-relevant arguments that are relevant within deliberations around local energy futures. The diversity of findings, and the many instances of places being represented as meaningful in a particular way, also suggests that the concept of place-technology fit (McLachlan, 2009) can be a very useful lens through which to understand local residents' representations of local energy acceptability. A focus on place-technology fit was found to capture both supportive and oppositional arguments, thereby moving beyond a narrow focus on understanding opposition (Aitken, 2010) or 'place-protective action' (Stedman, 2002; Devine-Wright, 2009).

The multitude of 'place enhancing' narratives (Devine-Wright, 2011) suggested that exploring the fit between multiple technologies in multiple places, at an early stage in public engagement, may be a productive way to identify locally acceptable place-technology configurations (Barry & Ellis, 2011; Whitton et al., 2015). In particular, this study suggests the importance of maintaining or enhancing a sense of local distinctiveness as a very important consideration in the design of local energy projects (Devine-Wright, 2009; Twigger-Ross & Uzzell, 1996). All of this suggests the value of continuing the use of a place-based approach, focusing on place-technology fit as a conceptual basis, throughout the remainder of this thesis.

This study's emphasis on the elicitation of place-related values and meanings as a very important part of its research design (in contrast to previous place-based studies, where this aspect was often relatively peripheral) enabled the study to capture a highly diverse set of place representations. The use of auto-photography was found to be very well-suited to this research aim, by providing a tool to elicit in-depth conversations about participants' connections with Guernsey, providing rich verbal and visual data which told many different detailed narratives about Guernsey as a place. Asking local residents to think about, and photograph, those things that they value about 'their' place can be a very effective way to start a discussion about potential future changes to this place (i.e. local renewable energy projects) – reiterating the potential of the approach for engaging communities in local affairs (Loopmans, Cowell & Oosterlynk, 2012). This also reaffirms earlier conclusions about the potential of auto-photography as a methodology for understanding people-place relations, and offering insights into the meanings in people's everyday lives (Johnsen et al., 2008; Stedman et al., 2014), and suggests this thusfar 'underutilised' (Stedman et al., 2014) methodology can potentially further enhance the study of people-place relations. What this study adds to those earlier conclusions is the observation that auto-photography can complement and extend existing place-based approaches (e.g. Devine-Wright & Howes, 2010) to understanding local energy deliberations. One of the ways it can do this is by moving beyond an interest in verbal descriptions of place, by focusing more on people's emplaced lived experience, which entails a richer conceptualisation of place as the setting for everyday behaviour and practices. For instance, many photographs captured practices that were associated by participants with specific places on Guernsey's coast, which subsequently led to in-depth discussions around how different places would be fitting for ORE development. Moreover, some of the overarching narratives that were found (e.g. Guernsey as a unique place in the world, and the notion of the sea as a resource to be utilised) would perhaps have been unlikely to be captured in such depth by less exhaustive, verbal instruments used in previous place-based energy acceptability studies (e.g. Devine-Wright, 2011b; Gee, 2010). In this study, the diversity of meanings and values that was found beyond a visual emphasis on sea space as an unspoilt, natural, open environment also suggests that auto-photography can be a suitable method to open up the diversity of meanings associated with offshore spaces in more detail – potentially enhancing understanding of public engagement with ORE technologies (Wiersma & Devine-Wright, 2014). Also, auto-photography was found to allow the opening up of spatial dimensions of place meanings and of local energy acceptability, due to the inherently spatial nature of photographs (they are taken *somewhere*). This was found to allow further analytical steps that helped in better understanding which places were valued more than others, and for what reasons. This is a further potential advantage of using auto-photography over verbal methods that has not been highlighted before.

However, a few caveats could be made about the use of auto-photography in this study. First of all, as noted in the methodology section, not all recruited individuals wanted to take photographs. Although they were still included, interviews with these participants were typically shorter and remained more superficial in nature when talking about the participant’s connection to Guernsey (as there were no specific places, activities or values represented in photographs to prompt more discussion) – which is unsurprising given the number of authors suggesting the value of visuals in enriching interviews (e.g. Harper, 2002; Rose, 2007). The fact that some people were not comfortable expressing themselves through photography (in this case, they were all over 50 years of age) raises questions over the representativeness of participants taking part in auto-photography studies. Numerous participants already had a keen interest in photography, suggesting that perhaps auto-photography may predominantly attract those who experience the world differently, potentially in a more visual way. This could have implications when investigating their views on renewable energy, which is often strongly associated with visual impacts (Wolsink, 2007) – although in this study a representation of the coast as a place of visual beauty was only one of many representations of the coastal environment. This suggests that researchers in the future need to carefully consider the question of whether or not to include those who are keen to participate but also do not feel comfortable expressing their views using photography.

Secondly, although auto-photography was found in this study to lead to diverse, rich, in-depth interviews and representations of place, it has also highlighted that not everything can be easily captured using photography. The first example is that one participant printed a number of maps to talk about his favourite places, which were underwater, and he therefore had no photographs of them. This suggests that one limitation of participant photography is that not all valued concepts or experiences are easily accessible or photographed (e.g.

underwater places, rare wildlife) and may therefore be overlooked in people's sets of photographs. Also, one participant was unable to access the coast during the study period due to a disability, which highlights potential issues with the approach in terms of inclusiveness and suggests that participant photographs need to be interpreted as partly the product of practicalities. The second example that illustrates the limits of what is likely to be represented through participant photography is that throughout much of the interviews on energy generation, the themes independence and self-sufficiency were clearly very important to participants. However, this theme did not come up across the 200 participant photographs. Although many related themes emerged when discussing the photos, for instance around a sense of local distinctiveness and identity, these were only connected to wider narratives around the need for Guernsey to become more independent when the interviews turned to Guernsey's electricity system. One explanation for this could be that participants were instructed to capture what they 'valued about Guernsey's coast and sea'. Alternative instructions, for instance focusing on Guernsey as a whole rather than the coastal environment, or focusing on negatives, challenges faced by Guernsey or the kinds of future participants imagined or wanted (rather than on what they valued) may have been better able to capture such broader narratives that were clearly very important among local residents. This suggests that auto-photography may have its limitations in capturing more abstract concepts like a desire for independence, which may be harder to capture in a visual sense, and care needs to be taken in phrasing instructions appropriately to allow participants to capture more abstract concepts, if required by the research aim.

Thirdly, one other element of participant instructions was suggested to be very important in this study. In particular, an important question is whether or not to limit the number of photographs to be taken by participants – especially as some auto-photography studies imposed a limit on the number of photographs taken (e.g. Beilin, 2005; Stedman et al., 2004) while others did not (Lombard, 2013; Van Auken et al., 2010). This question may have become more pertinent now digital cameras (which offer virtually unlimited quantities of photos to be taken) have become commonplace. Participants in this study commonly expressed they found it hard to reduce down their photographs into a set of ‘only’ 10 – suggesting it may have been of value to include a greater number of photographs. On the other hand, in light of the time-consuming nature of auto-photography (Van Auken et al., 2010), one thing that worked well was that enough time was left after a discussion of the photographs to cover the second part of the interview, about ORE in Guernsey, without experiencing participant fatigue. This suggests researchers contemplating the use of auto-photography need to carefully consider whether or not to restrict participants in the number of photos they can take.

Finally, in this study, participants were instructed to use either new or existing photographs. This deviates from most auto-photography studies, where all photographs are usually taken specifically for the research project. Instead, older, existing photos may be less specific to the brief of the project, and they may represent a very different kind of lived experience – especially as it could be argued that some photos (e.g. those taken from photo albums) may be biased towards memorable occasions and special places and thus do not necessarily represent the everyday experience of a place. Nevertheless, during the interviews and the analysis no difference was experienced in the richness of the data elicited from archive photos compared to those that were newly taken. On reflection, this option of using existing photographs may have made participating in the research a more pleasant experience for the participants as there was no need to brave the wet and windy weather during this period (subsequently no participants dropped out). As many participants drew on existing photographs rather than taking new ones for this study, it ensured the task captured much more than a ‘wet November’ experience of the Guernsey coast. Indeed, the eventual set of photographs represented many different seasons and weather types, and thus may have represented a greater diversity of place representations than could be obtained within one particular season. This observation that the weather/season may have influenced participants’ selection of photographs raises the question to what extent the place representations reported in this study would have been different had this study taken place during the summer months – an important point that is not usually raised in the auto-photography literature (e.g. Harper, 2002; Johnsen et al., 2008; Stedman et al., 2014). A further implication of allowing the use of existing photographs taken by participants was that one participant used pre-existing photos to structure her set of 10 photographs as a timeline, telling a story about her relationship with Guernsey's coast and sea from a young age until the present day. This suggests that an auto-photography approach that includes participants' previously taken photographs may (much like narrative interviews; Bailey, 2015) offer the opportunity to examine the ways in which people-place bonds change over time. This contrasts with most approaches to people-place bonds, which usually tend to conceptualise such bonds as static and overlook the ways in which they evolve and change over time (Bailey, 2015; Devine-Wright, 2014). Therefore this suggests that allowing the use of older photographs to some extent gives participants greater freedom in the narrative they choose to construct. Nevertheless, it could be argued that simultaneously, it focused attention on memories and histories rather than how participants experience the coastal environment in the present, which is a potential limitation of this way of using auto-photography as a method, depending on the research question at hand.

This study suggests a number of follow-up questions that can productively be addressed in future research, and will inform the subsequent studies presented in this thesis. First, throughout the study, ORE technologies were considered in an abstract sense: no details about how such technologies may be implemented locally (e.g. number of turbines, location, ownership model) were provided. As such, the value of this study should not be understood as providing a definitive account of public acceptability of specific ORE projects proposed in Guernsey in the future. Instead, it should be remembered that participants' expressed opinions are likely to be *conditional* in nature: they are likely to evolve when an actual development is proposed and the finer details of its implementation become available in the public domain. In other words, there remains a need for better understanding how such specific characteristics of local ORE developments shape public evaluation of such developments in Guernsey. This reaffirms the value of continuing a project-specific line of enquiry – as is already common in the energy acceptability literature (see chapter 2).

Second, it was found that in particular wave and tidal energy technologies were understood in a wide variety of ways by local residents, and that there is no clear consensual notion of what such technologies might entail. Nevertheless, such lay knowledge informed local energy deliberations around ORE technology and its role in Guernsey's energy future. Therefore, this study highlights a need for greater investigation into how, and to what extent, local representations of a 'fit' between place and ORE technologies may be transformed when detailed information about the local implementation of specific ORE devices becomes available.

Third, this study found that many participants expressed strong preferences for the siting of offshore wind in some places over other places (while others expressed indifference). However, this was only explored for offshore wind energy technology, and not for wave and tidal energy. Also, the method through which such spatial preferences were elicited in this study was limited, as it depended on mostly verbal descriptions of (un)acceptable locations, subsequently relying on the researcher's interpretation of which areas exactly were meant by participants, as summarised in the map in Figure 4.14 (p.173). This shortcoming could have been addressed by going back to participants with this map to ask for their feedback. Also, the verbal elicitation of participants' spatial preferences tended to produce responses that generalised across sections of the coast, rather than identifying specific offshore places, and as such represents a rather crude way of opening up the ways in which different places on Guernsey's coast are seen to (not) fit ORE development. Therefore, there is a need to explore such spatial ORE siting preferences in more robust ways, by letting participants rather than the researcher define the relevant coastal places, and by stimulating participants to define specific rather than generic (un)acceptable places, and recording this data spatially rather than only verbally. Moreover, future studies need to explore this question of spatial siting preferences for multiple technologies in order to understand differences between these technologies, and by doing so coming to more robust conclusions over the relative importance of finding acceptable places in making local energy developments more acceptable. These research gaps informed the design of the second and third studies of this thesis (chapters 5 and 6).

In conclusion, this largely exploratory study was successful in capturing many instances where particular representations of place and technology were invoked to construct arguments around a (lack of) fit between place and technology. Its use of auto-photography helped to capture the diversity of ways in which the land and the sea were argued to be meaningful to local residents, and provided a rich foundation for understanding how local energy deliberations around ORE technology development emerge throughout this thesis. The next chapter presents the second qualitative study of this research, which builds on the findings of this first study, and which together with the findings of this first study forms the foundations of the quantitative, confirmatory third study presented in chapter 6.

Chapter 5. Deliberating local energy: Understanding the conditions for support for offshore energy projects in Guernsey

5.1 Introduction

The auto-photography study discussed in the previous chapter (study 1) elicited a rich and diverse set of representations of places and technologies, and identified many ways in which Guernsey residents used such representations to frame ORE technologies as 'in place' or 'out of place' in Guernsey. The study confirmed the value of using a place-based approach (Devine-Wright, 2009) and the concept of place-technology fit (McLachlan, 2009) in understanding local energy deliberations around ORE in Guernsey, at an early stage of public engagement – an approach continued in the next stage of this research.

The previous study suggested a number of important research pathways, which informed the study presented in this chapter (study 2). In particular, study 2 complements study 1 in two main ways. First, while in study 1 ORE technologies were discussed in an abstract, general sense, in study 2 these technologies and the way they may be implemented locally are discussed in more detail. This opens up the circumstances under which the local implementation of ORE technologies may be acceptable. This is important because support for a technology in principle (as captured in study 1) needs to be understood as *qualified* (Bell et al., 2005) or *"conditional on a wide array of factors which shape the local characteristics and conditions of project development."* (Walker et al., 2010, p.937). Such conditions may include that a local energy project offers sufficient (financial) benefits to host communities, is sited in 'the right place', and that communities are treated fairly (see section 2.2.1). However, the relative importance placed on these various factors was found in chapter 2 to vary across contexts. It is therefore important to open up the relative importance of these diverse conditions for support in this case study context, by discussing in more detail future ORE *projects* rather than merely the *technology* they may employ (as was done in study 1). Also, one factor that was found in study 1 to shape public evaluations of ORE technologies was the diverse understandings of especially tidal energy technology (for instance, an understanding of tidal energy as 'invisible' was associated with support). Study 2 aims to complement such common sense understandings of ORE technologies by presenting concrete, visual information on likely ORE projects in Guernsey, and by encouraging the deliberation of such information in a social setting (focus groups). This way, it intends to open up the stability or changeability of public evaluations and representations of local ORE developments (compared to study 1), upon such projects becoming more tangible.

Second, study 1 found support for offshore wind development in Guernsey to be conditional upon *where* it would be sited. However, the study was unable to comment on whether siting is equally important for other ORE technologies, and was limited by a relatively basic, verbal method of eliciting (un)acceptable locations (see previous chapter). Study 2 aims to interrogate this finding further, by using a group-based, visual methodology designed to elicit a diversity of local siting discourses around both offshore wind and tidal energy. As noted in section 2.6, previous studies on the siting of ORE have commonly focused on offshore wind energy, and have usually only investigated the role of distance to the coast as shaping public acceptability of offshore wind projects (e.g. Ladenburg & Dubgaard, 2007; Landry et al., 2012). However, study 1 as well as some previous studies (Alexander et al., 2012; Wolsink, 2010 – see chapter 2) have found that different coastal or offshore places may be judged to be (un)acceptable based on a variety of criteria other than simply their distance to the shore. This study aims to build on these conclusions by conducting a more in-depth analysis of the processes of representation and contestation underlying the discursive positioning of some places as acceptable and others as unacceptable for ORE projects (which was lacking in these previous studies). Also, by looking at two ORE technologies simultaneously, this study aims to add to a better understanding of how public evaluations of wind energy projects may be fundamentally different or similar compared to public evaluation of other technologies (in this case tidal energy).

Informed by the points above, this study has four research questions (summarised in Table 5.1). It aims to better understand how the notion of place-technology fit was used within public evaluations of specific local offshore wind and tidal energy projects (rather than the more generic evaluation of these technologies *in principle*, as elicited in study 1), using a deliberative focus group methodology (RQ1). A particular focus within this broader interest is the aim to capture the conditions upon which support for particular offshore wind or tidal energy projects are contingent (RQ2). In order to do this, a key element of the focus groups was to make such general technologies more concrete to participants, by providing (visual) information on the likely local use of such technologies in the future. This information intended to help participants in imagining future ORE development in more detail, and was designed to inform a deliberative workshop where multiple technologies are considered in terms of their role in Guernsey's energy future. This aimed to open up the ways in which public evaluations of ORE technologies were stable or transformed upon imagining the local implementation of ORE technologies (RQ3). One key condition for support that was explored in detail was the role of *where* such a project would be sited (RQ4). Understanding such locally relevant conditions for support at an early stage of public engagement is important, as it may inform the design of more acceptable local energy projects (see chapter 2).

This study adopted a deliberative focus group methodology with an emphasis on using visuals, including maps and photographs/visualisations of energy technologies. Focus groups are well-suited for examining the ways in which groups *"collectively make sense of a phenomenon and construct meanings around it"* (Bryman, 2012, p.476). Therefore this method fits well with this thesis' interest in public understanding of novel technologies, and of the social representational processes at the heart of this (Wagner & Hayes, 2005), including the anchoring and objectification of new phenomena which help make sense of them and result in new social representations of (in this case) local energy technology. Methods of public engagement can be described as deliberative *"when they encourage citizens to scrutinise, discuss and weigh up competing values and policy options"* (Coleman & Gøtze, 2001, p.4). Such methods are thus interested in the construction of preferences and judgements, rather than merely capturing these as a finished 'end product' of prior thought or discussion – which closely matched this thesis' interest in local energy deliberations (see section 2.2.5). Deliberative approaches to public engagement and participation have been a central interest within democratic theory, where a ‘deliberative turn’ took place in the late 90’s and early 00’s in response to the observation that *“it is undoubtedly the case that most developed democracies are experiencing a collapse of confidence in traditional models of democratic governance.”* (Coleman & Gøtze, 2001, p.4). Deliberative public engagement therefore has been offered as an alternative way of achieving better, more democratic decisions – which may or may not be achieved (Delli Carpini, Cook & Jacobs, 2004). Rather than focusing on deliberative processes in democratic governance, other studies have instead used such methods as a social science research method, for instance to better understand the degree of stigma associated with nuclear energy technology (Horlick-Jones, Prades & Espluga, 2012) and public values for whole energy system change (Butler, Parkhill & Pidgeon, 2013). In this study, deliberative methods were similarly used in order to better understand public evaluations of multiple local energy alternatives – rather than explicitly aiming to achieve more democratic decision-making (although it could potentially contribute to this).

Finally, this study focuses on offshore wind and tidal energy, but not wave energy, to avoid overloading participants with information and leaving enough time for in-depth discussion of offshore wind and tidal energy. It was decided to focus on offshore wind and tidal energy because these technologies were deemed to be more likely to be developed in Guernsey in the near future by the external stakeholder.

RQ1	❖ How are specific offshore wind and tidal energy projects represented as (not) fitting Guernsey or specific places on its coast?
RQ2	❖ In what ways are public evaluations (e.g. support) of offshore wind and tidal energy projects represented as depending on particular conditions being met?
RQ3	❖ How are public evaluations of offshore wind and tidal energy transformed by informed deliberation of their local manifestation?
RQ4	❖ To what extent are public evaluations of offshore wind and tidal energy projects conditional upon their location, and in what ways are locations represented as (un)acceptable?

Table 5.1. Research questions study 2

5.2 Method

Four focus groups were hosted in Guernsey between 10 and 16 June 2014 (three weeknights, one Saturday morning). For each session the same function room at a well-known Guernsey venue was hired (Les Cotils, see Figure 5.1). The sessions were moderated by the researcher, while one extra facilitator was also present (two local students were able to fulfil this role). The focus groups lasted around two hours each.

Figure 5.1. The venue for the focus groups.

Each focus group had five or six participants (totalling 22 participants). All study 1 participants were invited to attend any of the four focus groups (14 out of 28 participated), as the rich insights into their connection to Guernsey generated in study 1 were expected to contribute to the analysis of study 2 data. Eight additional participants were recruited through on-street recruitment and snowballing to ensure every focus group had at least five participants, and to further diversify the variety of local views captured by the research. To counter the fact that those who had participated in study 1 may have already learned more about ORE than those that had not (although in study 1 they were not actually given any information), an important part of the focus groups was to provide basic information on relevant topics (as outlined below). During the focus group discussions there was no noticeable difference between the two types of participants in terms of their ability to fully participate in the discussions. The sampling strategy aimed to achieve a mix of participants in terms of age, gender, and place of residence in Guernsey. Participants were incentivised to attend by offering a chance to win £200 in vouchers in a prize draw, and by emphasising the chance to learn more about potential future energy developments in Guernsey. The sample was diverse in terms of age, gender, place of residence within Guernsey, and whether or not participants were born in Guernsey (see Table 5.2), though it should be noted that similar to study 1, relatively few participants lived in the north of Guernsey (three in St Sampson and one in Vale). However, judging from the focus group discussions, the sample may have been biased towards those with an existing interest in renewable energy. This may have been a consequence of 'marketing' the focus group sessions as a chance to learn more about potential future local energy projects – which may appeal more to those interested in (renewable) energy. Also, experiences of on-street participant recruitment suggested that many local residents did not feel strongly enough about local renewable energy projects to attend an evening workshop on the topic.

Age		**Gender**		**Born in Guernsey**		**Parish of residence**		**Also took part in study 1**	
18-29	6	Male	11	Yes	14	St Peter Port	6	Yes	14
30-39	4	Female	11	No	8	St Peters	4	No	8
40-49	4					Castel	3		
50-59	5					St Andrew	3		
60-69	3					St Sampson	3		
70+	1					St Saviour	1		
						St Martin	1		
						Vale	1		

Table 5.2. Socio-demographic attributes of study 2's 22 participants

The purpose of the focus groups was to encourage the *deliberation* of diverse local energy options. Consequently, a key issue in hosting such deliberative group discussions is the information presented to participants (Coleman & Gøtze, 2001). Early public engagement with future technological (energy) development is always highly complex (Flynn, Bellaby & Ricci, 2011), both in terms of providing participants with a basic understanding of the science of such technology, but also to offer a balanced account of the wider implications of the use of such a technology in terms of associated personal and environmental costs, benefits and risks (Flynn et al., 2011). In this study, the information was carefully designed by the researcher – in conjunction with the external stakeholder – in order to outline the basic characteristics of what a local offshore wind and a local tidal energy project *could* look like (see Table 5.3, p.191). It was also repeatedly emphasised that no such developments are currently proposed and that the information was merely intended to give participants a clearer idea of the kind of ORE project that could be proposed in the future. This was done to ease external stakeholder concerns about the research misinforming the community or causing public controversy (see section 3.4). All information was designed to be easy to understand for all, so no prior knowledge was required. Participants had the chance to ask questions about any of the energy-related information provided. In order to ensure its accuracy, the information provided in this study was co-produced in close cooperation with the external stakeholder, drawing on their latest insights into the local energy system, ORE technologies and the potential implementation of these technologies locally.

The focus groups followed a semi-structured format, encouraging group discussion to freely develop while loosely following a template to ensure consistency of topics covered across the four sessions (see Appendix D). During the focus groups, an A1-sized map of Guernsey and its waters (including its territorial waters, up to 12 nautical miles from the shore) and several marker pens were provided to visually and spatially capture the discussions, and to act as stimuli (as visuals such as maps may elicit rich discussions; Harper, 2002). The focus groups started with an explanation by the researcher of the purpose, ground rules and structure of the workshop, which highlighted aspects characteristic of deliberative methods, like the provision of balanced information, an open rather than restricted agenda (within a researcher-defined topic), time to consider issues expansively, an absence of manipulation or coercion, and scope for free interaction between participants (Coleman & Gøtze, 2001). Next, the participants were asked to introduce themselves briefly by stating their name and saying something about 'their connection to Guernsey', to bring an element of people-place bonds into the discussion early on. Then the researcher briefly described the current electricity system (e.g. energy sources, proportion of imports) and current States of Guernsey policy priorities, and asked for participants' views on this current system. This framed the subsequent discussions within this broader context of energy system change. Participants were also asked to write on the communal map what particular coastal and marine locations meant to them, which could later be referred back to when discussing the siting of ORE developments around Guernsey. By including this task, the discussions were implicitly framed as being about 'place-technology fit' rather than the deliberation of technology per se.

Next, offshore wind and tidal energy – and their possible implementation in Guernsey – were discussed in detail in two separate 30/40-minute segments. The order of these segments was alternated across groups, to investigate order effects. Both followed a similar structure, which started with the question where participants expected this technology to be developed around Guernsey (if developed), as throughout study 1 participants often explicitly or implicitly talked about wind and tidal energy in relation to some locations more than others, suggesting there are existing expectations on likely locations. Subsequently the researcher described each technology in more detail, and passed around a number of general visuals of what the technology could look like (see Appendix E), in order to prompt rich discussion (Harper, 2002). Providing these visuals was deemed very important, given the highly divergent ways in which local residents imagined such technologies (see chapter 4). It thus provided a shared basis for the deliberation of the desirability of such alternatives. These images were chosen from various online sources, and were selected to ensure they gave an idea of the technology's scale and of how the technology works (e.g. showing turbine blades), as well as to illustrate the diversity of tidal energy technologies that could potentially become commercially feasible. It was also explained that tidal barrages were not suitable for Guernsey. Instead, three different tidal current technologies were shown (representing technologies that were judged to be likely candidates for local use by the external stakeholder; one subsurface and two surface-piercing options), explained in terms of how they would operate, and discussed by the participants. It was emphasised for all visuals that they were merely intended to illustrate what such developments *could* look like, and that no conclusions should be drawn from the details of those photos.

Next, the technologies were made more specific by outlining what a future offshore wind/tidal energy project in Guernsey could look like (see Table 5.3). For offshore wind energy a detailed potential local project was described in terms of number of turbines, proportion of local energy demand met, cost, and timescale. For tidal energy the description of a potential local project was less detailed, due to uncertainty about the technology development trajectory. Participants were asked for 'their views' on such a development (leaving open to participants how to position their stance towards such a project; e.g. tolerance, active support, indifference). Throughout the discussions, it was attempted to create an atmosphere where participants would feel confident expressing that they did not have a strong view on a given topic, to avoid 'forcing' an opinion out of every participant. This was for instance done by emphasising that they did not *have to* have an opinion on every question asked, and that it was fine to be unsure. Next, participants were also asked to discuss the option of a larger, export-focused offshore wind option with about 100 turbines.

<u>Characteristics of the described hypothetical local offshore wind energy project:</u>

- 10-15 turbines (30MW)
- Would provide around 25-30% of Guernsey's electricity demand
- Would increase electricity prices by about 5-10%
- The electricity generated from this would virtually all be used on the island, rather than exported
- This could happen by 2020

<u>Characteristics of the described hypothetical local tidal energy project:</u>

- Not very likely to happen before 2020 or 2025
- Cost of energy generation from tidal energy still very high, but may be more in line with other renewable energy technologies by 2020 or 2030 (based on estimates from ETI & UKERC, 2014)
- A development in Guernsey would likely be relatively large-scale, possibly between 20 and 100 turbines, depending on many factors that are still uncertain

Table 5.3. Descriptions of potential future offshore wind and tidal energy projects in Guernsey

After having described the technologies and their potential local implementation (though not the locations that could be technically suitable for these technologies in Guernsey), participants were asked to each place one green and one red sticky note on the A1 map to highlight which specific marine locations would be most (green) and least (red) acceptable to them as a location for offshore wind/tidal energy development. This task was designed to stimulate and spatially capture otherwise verbal discussions, and was chosen as interactive map-based discussions have previously been found to be effective in spatially capturing diverse stakeholder perspectives on marine place meanings (Alexander et al., 2012). This exercise and the resulting map formed the basis for a discussion around the acceptability of different locations around Guernsey, reasons for choosing particular places, and the (dis)agreement between participants on (un)acceptable locations, opening up more explicitly the socially constructed and contested nature of place meanings.

After this, another A1 map was introduced showing the locations which were at the time considered by the external stakeholder as potentially feasible for offshore wind or tidal energy development (see Appendix F). The researcher explained why these sites were deemed to be technologically suitable, and participants were asked what they thought of such locations as sites for offshore wind/tidal energy development. In the case of offshore wind energy, for this discussion a number of additional visuals were passed around by the researcher, to help participants imagine such developments and prompt further discussion. These images showed three photos of existing nearshore wind farms in the UK and two visualisations of what offshore wind energy in Guernsey could look like (see Appendix E), which were produced at an earlier stage by the external stakeholder (their origin was made clear to participants). For tidal energy such imagery was not available to the same extent, so no additional visuals were used in the tidal energy discussions.

Finally, after both offshore wind and tidal energy had been discussed in detail, any key themes from study 1 that were not already discussed by the participants were brought into the discussion: notions of independence, electricity export versus local use, expected local benefits, different ownership models, and the relative acceptability of ORE compared to other local energy alternatives. Also, participants were asked for any final thoughts, to encourage any outstanding issues to be brought up. The focus groups were moderated to ensure participants felt able to contribute to the discussions, by for example asking quieter participants for their views, attending to body language (*"you're nodding?"),* synthesising what was said and asking for agreement, asking open questions and leaving silences to encourage discussion between participants (Krueger, 1998). Across the focus groups, participants were generally engaged and everyone contributed substantially to the group discussions.

The focus groups were recorded (after verbally obtaining participants' consent) and transcribed. Both workshop facilitators kept notes during the focus groups, and further impressions and reflections were written down after each workshop. These notes were used to further improve the running of each subsequent session, for instance by adding further explanation on topics that were found to be unclear by participants. The notes were also used as a first, informal analytical step, to form ideas around the prominent themes that emerged during the discussions. A thematic analysis (Braun & Clarke, 2006; Joffe, 2011b) was subsequently carried out using NVivo (v10). In this analysis, the verbal data was coded under particular (sub)themes, with the sticky note maps acting as a reference to understand what the verbal data referred to. The coding scheme developed in the analysis of study 1 was not used; a new coding scheme was developed from scratch instead, in order to be open to capturing the particulars of the focus group discussions, without the interpretation of these data being guided or restricted by the themes that characterised the study 1 data. The content of the coding scheme is reflected in the themes that are discussed in the results section and is therefore not reproduced separately. The sticky note maps were analysed separately through a visual inspection of the location of the red and green sticky notes placed by participants.

5.3 Deliberating 'expert' information on ORE development

The information provided by the researcher during the focus groups was intended to open up discussions on the conditions under which specific ORE developments would be supported. However, participants' responses to this information also illustrated dominant representations and lay understandings of offshore wind and tidal energy technologies more generally, as represented in the images selected to be shown to the participants – expanding findings from study 1.

For instance, participants responded to the tidal energy visuals introduced (see Appendix E) by expressing that "*I thought there would be more designs around that sort of underwater [design]"* (Jodie, FG4). This confirms representations of tidal energy technology as an essentially visually unobtrusive technology expressed in study 1. The tidal technologies shown by the researcher were represented in multiple ways, both as bigger than expected and *"chunky"*, *"big"* and *"ugly"* (see quote below), but also as smaller than expected and *"flimsy"* (Hank, FG2). Such 'negative' (compared to what was found in study 1) representations of tidal energy were sometimes positioned relationally, and used to frame offshore wind turbines as more positively than at the start of the focus group sessions:

> Marie*: "Well that's pretty chunky isn't it? I mean when you compare it with 15 of those, compared with 15 rather slender [wind turbines]"*
> Dean*: "I think if you're comparing these to the wind turbines, actually the wind turbines have something going for them aesthetically, whereas these don't, these are just big static, ugly blobs that shouldn't be there really."* (FG1)

This illustrates how representations of specific tidal energy technologies are likely to be different from representations of the technology *in principle* that were elicited in study 1, and suggests that the high levels of support for tidal energy found in study 1 may be conditional on the understanding that tidal energy is an unobtrusive technology. This finding may to some extent be a consequence of the selection of visuals shown to participants, which only included one of several existing submerged tidal energy technologies, and thus represented a simplified account of the many subsurface and surface-piercing technologies that exist. It also further problematizes findings on public support for wave/tidal energy from opinion polls like DECC's Public Attitudes Tracking Survey, which have not accounted for the conditional nature of this support (DECC, 2015b).

Similarly, the information that tidal energy may only become commercially viable in over a decade (see Table 5.3 on p.191) contrasted with dominant representations of tidal energy as an unproblematic technology that should be deployed sooner rather than later (also see study 1). The notion of tidal energy as commercially ready was often linked by participants to Alderney's perceived progress in using tidal energy technology, which has been reported in the media[7]. This was done across all four focus groups, for example by asking "*but what is happening in Alderney?"* (Marie, FG1). Subsequently, participants responded to the information about tidal energy's current stage of development by expressing they found it *"amazing, staggering that this technology is not available"* (Adam, FG1), and represented the information as contrasting with earlier understandings of the technology:

> Michelle: "*I didn't realise, because I had read about Alderney, and I didn't realise it's still so new. I suppose I did know it was new but kind of not so conscious of the risk."* (FG2)

Although tidal energy was already represented as *"modern", "leading the way"* and *"forward-thinking"* (see study 1), such notions of 'progress' were thus complemented by notions of 'risk' and uncertainty. This suggests that the widespread support for tidal energy in principle is a result of a consensual understanding of the technology as a cost-effective, commercially ready energy technology (rather than a 'risky' experimental technology).

Despite information on its high current cost, generic notions of tidal energy as *"very lucrative"*, and as something from which "*everybody's going to benefit"* (Frank) continued to be used to position tidal energy as something that would fit Guernsey well, again by referencing notions of Guernsey as vulnerable and Guernsey's tides as a globally unique resource (also see study 1):

> Lisa: "*The only thing is, given that the Channel Islands have some of the biggest tides in the world, it could potentially be a very lucrative industry in terms of creating energy and sending it on. And Guernsey needs to think*

[7] In 2004, Alderney (a small Channel Island within the Bailiwick of Guernsey; see chapter 3) agreed to a 65-year lease of their seabed to a company called Alderney Renewable Energy to develop tidal energy in Alderney's offshore waters. Despite having been in existence for over a decade, at the time this research was carried out, not a single tidal energy converter had been installed in Alderney. Nevertheless, there has been a lot of media attention in Guernsey about the developments.

about its economy and its future and how it manages to survive. And the financial services contracts, as it is at the moment, Guernsey does need to reinvent itself again, and this may be the way for it to do that." (FG4)

The positive way in which exporting tidal energy is talked about here contrasts with the negative representations of developing an export-focused offshore wind project (see next section), suggesting it is not the notion of 'export' per se that is objected to, but that support instead depends on the technology used. A second point to make is that seemingly contrasting notions around the economics of tidal energy exist side-by-side: while on the one hand its expensive and innovative character are noted, on the other the technology is continued to be framed as representing an important potential pillar of Guernsey's future economy. This could be understood through the social representational concept of cognitive polyphasia, which describes the situation of contradictory rationalities existing side-by-side – this is considered unproblematic because they apply in different social contexts (Wagner & Hayes, 2005). This suggests that the information provided on future use of ORE technologies in Guernsey should not be understood as *replacing* existing understandings of such technologies, but as complementing them. Following this line of thought, it could be argued that strategies to 'educate the public' (emanating from a knowledge deficit model of public attitudes; Sturgis & Allum, 2004) may not be an altogether straightforward way to increase public support for local energy projects.

One aspect of the researcher-provided information on a potential local offshore wind project was also represented as generating more positive responses to such a development: the idea that 10-15 wind turbines could generate 25-30% of Guernsey's electricity demand. This information was talked about as having *"positively surprised"* (Marie) participants:

Nathan: *"If we got 25% that would be more than I expected from 10 to 15, but yeah it's good."* (FG3)

This positive response to one aspect of the outlined hypothetical offshore wind project was part of a broader pattern where the overall broadly negative ways of representing offshore wind technology *in principle* (see study 1) were complemented by more positive representations of a specific offshore wind project. This was also evident in responses to the variety of potentially suitable locations for such a development, as discussed in section 5.4.

In short, the information on ORE provided during the workshops elicited more negative public evaluations of tidal energy, and (partly as a result of this) more positive evaluations of offshore wind energy development when compared to study 1. This reiterates that support needs to be understood as conditional upon a number of factors – not least the (perceived) availability of other options. These findings also echo earlier conclusions on the potential importance of 'initial resident expectations' of a development – and whether or not these are met – in understanding public responses to local energy projects (Fergen & Jacquet, 2016). It also highlights that support for a technology in general is not the same as support for a specific local development (Batel & Devine-Wright, 2015a; Bell et al., 2013).

5.4 Representations of place-technology fit and conditions for support

Across the focus group discussions, many place-technology representations were invoked to construct arguments on the conditions under which certain technologies or projects would be supported or not. One of these framings was focused on local distinctiveness (Twigger-Ross & Uzzell, 1996) – an argument that was, like in study 1, used to argue that tidal energy would 'fit' Guernsey, but here was also used to simultaneously frame offshore wind as not fitting Guernsey:

> Hank: "*We started about it, more so the tidal thing, making us unique and something that Guernsey is about, and this [wind energy] would just bring us, sort of drag us into, with everyone else, if you know what I mean. And we have got beautiful views, and there's not really a place in the world, generally, where there is a large population or whatever, that is free of this stuff at the moment. On the whole I'd rather have we cling on to being Guernsey for as long as possible, I think as this [wind energy] comes in, we're losing our identity."* (FG2)

The importance placed on 'clinging on' to 'being Guernsey' illustrates the strong emphasis on Guernsey's distinctiveness in maintaining a distinct place identity – clearly suggesting that anything that is represented to threaten such elements of place identity may be unacceptable (as proposed by Devine-Wright, 2009). Also, the relational positioning of Guernsey in contrast to *"everyone else"* creates an imagined 'other' – a symbolic outside world that is no longer *"free"* of wind turbines. This notion is used to argue that Guernsey needs to retain its distinctiveness by not, like *"everyone else"* installing wind turbines.

Another key representation of Guernsey that was essentially relational positioned it as vulnerable and too dependent on others (confirming the relevance of similar conclusions drawn in study 1), for instance by representing the current electricity system in terms of vulnerability (*"we're the end of the line here, we're even behind Jersey"* – Susan, FG4; "*what if France wants more energy?"* – Michelle, FG2). Such arguments were used to argue in favour of tidal energy (as well as offshore wind and demand reduction) across the focus groups:

> Dean*: "You don't want to be beholden on anybody, so the tidal power seems to me the perfect choice." (FG1)*

> Susan*: "I don't think this [energy system] is going to be completely secure. Because we won't be at the front of the queue. We will be at the bottom of the queue"*
> Lisa: *"We won't be able to set the tariff."*
> Susan*: "No, we won't be able to set the tariff. So that gives an added impetus to Guernsey to improve its sustainability and its on-island generation through renewables and also improve our efficiency, you know, we waste a huge amount." (FG4)*

The sentiments expressed in these quotes echo similar concerns about becoming more energy independent and ensuring a secure supply found in previous work (Firestone & Kempton, 2007; Parkhill et al., 2013). Here, these arguments are not just used in relation to support for energy-generating projects, but also linked to a secure, reliable supply more broadly; a discourse where both supply and demand side actions are represented as required in addressing this reliance on others.

This discourse of Guernsey needing greater self-sufficiency and local resilience was used across the discussions to make several points related to the circumstances under which offshore wind and tidal energy development would be acceptable. One key argument framed support for wind and tidal energy as contingent on the ownership model of any future development. Local ownership (referring to either States or community ownership) was commonly represented as the preferred option through representations of Guernsey as vulnerable *"small fry"*, defenceless to the whims of non-local *"big companies"*:

> Rachel*: "We talk about wanting to be an independent unit, I think it'd be nice really to know that it was owned by the States for the island. Or owned by the islanders for the island. Because you'd like to have that security, because we have problems with big companies – for example airlines, big companies looking for profit, you know …"*
> Susan: *"Yeah"*
> Rachel: *"… we're small fry, and you don't want to be cut off because someone else finds something more profitable and moves away and leaves you high and dry. So I think from that point of view really, you'd want it to be at least island-owned in some format."* (FG4)

> Rebecca: *"It would worry me that if it's not owned by the local people …"*
> Alison: *"Exactly"*
> Rebecca: *"… it kind of just ignores [interrupted]"*
> Alison: *"They don't care about – outsiders, if you don't, yeah they don't necessarily care about the island."* (FG3)

These quotations highlight that local ownership is particularly important because non-local project developers ('outsiders') were portrayed as not understanding and caring for the island to the same extent as 'locals' would. This highlights trust in the developer as a key condition for support (a common theme in local energy acceptability; e.g. Barry et al., 2008; Devine-Wright, 2013a). This argument also frames support as being conditional upon a local energy project being *"not solely [about] getting the energy"* (Stacey, FG4), but instead being sensitive to Guernsey's unique context, being designed with care *"for the island"*, and coming with the security and control offered by local ownership.

Important themes around enhancing Guernsey's independence, resilience and self-sufficiency also informed notions of local energy projects needing to be *"for the island"* (see above) – reflecting the argument that support for ORE is conditional on that such a project would be *"something we were doing for ourselves"*:

> Michelle: *"I think it would perhaps give us a little bit more of a sense of independence, in the fact that we weren't dependent on the price of oil and we weren't dependent on the cost of nuclear. That would be something we were doing for ourselves, which kind of 'Guernsey is doing this and this', so-"*
> Hank: *"Oh yeah totally."* (FG2)

Such arguments position support for ORE development as conditional upon the extent of local benefits (rather than, for instance, benefits to the global environment). In other words, this representation frames only those projects that are done to benefit Guernsey as acceptable (not an uncommon argument; e.g. Haggett, 2011). This is perhaps unsurprising given the consistent use of collective terms like 'we' and 'us' throughout the group discussions, which suggests a strong identification with and attachment to Guernsey. This representation of ORE as *"something we were doing for ourselves"* was also invoked to position a hypothetical large, export-focused offshore wind project as unacceptable, as such a development was portrayed as going beyond what Guernsey would *"need"*, being portrayed as *"exploitation"*:

> Rebecca: *"But then if it's just energy going to France, perhaps France actually has better places that an array of wind turbines could be placed. So I don't think we should exploit our – I don't know [pause] if we're not using it ourselves [Frank: Yeah], it feels a lot more like exploitation"* (FG3)

> Susan: *"[installing an export-only offshore wind farm] also still means that Guernsey is no better off in terms of vulnerability. We're still left vulnerable, unless you're suggesting that we find ways of making more energy than we use, and sell off. But to actually put in a wind farm and then send all of it, although we would still need to get energy from somewhere else, would seem silly."* (FG4)

In other words, ORE projects that 'fit' with place-related narratives around vulnerability and local benefits were positioned as acceptable, while alternative configurations using the same technology (i.e. an export-focused project) were instead framed as not fitting with these narratives, and portrayed as unacceptable.

Also, the likely electricity price increases associated with an (as yet) experimental technology like tidal energy (as presented in Table 5.3 on p.191) were represented as unacceptable to many, suggesting support for local ORE projects is conditional upon such projects not resulting in any substantial increases in local electricity prices:

> Hank: *"I mean I agree with the green side of things and all that, great. That can only be a good thing. But again just on the day to day life of people and their pockets and things, if you're going to a) spoil the view, and b) make us pay extra for spoiling the view, again, I mean, I'm trying to look at it as a general opinion - I can see the Guernsey Press already - I don't think people are going to buy into it, and unfortunately we live in a world where we all want to be green but no-one wants to spend any more because day to day life is hard enough as it is, for most."* (FG2)

Moreover, as in study 1, representations of the current electricity system as *"not very green"* (Rebecca, FG3) and *"old-fashioned"* (Lisa, FG4) were invoked to portray ORE as an environmentally friendly and modern alternative. However, throughout the discussions such negative portrayals of the current system were also often used to argue in favour of other forms of local energy action, encompassing both supply (e.g. solar pv, solar thermal, heat pumps) and demand-side options (e.g. insulation, green energy tariffs, behaviour change). Indeed, most of these local energy alternatives came up across all four focus groups, unprompted by the researcher, illustrating their prominence within deliberations of local energy futures. They were commonly represented as quick, easy and cheap alternatives to offshore wind and tidal energy.

> Ben: *"Now at the moment, personally, what should be encouraged is insulation. If you want the quick fix, rather than saying 'let's generate more', if you want to actually do something quickly and relatively cheaply, you encourage insulation. (…) I think that's the first thing the government should be doing, is encouraging us to save energy [people agreeing]. Then you start saying right ok, the technology will evolve over the years, you then start saying 'well what are we going to encourage?'"* (FG3)

The mention of insulation being 'the first thing the government should be doing' positions such demand-side options as preferable over ORE development, and frames ORE development as something that should only be implemented when such 'quick' and 'easy' measures have already been implemented. Others made similar arguments by stating that demand side options should be done *“for a starter”* (Susan, FG4), or by referring to the familiar phrase *“reduce, reuse, recycle”* (Andy, FG3) to highlight that demand reduction should always be the starting point, framing support for ORE projects as conditional upon the perceived progress made in first reducing electricity demand locally. This finding again confirms that public evaluation of specific local energy projects is dependent on how local residents envisage their wider energy future, and whether or not the local project is seen to fit in and contribute to such a future – or whether other options would have been more acceptable (Demski et al., 2015). In particular it echoes the importance placed by many – at a national level – on reducing energy demand, as part of achieving an energy system that is ‘efficient and not wasteful’ (Demski et al., 2015), and suggests a potential weakness of this study’s design is a lack of discussion of local energy demand in more detail.

Others instead used references to other demand and supply-side alternatives to argue any ORE project would need to be part of a comprehensive, mixed strategy, rather than being a stand-alone project (which has previously been found in relation to offshore wind energy in France; Westerberg et al., 2013). Within such arguments, investment in a single large-scale wind or tidal energy development was represented in terms of risk and uncertainty, as participants argued there is *“no one silver bullet”* (Adam, FG1), opting for a mixed, *“spread betting”* (Adam) approach, and in doing so reducing risk:

> Susan: *“I wouldn’t want to see – ideally – a huge big plant there, and nor would I like to see putting all our eggs in one basket, just relying on one energy source. So I think we need to spread the load on all the different technologies. So if you were talking about a small farm, then – it’s more important that we move toward renewables to me, and within that, and reducing our energy use”* (FG4)

This emphasis on not *“putting all our eggs in one basket”* again reflects the importance of the representation of Guernsey as a vulnerable place as an underlying narrative throughout local energy deliberations in this context. It also illustrates the value of looking beyond responses to single projects towards broader visions and perspectives on local energy system change, when trying to understand what shapes public evaluations of multiple local energy options.

In summary, discussions around hypothetical future offshore wind and tidal energy projects highlighted many conditions upon which support for such developments is likely to depend, such as whether it is for local use or for export, locally or externally owned, and whether it is seen to make Guernsey more independent and resilient (see Table 5.4).

Support for local ORE projects was represented as conditional upon such projects:
❖ Maintaining or enhancing Guernsey's distinctiveness
❖ Not increasing or even reducing Guernsey's vulnerability
❖ Being owned locally
❖ Being predominantly for the benefit of Guernsey
❖ Generating electricity for local use rather than for export – if using wind energy
❖ Not resulting in substantial increases in local electricity prices
❖ Being implemented only *after* other, 'easier' energy system changes have already been made
❖ Being part of a coherent wider approach to energy system change
❖ Being sited in the 'right' place (see section 5.5)

Table 5.4. Conditions for support expressed on future local ORE projects

Although ORE was also represented as a technology that contributes towards global sustainability, the prominence of other, locally-oriented narratives in Table 5.4 (e.g. ORE as tackling local vulnerability and as something mainly benefiting Guernsey) suggests such global narratives are relatively less important compared to locally-focused place-related narratives, in this case study context. It also suggests that while environmental arguments may be very important in shaping public evaluation of technologies *in principle*, they may not be the most relevant lens through which to understand the nuances of locally-relevant conditions for support for specific projects. The relative lack of prominence of global environmental arguments may also have been a result of the design of the focus groups, which were less about whether or not ORE should be developed, but more about under which conditions and in what form – questions where arguments about climate change are less pertinent. Another key concern that often characterises public responses to local energy projects – fairness and justice of both process and outcome (Gross, 2007; Wolsink, 2007) – was largely absent from the group discussions. This is unsurprising given that the research focused on other themes instead and the study design did not explicitly attempt to bring such topics into the discussions.

Also, it is worth noting the differences in public evaluations of the technology *in principle* (study 1) and public evaluations of more specific ORE projects (this study). Although the concept of tidal energy was represented very positively in study 1, in this study this was complemented by more negative representations of local tidal energy projects (for instance on its visual appearance and costs). By contrast, representations of a local offshore wind project added some positive elements to the earlier, rather negative representation of the technology itself. Moreover, in some groups it was suggested that the described offshore wind project was in some ways preferable to the 'chunky' and 'ugly' tidal energy development – illustrating the importance of opening up public evaluations of more specific projects rather than energy technology at an abstract level (Batel & Devine-Wright, 2015a).

5.5 Deliberating (un)acceptable locations for offshore wind and tidal energy development

One further important condition for support found across the in-depth interviews of study 1 and the focus group discussions in this study was that ORE developments would need to be sited in 'the right place', which was represented as important by participants across the four focus groups:

> Michelle: "*It does depend a bit on where it would be placed. Because there are places that you don't actually, you know, if it's a balance between saving energy, you know, renewable energy, and – you know, if it was in the right place, it'd be probably more acceptable than in sort of a recognised - "*

Nicole: "*I agree. [others hum in agreement]*" (FG2)

I: ***"In what way would [offshore wind development] be unacceptable to you?"***
Susan: *"If they put it on the Humps."* (FG4)

The focal point for the discussions around (un)acceptable locations for tidal and offshore wind energy was the A1 map in the middle of the table, which was used when asking participants to each place one green and one red sticky note on this map to signify the most and least acceptable locations for offshore wind and tidal energy (see methods section). The sticky note task was performed before the maps showing technologically feasible sites (Appendix F) was introduced. The outputs of this task are shown in Figures 5.2 and 5.3.

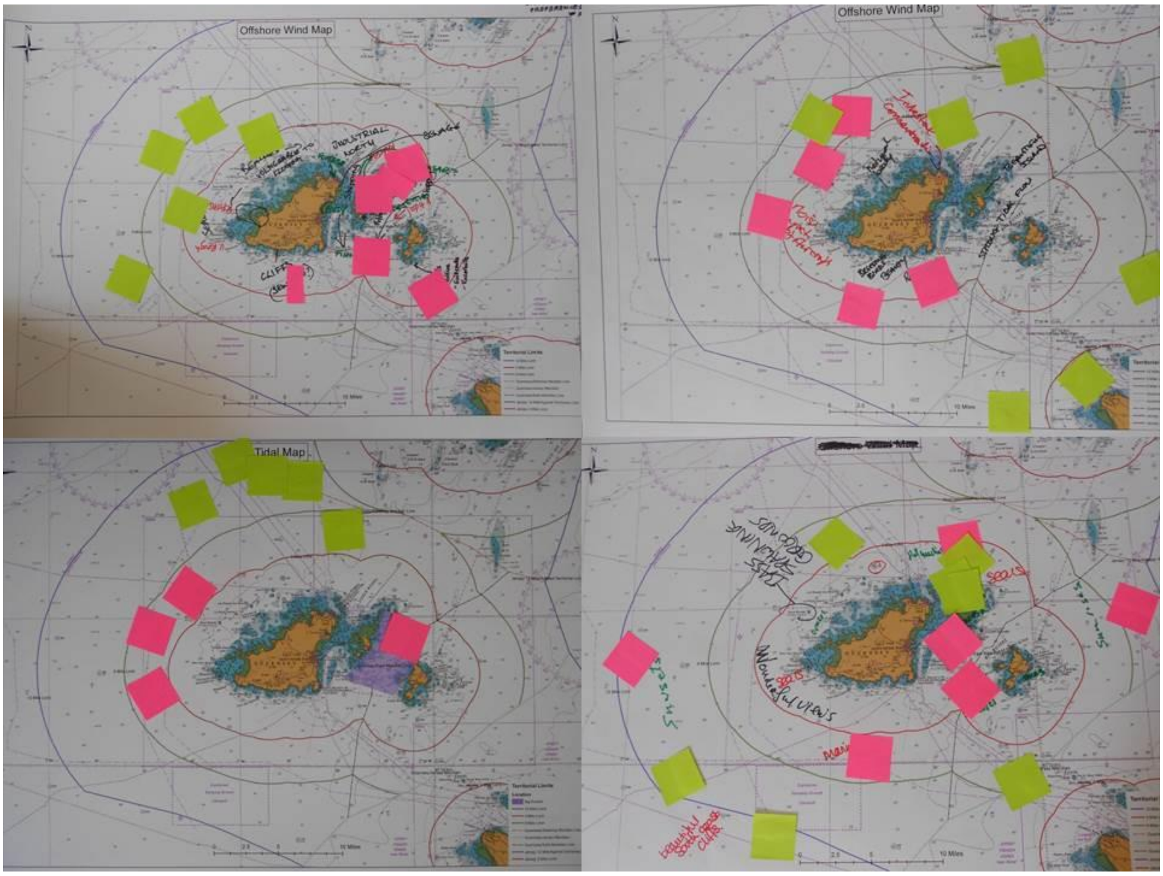


Figure 5.2. The four offshore wind spatial preference maps produced by the four focus groups

A visual inspection of the maps in Figure 5.2 (an analysis of the verbal group discussion data and why the notes were placed in this way follows below) shows that sticky notes were placed in a variety of places, covering all sides of the island – this mirrors Figure 4.2 (p.130), which showed participants' photographs were taken all around Guernsey's coast. This reflects the multiple narratives that were created by participants around what constitutes 'acceptable' locations (as discussed below): no consensual notions of one or two particular places being universally agreed upon 'best' locations were expressed consistently. Instead, the green sticky notes were placed on all sides of the island, but most commonly to the north(west) of the island. The red sticky notes were placed on the east, south and west coasts, but only rarely to the north of Guernsey, representing the latter as the most 'fitting' place for offshore wind development (which may have been in part due to a relatively low number of participants from the north of Guernsey – see Table 5.2). Although findings from previous studies would suggest all green notes would have been placed at the greatest possible distance from the shore (e.g. Knapp & Ladenburg, 2015), in fact over half of the green notes were placed relatively close to the shore (within six nautical miles of Guernsey). Although this does not mean that participants necessarily prefer nearshore locations over locations further offshore, it does suggest that in deliberating the most acceptable location for offshore wind energy, for many participants there were more important considerations (discussed below) than ensuring the turbines are sited as far away as possible (as would be the proposition of the NIMBY hypothesis; see Swofford & Slattery, 2010). One participant expressed she had no preference (*"I don't really mind anywhere, so what do I do with that?"* – Alison, FG3) and therefore did not place her red sticky note, as suggested by the researcher in response. The fact that almost every participant placed a green and a red sticky note suggests that *where* offshore wind is sited is important in judgments on whether such a technology is 'in place' or 'out of place' (even if of course it also reflects the fact that they were specifically asked to do so by the researcher even if they did not necessarily feel very confident about their view (yet)) – though not for *all* local residents (in other words, it is an important condition for support; Walker et al., 2010).

Figure 5.3 presents the three spatial preference maps for tidal energy – one group did not produce a map as participants were confident tidal energy was only possible in the Big Russel (between Herm and Sark) and therefore did not engage in the exercise:

Alison: *“I would only want it to be in the right place, because otherwise what’s the point?”*
Ben: *“I don’t think – economically, people are going to put them where they are going to get the most energy out, and it’s the cheapest for them to actually be installed and maintained [refers to Big Russel].”* (FG3)

This quotation illustrates that local residents may have strong pre-existing ideas, grounded in local experiential knowledge (in this case of the tides). Such ideas can inform their ideas of the technology, as well as presumptions about what is economical – presuming strongest currents are best (which overlooks for instance the option of using less powerful currents instead or the role of the suitability of the seabed).

Compared to the offshore wind maps in Figure 5.2, a visual examination of Figure 5.3 shows that these sticky notes were generally placed closer to shore, yet similar areas were portrayed as acceptable (the north, as well as the southwest) and unacceptable (the east, south and west coasts). Overall less sticky notes were placed on these tidal energy maps (the 22 participants only placed 11 green and 10 red notes), reflecting the greater difficulty experienced in deliberating (un)acceptable locations for tidal energy. This may be due to the researcher’s presentation of multiple (visual) tidal energy technologies, which most participants were not familiar with. This may have added uncertainty to envisaging what such a project would look like. Also, the visualisations only showed single tidal energy turbines, rather than the arrays of turbines that would be most likely to be installed in the future (such visualisations were not available of sufficient clarity and quality), again potentially making it more difficult to imagine such a future development, and thus to comment on its (un)acceptable locations. The other possible explanation for the difference in the number of sticky notes placed is that for the tidal energy technologies shown, the question of *where* the technology is developed may simply be less important than for offshore wind energy – potentially because of some of these technologies being submerged and thus not visible from the shore.

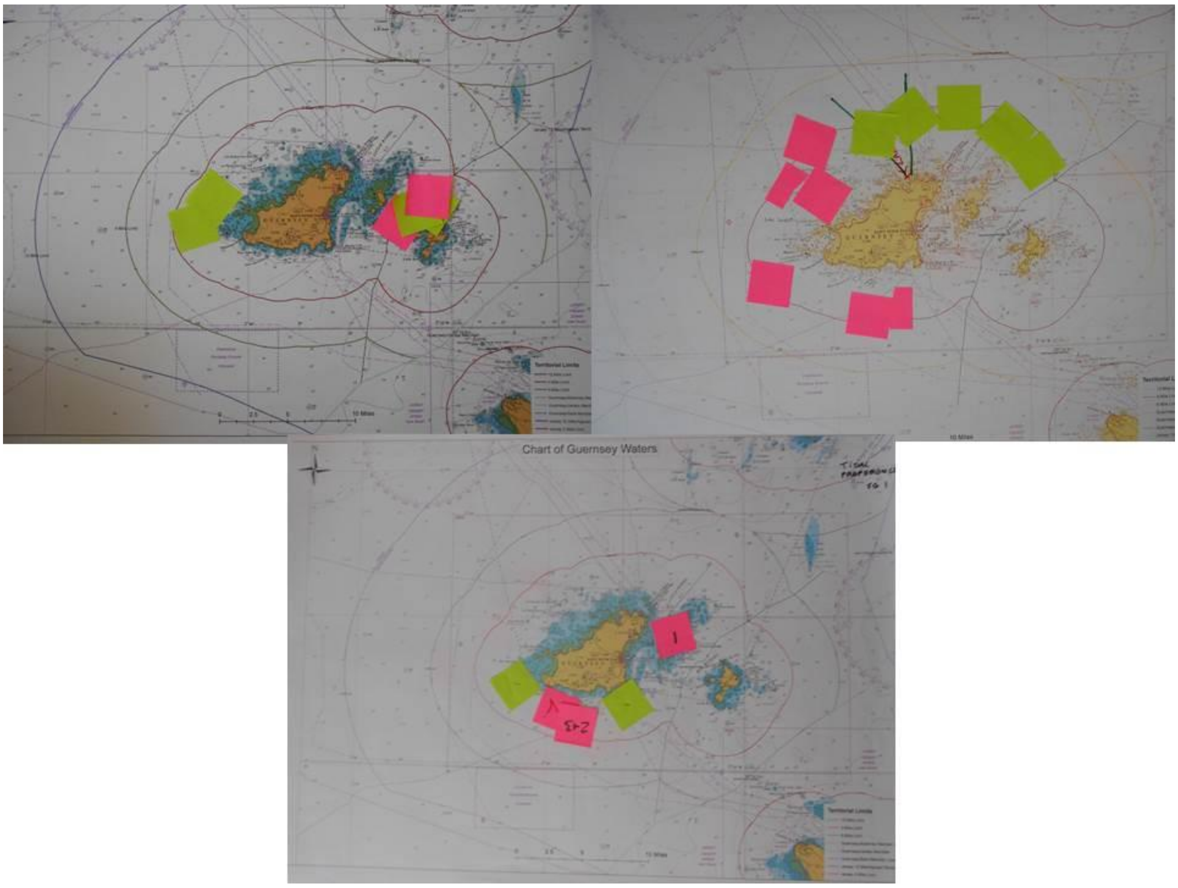


Figure 5.3. The three tidal energy spatial preference maps produced by the four focus groups

It should be noted, however, that not all sticky notes that were placed bear the same weight. Generally speaking, the red sticky notes were placed using strong 'place-protective' (Devine-Wright, 2009; Stedman, 2002) arguments – see section below for illustrations. By contrast, the green sticky notes did not invoke 'place-enhancing' arguments, but were often talked about in terms of minimising the apparently inevitable negative impact of energy development:

> Dean: *"I put mine [a green sticky note] just [in the south] because it's in the least of all evils"* (FG1)

This suggests participants felt more strongly about places that were *unacceptable* for ORE development than about places that were relatively acceptable. This was also implied by the two occasions during which a participant decided to tear their single red sticky note in half, to be able to mark two locations as unacceptable (something that never happened with the green notes). This suggested more flexibility in the task instructions (e.g. more or differently sized sticky notes) may have helped some participants in expressing themselves. A further difference is that the red notes were often placed to signify very specific (named) places (e.g. the Humps, the Hanois), while the green notes frequently signified general areas (e.g. 'the west coast') seen as broadly more acceptable, rather than specific places (at a micro scale) that are *very* unacceptable.

Also, not all sticky notes necessarily reflect highly acceptable or unacceptable places; for instance one participant vocally placed her green note off the west coast as a playful act of provocation *("so shall I be controversial then?"* – Alison, FG3), rather than to signify a place that was particularly acceptable to her personally. Others mentioned they did not consider some areas (usually the east coast) for their sticky notes because they presumed it was unsuited to ORE anyway, for example due to the intensity of boat traffic:

> Hank: *"I'm kind of ignoring this part [east coast] anyway because I'm assuming with the amount of commercial traffic …"*
> Michelle: *"Yeah."*
> Hank: "… *that's not viable anyway. So I'm hoping that's out of the question."* (FG2)

Also, it should be remembered that the maps in Figures 5.2 and 5.3 do not reflect the importance or indifference that was verbally attached to particular sticky notes by participants. In other words, the maps and the precise location of the sticky notes should not be taken at face value (Rose, 2007), as the location of the sticky notes are the product of individual siting preferences as well as the process through which these were elicited (e.g. participants being given a binary response option; restrictions places on the number of sticky notes placed by individuals). Instead, the value of the production of these maps perhaps mostly lies in its use as a tool for opening up complex and diverse arguments around the 'fit' of different places with certain technologies, which are discussed below.

Place-technology narratives used in defining (un)acceptable places for ORE development

The discussions that took place while placing the sticky notes revealed eight ways in which offshore wind and tidal energy technologies were represented as threatening or supporting place-related meanings and therefore (not) fitting in various places (summarised in Table 5.5).

❖ **Fairness** – places represented as already having existing energy infrastructure were framed as unacceptable; locating this in other places would 'share misery'
❖ **Nature versus industry** – places portrayed as natural were represented as unacceptable; 'industrial' places were represented as acceptable locations
❖ **Place attachment** – places that were represented as special to people individually were represented as unacceptable locations
❖ **Practicalities** – places represented as having the biggest resource or as being closest to the existing grid were represented as most acceptable
❖ **'Othering'** – places portrayed as representing some symbolic 'other' were represented as acceptable locations
❖ **Usage** – places represented as being used by many people were framed as unacceptable locations
❖ **Visual impact** – places associated with beautiful views were represented as unacceptable locations
❖ **Wildlife** – places associated with the presence of wildlife were represented as unacceptable locations for ORE

Table 5.5. Arguments used in representing locations as (un)acceptable for ORE projects

Fairness

Although several arguments were used to position the north as the 'best' place for ORE projects (e.g. nature versus industry, usage), one argument was specifically used to argue against siting ORE to the north of Guernsey: the notion that it would be unfair to concentrate all energy technology in this area, and that spreading energy generation technologies around the island would be better:

> Dean: *"But I'm just wondering if, if [renewable energy] is to impose, impinge on everybody's lives, whether it could be shared, and perhaps have the wind farms up here [north], and the visible ones [tidal energy] sort of down here [south]. I don't know why I think that, but it seems - "*
> **I: *"What do you mean by 'shared'?"***
> Dean: *"Erm…"*
> Marie: *"Share misery."*
> Dean: *"Yeah, yeah. Rather than have the visual impacts all in one place. (…) We all have to make sacrifices."* (FG1)

Issues around fairness and distributional justice have commonly been found to be important to acceptability of energy schemes at different scales (e.g. Demski et al., 2015; Gross, 2007). The language used in this quote ('share misery') represents ORE technologies as essentially very undesirable, which foregrounds the importance of ensuring the 'sacrifice' of having such technology nearby does not solely fall on one part of the island. Moreover, in this quotation the acceptability of a specific location for a specific technology is framed as relational: the acceptability of a wind energy project in the north is seen as dependent on the presence of a tidal project in the south. This again suggests that public evaluations of local energy projects may be partially dependent on how such projects are interpreted and deliberated relationally within its wider context, such as the (lack of) simultaneous implementation of other local energy options.

Nature versus industry

Places represented as 'natural' and 'unspoilt' were often portrayed as not suited for siting offshore wind (this argument was not made for tidal energy), by representing wind turbines as *"modern"* and *"industrial"* (as was found in study 1 and other previous work including Devine-Wright & Howes, 2010):

> Michelle: *"That ruggedness of Rocqaine, it would be horrible to have something so modern on that bit"* (FG2)

However, this representation of offshore wind energy as a modern, industrial technology was also invoked to portray *"the industrial north"* (a phrase that emerged in each of the four sessions and across the study 1 interviews) as a place that 'lends itself' to hosting such technologies:

> Emily: "*this [the north] is quite industrial anyway [people agree], and so [by installing offshore wind turbines] you're only just adding to the industrial sort of scene [people agreeing vocally]."* (FG1)
> Jodie: "*Or maybe, like you said, the industrial north, it maybe keeps it like" [interrupted]*
> Lisa: "*Yeah it lends itself doesn't it?"* (FG4)

Such representations, portraying wind energy as a dirty, utilitarian manufacturing activity, clearly contrast with the notion of ORE technologies in general as clean, green and forward-looking (see study 1). Such a representation of wind energy has been commonly found before in wind energy acceptability studies before (e.g. Devine-Wright & Howes, 2010; Fast et al., 2015). However, while in Devine-Wright and Howes (2010) the 'industrial scale' of a 200-turbine wind farm was objected to locally, in the current study it was a much smaller wind project (10-15 turbines) that was represented as industrial. This suggests that this notion of wind energy as 'industrial' has less to do with the number of turbines or scale of the project than with the technology itself, and with the ways in which such technology is represented to (not) fit a particular ('natural') place (McLachlan, 2009).

<u>Place attachment</u>

Places represented as especially *"precious"* to or *"loved"* by participants were also frequently portrayed as unacceptable locations for offshore wind – though not for tidal energy (reflecting a narrative of 'place-protection'; Devine-Wright, 2009; Stedman, 2002):

> Frank: "*I would be a NIMBY in respect of Herm, because I just think it's outstanding."*
> Alison: *"Yeah I do love Herm."* (FG3)

> Hank: "*I've got no objections in particular, if they are going to come, they're going to come, fine. I'm just precious about the Hanois."* (FG2)

Such favourite places (including places to visit like the island of Herm, as well as places to look at, like the offshore Hanois lighthouse) were often talked about in terms of their visual beauty, naturalness and the presence of wildlife, suggesting these arguments are likely to overlap – despite being presented here as distinct arguments. Place attachment has been found before to be positively correlated with opposition (Devine-Wright & Howes, 2010) as well as support (Devine-Wright, 2011c) among residents of coastal towns to local energy projects (see section 2.2.2). However, in contrast to those studies, in this study such attachment-related arguments were expressed on places at a different scale (i.e. not to towns of residence but to particular coastal places), and were also only ever used to express opposition to ORE in particular places, but never to express support. This suggests that the role of place attachment as a predictor of public evaluation of ORE projects may strongly depend on the scale at which it is operationalised (Vorkinn & Riese, 2001; Woods, 2003) – an issue not frequently reflected upon by previous place-based acceptability studies (see section 2.3.1).

Practicalities

Several participants used arguments pertaining to efficiency and practicality to justify the placement of their green sticky note, to highlight cost-effectiveness as an important condition for support (mirroring findings on public preferences for an energy system that is efficient and not wasteful; Demski et al., 2015). Green notes placed using such arguments were often located in areas that were portrayed as possessing the strongest winds or tides, as well as locations close to the existing power station, which was represented as the *"hub" (*Adam, FG1) of the Guernsey electricity system:

> George: "*I like the north coast because it's close to existing infrastructure."* (FG1)
>
> Stacey: "*I think it just makes sense from where the wind is coming [west coast] and then being able to get a cable straight in to Guernsey."* (FG4)

Such arguments were partly linked to participants' representations of which places were expected to be the most likely for offshore wind and tidal energy – as elicited earlier in the sessions (and in study 1, which found that such expectations were linked to overall stance towards particular ORE technologies; especially offshore wind was unpopular because of the expectation that it would have to be sited off the west coast; see section 4.4.2). Participants generally expressed expectations of tidal energy to be located in the Big and Little Russel, off Pleinmont, and off St Martin's Point (see Figure 3.1 on p.98 for a map of Guernsey), and offshore wind energy to be located off the west coast, which was represented as a logical location given that that is 'where the wind is coming' from (which accounts for some of the green sticky notes in those locations).

'Othering'

Some places were also portrayed as suited for offshore wind energy development by (often implicitly) positioning such places as representing symbolic 'others'. This argument was used to place green sticky notes very close to Jersey's coast in several of the four maps shown in Figure 5.3 (p.208):

> Adam: *[while placing green sticky note] "Between us and Jersey" [laughs]*
> Gary: *"Oh, genius!"*
> **I: *"Why do you say that?"***
> Adam: *"Well it wouldn't spoil the view." [people laughing]* (FG1)
>
> Hank: *"Can't we just stick them at the end of Jersey and just stick cables up?" [people laughing]* (FG2)

Although these green notes were placed in humorous way, they defined Guernsey (rather than for instance the Channel Islands as a whole) as the 'in-group', and Jersey as a symbolic 'other'. Similar arguments were to some extent implicitly made about the northern part of Guernsey; in both study 1 and this study, 'the industrial north' was a commonly used label by participants from other parts of the island, suggesting a consensual understanding among those from other parts of the island of this area being 'a certain kind of area', in both a social ('bandit country') and physical sense (being 'industrial') – see section 4.3. No other part of the island was consistently talked about in this way throughout the interviews and focus groups. Given that such labels were used by those from other parts of the island, it could be understood as a way of implicitly suggesting 'the north' is a fundamentally different kind of place, which therefore 'lends itself' to hosting such unwanted technology (see other quotes throughout this section).

Usage

Places represented as being used by many people (e.g. west coast) were commonly portrayed as unacceptable locations for either offshore wind and tidal energy development, while places considered less popular (e.g. the north of Guernsey) were represented as very acceptable by comparison:

> Dean: "*There's only a few people that would view this here [north of Guernsey], whereas tens of thousands would see that there [Cobo] [people agreeing].*" (FG1)

Such arguments around the popularity of coastal places were sometimes combined with visual arguments and specific experience and local knowledge of the coast (e.g. orientation of particular beaches) to represent particular spaces as having the least visual impact on the Guernsey population as a whole, if used as sites for offshore wind energy development (the area talked about in this quote was marked on the map used during this focus group – see the black triangle on the top-right map in Figure 5.3 on p.208):

> Hank*: "No-one goes there [north of Chouet] for the view. And if you do, you're that much lower down. (…) When you're at Pembroke, your views kind of go a bit more that way I think."*
> Nicole*: "Yeah. Because of the angle."*
> Hank*: "And when you get into sort of like Ladies Bay and stuff, your view is kind of thrown that way [the west]. And this bit in between, going out that way, is very rare, you've got to go there to get that view."*
> Nicole*: "Yeah."*
> Hank*: "It's not really overlooked." [marks this discussed area on the map]* (FG2)

Visual impact

Places represented as having particularly beautiful views and being associated with enjoying sunrises or sunsets (in particular the west and south coasts – see Figure 4.6) were widely represented as unacceptable locations for locating offshore wind projects:

> Hank: "*I think you go to the cliffs for the views, to look back across the bays, it's all about the view.*" (FG2)

Nathan: "*I did [place this sticky note], I like the view of the west coast, I think it's so pretty, and especially when it's sunset and you've got – it's a beautiful part of the island. So if, possibly if I have a sunset with a silhouette of 100 [laughs] or whatever it would be, wind farm on there I don't think I would particularly enjoy that. [pause] Anywhere with a sunset isn't - "*
Rebecca: "*Yeah exactly the same [reason for placing sticky note], yeah that sunset, that horizon, I wouldn't want to see that spoiled."* (FG3)

It should be noted that such arguments were not used during the focus groups in relation to the subsurface tidal energy technology, which was represented as acceptable anywhere (although some represented the surface-piercing options as unacceptable anywhere):

Dean: "*I think it is really important whether it [tidal energy] is visible or non-visible, the visible ones, I wouldn't want to see them anywhere, if they're underwater I don't care, you can do what you like."* (FG1)

Another difference between representations of offshore wind and tidal energy was that the visuals of both technologies were represented as suited to areas with different visual characters. The surface-piercing tidal energy option was represented by some as visually fitting particular places "*where there's already structures that are similar"* (Rebecca, FG3), which typically referred to the east coast. By contrast, offshore wind turbines were represented as fitting large open, 'empty' spaces with fewer existing maritime objects, rocks or islands, which commonly referred to the west coast:

Susan: *"Over here [west coast], then it's, yeah I think [wind energy] would just fit in – there's a lot to look at here [east coast], and it would muddle, interfere with the visual, whereas this way [west], you'd be looking at the sea and just those [wind turbines], which I think are quite good-looking."* (FG4)

Nicole: *"I think, I wouldn't mind any of these, the tidal ones, here [the Big & Little Russel], but I think these would look worse there, the wind turbines (…) because it's always busy with ships and stuff, I just think there - the wind turbines are like somewhere for a big open space"*
Jesse & Michelle: *"Yeah."*
Nicole: *"… and the tidal ones are for like out here behind Herm, I don't know."*
Michelle: *"You've got a good point there."* (FG2)

This suggests that while certain places may be unacceptable as locations for siting one ORE technology, they may at the same time be rather more acceptable as sites for another ORE technology. This suggests care needs to be taken when presuming findings on finding acceptable locations for offshore wind projects (e.g. Knapp & Ladenburg, 2015) also apply to other ORE technologies like tidal energy.

Wildlife

Finally, places associated with the presence of wildlife (in particular Herm, the Humps, the Big Russel and parts of the west coast) were represented as very unacceptable as locations for both offshore wind and tidal energy development:

> Stacey: "*I'd have a problem if it were to disturb the wildlife that was here [around Herm] [people hum in agreement], because I think there's other options that would be available that wouldn't have as much of an impact on the environment. And we get quite small groups of breeding birds that come over every year and stuff. And I love going out and seeing them so it would be a shame if that was taken away, and I think Guernsey would lose quite a lot by losing that.*"

The framing of this argument by arguing that 'Guernsey would lose quite a lot' if its wildlife was to be affected suggests that this wildlife is considered a fundamental part of what Guernsey 'is' – highlighting another way in which aspects that are seen to define the distinctiveness of a place are very important to protect (Devine-Wright, 2009; Twigger-Ross & Uzzell, 1996). Also, the mention of 'other options that would be available' again suggests that lay knowledge of what alternative options are available influences the evaluation of specific local energy projects (see Demski et al., 2015; Setiawan & Cuppen, 2013).

Preferences across technically feasible locations

After the sticky note task, a map was provided showing the locations that were judged to be technically suitable for offshore wind and tidal energy development in Guernsey (see Appendix F). For tidal energy, this information did not lead to substantial further discussions, as the map showed only one potential near-term development site, a location that was already expected to be the most suitable in most groups (Big Russel). By contrast, the four suitable locations that were highlighted for offshore wind led to lively debates around their relative acceptability – possibly because only the west coast was expected to be a suitable place for offshore wind development (see section 4.4.2). Employing broadly similar arguments as outlined above, participants commonly represented the Schole Bank site (the site furthest from the shore – over seven miles east of Guernsey; see Appendix F) as the most acceptable location. In light of previous studies finding a similar preference for locations further offshore (e.g. Ladenburg & Dubgaard, 2007; Landry et al., 2012) this is perhaps unsurprising. The Schole Bank site was portrayed as *"out of the way"* (Marie) in multiple ways (e.g. visual, usage), and was represented as most acceptable location for virtually everyone in Guernsey:

> Nathan: "*Yeah I think if you have the whole population of Guernsey and they go 'where do you want your wind farm?', you'll have 60,000 crosses there [Schole Bank]."* (FG3)

However, when the researcher added that the Schole Bank site was likely to be more expensive, across the four groups it was argued that electricity price increases would be very unpopular among most Guernsey residents, suggesting the three sites closer to Guernsey would be more suitable. Among these three sites – again drawing on the arguments summarised in Table 5.5 (p.210) – the eastern portion of the 'Northwest coast' site and the 'North coast' sites were commonly represented as the most acceptable by participants, while the 'North of Herm' and western portion of the 'Northwest coast' sites were universally represented across the groups as the least acceptable, and also the *"easiest sell"* to the wider Guernsey community:

> Rachel: "*I think out of all places that is probably the easier place to sell it if you can do it up here [north coast], in terms of getting public – if we said ok that one [Schole Bank] is probably going to be massively expensive, and that one is not going to happen [North of Herm], because you just wouldn't be able to get permission to do it I don't think, I think this would be the easiest sell, just because even though you've still got walkers, you've got less housing actually overlooking it, whereas this [Northwest coast] is just popular coast with everybody, and there's going to be a lot of opinions over what you do to it."*

> Susan: "*Yes that's what I'm thinking, I agree. All the people that like to go and have a drink down down at Cobo, they will complain, whereas here, actually, I would have thought it [would be more acceptable].*" (FG4)

In summary, across the focus groups a range of different place-technology narratives were used to position some places as acceptable and others as unacceptable for offshore wind and tidal energy development. Many of these arguments were used for both offshore wind and tidal energy development, although some (like industry versus nature) were only used in the context of offshore wind energy. Although many 'place-protective' discourses came up (e.g. protection of favourite places), no discourses of place enhancement emerged in this part of the workshop sessions (though they did come up frequently during other parts of the discussions – see below), despite participants being given both red and green sticky notes, allowing them to talk about both positive and negative effects on place meanings. A potential explanation for this could be that the focus in this study was on the 'micro' scale (i.e. *where* to locate ORE), which is therefore less suited to capturing place-enhancing arguments, which predominantly relate to the wider locality (e.g. the need for independence). This suggests the extent to which 'place-enhancing' interpretations of local energy projects are found could depend on the scale at which such interpretations are investigated – meaning it is important to critically consider the scale at which such studies are conducted (Woods, 2003).

Many of the same themes also emerged in study 1 (e.g. independence/self-sufficiency), while others that were prominent in study 1 did not come up in this study (e.g. the coastal environment as a place to be utilised, as a space for escape from the crowded land, as a place of significant life events). This could be due to methodological differences, as study 1 was more oriented towards individual place-related narratives, and personal experiences of the coast and sea, whereas during the focus groups the emphasis was more on a discussion of specific local energy projects.

Although many of these arguments for positioning places as (un)acceptable for energy technology development have been found before (e.g. industry versus nature; see Devine-Wright & Howes, 2010; McLachlan, 2009), others (e.g. practicalities, usage, 'othering') have not been highlighted before. This suggests support for ORE technologies in particular places may not just depend on the symbolism of such places (as emphasised by McLachlan, 2009), but also more practical rationales around minimising such a development's impact (e.g. in terms of protecting valued or much used places) on the wider community, and maximising its cost-effectiveness.

5.6 Discussion

This study aimed to better understand public evaluations of offshore wind and tidal energy projects in Guernsey and the factors upon which public support is *conditional* (Walker et al., 2010), by exploring representations of place-technology fit (McLachlan, 2009) in a deliberative (Coleman & Gøtze, 2001) setting.

Local offshore wind and tidal energy projects were represented as (not) fitting Guernsey in many ways, focusing on themes similar to those found in study 1, like vulnerability, independence, distinctiveness, local benefits, and finding the 'right' (or the least bad) place. These themes were also drawn upon by participants to frame their support for specific future developments as conditional upon how such factors are addressed by future developments. In particular, locally-oriented themes (e.g. independence, economic benefits to Guernsey, tackling local pollution, enhancing Guernsey's distinctiveness) were commonly represented as conditions for support (ORE as something 'we would to for ourselves'). In other words, many 'place-enhancing' (Devine-Wright, 2011b) narratives emerged. This suggests that public perceptions of a mismatch between a project's local 'costs' and non-local 'benefits' (Haggett, 2011) are by no means inevitable within local energy projects. Instead, it implies that, at an early stage of public engagement, local communities may perceive many potential local benefits to local RE development. This points to the value of attempting to better understand and galvanise these potential reasons for supporting local energy projects by adopting more 'upstream' research designs, to complement the prominent literature aimed at understanding opposition to 'downstream' case studies.

A further key condition for support for many participants was that ORE projects would be sited in 'the right place'. However, contrasting with the notion of local communities as a 'real and present danger' to local developments (Walker et al., 2010), participants were widely able to identify a variety of locations as a potentially 'right place' for ORE development. This is one example of a topic in which it may be particularly beneficial to engage local communities at an early stage – involving them in important 'upstream' decisions on site selection. Nevertheless, and in contrast to findings in study 1, which found the west, east and south coast to be universally represented as unacceptable locations, many places were marked as both acceptable *and* unacceptable locations by participants across the focus groups. This suggests that finding a universally acceptable location may be unlikely (when using small samples; see next chapter for an alternative approach) – though this certainly does not mean it is impossible, as evidenced by the emergence of the north of Guernsey as a widely-supported location for ORE development.

The range of arguments used in deliberating what constitutes acceptable locations elicited by this study offers a novel and important contribution to the local energy acceptability literature, as many previous studies have mostly focused only on minimising visual impacts when siting wind energy (see Knapp & Ladenburg, 2015). Instead, this study found eight different arguments were used to represent locations as 'right' or 'wrong', including visual arguments (e.g. protecting valued vistas and 'natural' areas from industrialisation), but also symbolic (e.g. fairness, 'othering'), wildlife and practical arguments. This diversity suggests the value of further investigating how the meanings associated with particular places (at a 'micro' level) may have the potential to contribute to designing well-supported local energy projects that are interpreted to 'fit' their place. A key question to consider for future studies is the extent to which such spatial questions are equally relevant for onshore RE projects, which offer a fundamentally different geography to offshore settings. In terms of applied implications, the list of eight local considerations for what constitutes a socially acceptable location for local energy projects could potentially be used in the future by project developers as a checklist to consider when exploring the potentially suitable locations for future energy projects.

Importantly, the kinds of area represented as acceptable were different for offshore wind energy compared to tidal energy. In particular, offshore settings that were characterised as filled with existing objects (buoys, lights, markers, rocks) were said to be more suited for tidal than offshore wind energy. Wide open offshore spaces were instead portrayed as visually more suited to wind turbines. Although this perspective was only offered by participants in one focus group, such cross-technology differences nevertheless suggest the value of a comparative research design, which investigates public responses to multiple local energy alternatives simultaneously. This is especially important given the dominance of wind energy case studies in the current energy acceptability literature (see Wiersma & Devine-Wright, 2014). More comparative studies can help in better understanding the extent to which findings from such wind energy case studies are equally relevant in energy projects using other technologies.

Moreover, a key component of this study was the deliberation of more specific local uses of offshore wind and tidal energy, rather than the technology *in principle*. These deliberative processes were found to alter representations of these technologies compared to study 1: tidal energy was represented more negatively, in terms of risk and uncertainty, while offshore wind energy was instead evaluated more positively compared to study 1. This suggests the importance of deliberative components to upstream studies of local energy acceptability, which allow a better understanding of how public understandings of potentially unfamiliar technologies (and their local deployment) may evolve when prospective local energy projects become more ‘real’ to locals. As such, upstream engagement that includes a deliberative element may offer a better understanding of how local communities may respond to projects as they become more specific in later stages of implementation.

One key finding generated by the deliberation of multiple local energy alternatives is that the evaluation of these distinct options is an inherently relational process. In other words, public evaluation of specific ORE projects was linked to participants’ evaluation of alternative options to address local energy challenges. For instance, ORE was represented as something that should only be deployed *after* other local energy options had been implemented – in particular options represented as ‘easy’ (e.g. demand reduction). Also, ORE was evaluated relationally in contrast to Guernsey's current electricity system: for instance, representations of this current situation as unproblematic were associated with less favourable evaluations of the installation of ORE projects. Evaluations of specific ORE projects were also linked to whether or not such projects would represent one-off endeavours or be a part of a wider, comprehensive energy policy (the latter option being associated with higher levels of support for ORE projects). In other words, public evaluations of local energy projects seem to not only depend on factors related to the project itself, but also on how it is perceived to fit within the wider energy system and policy context. This study thus suggests that the energy acceptability literature is weakened by largely overlooking such broader systemic questions (with some exceptions; e.g. Firestone & Kempton, 2007 – see section 2.2.1) until recently (Demski et al., 2015). Therefore there is a need for future studies to build on these qualitative findings by (quantitatively) opening up the relative predictive importance of such factors compared to other important variables (e.g. procedural justice). In the meantime, these findings suggest to policy-makers it may be beneficial to frame any local energy project within its wider energy system and policy context, rendering explicit its broader systemic rationale, in project communications (as suggested by Parkhill et al., 2013).

Although the methodology employed worked well in eliciting rich deliberative discussions of hypothetical ORE projects as part of Guernsey's energy future, future studies employing a similar method could further improve it in several ways. First of all, participants were relatively restricted in how to express their spatial preferences during the sticky note task. In particular, the binary choice offered between green and red sticky notes marginalised the wide array of potential stances towards local energy projects, such as agreement or indifference (Batel et al., 2013). Also, the size of the sticky notes was prescriptive in terms of the kinds and size of place that participants could mark as either acceptable or unacceptable – although the notes were still used to mark both highly specific places (e.g. the Hanois lighthouse) and much broader areas (e.g. the west coast). Future studies could thus improve the usefulness of this sticky note task by allowing participants greater freedom in the size, number, and shape of sticky notes given to them, or by instead using marker pens for the same purpose. Also, providing different colours to reflect alternate stances (e.g. orange notes for areas participants are not yet sure of) may further enhance the outcomes of this kind of research method – though care should be taken to avoid overcomplicating it. Moreover, greater use of digital technology (e.g. Alexander et al., 2012; Brown et al., 2015) could help in upscaling such exercises to include greater numbers of participants, offering the potential to judge the representativeness of the findings beyond small samples.

A second important limitation of this study was that it prescribed an emphasis on two particular technologies (offshore wind and tidal energy), which could be argued to be inconsistent with the wider research interest in the local deliberation of multiple energy alternatives. In particular, substantial parts of the focus groups were allocated to an in-depth discussion of both offshore wind and tidal energy. However, throughout all four focus groups, discussions often veered towards energy technologies that apparently struck participants as more appropriate local energy options at this stage in time (e.g. demand reduction, solar energy). However, due to this research' interest in ORE technologies, the deliberation of such technologies could not be opened up in more detail. This suggests that if future studies of local energy futures are to fully capture the diversity and depth of local energy deliberations, and the identification of options that are most widely supported locally, they would benefit from providing information on more than two (researcher-selected, co-produced) potential future energy technologies, and allocating more time for the discussion of these.

This study was also limited by the fact that almost all of its participants were (very) interested in (renewable) energy, which is unlikely to be entirely representative of the wider population. This may have been a consequence of recruiting participants by emphasising the focus groups would be a chance to learn more about the future of renewable energy in Guernsey. This weakness reinforces the value of methods like auto-photography, which was found in chapter 4 to be successful in recruiting participants who may not have a particular interest in energy. It thus captured views from such 'hard to reach' groups – yet at the same time potentially excluded others who are unable to commit to participating in such a relatively time-consuming method. Also, despite targeted recruitment efforts to tackle this, relatively few participants from the north of Guernsey took part. This may have shaped the finding of the north of the island as the most ‘acceptable’ location for ORE development (although the findings show this was a result of many different arguments other than self-interest or NIMBYism). The next study aims to address these shortcomings by collecting a sample that is representative of the Guernsey population.

In conclusion, studies 1 and 2 have identified multiple prominent ways of representing place (at different scales) and technology (both in a general sense, and for specific projects), and ways of using such representations to portray local ORE developments as ‘in place’ or ‘out of place’ at multiple scales in Guernsey. However, these findings were based on a small sample of Guernsey residents (36 different individuals across the two studies), where the north of Guernsey was relatively underrepresented. Therefore, a key limitation of these two qualitative studies is that some perspectives may not have been explored as fully as others due to the limited representativeness of the sample used. Also, the studies are unable to comment on the relative prevalence and predictive importance of these different factors in shaping evaluations of ORE developments in the wider Guernsey population. The next study therefore aims to quantitatively explore the relevance of these different factors in explaining public evaluations of multiple specific offshore wind and tidal energy projects in Guernsey.

Chapter 6. Public evaluation of three specific offshore wind and tidal energy projects: A quantitative, comparative examination of underlying factors

6.1 Introduction

This chapter presents the third and final study of this thesis, which takes a quantitative approach designed to complement the first two qualitative studies. In building on the findings of study 1 and 2, this third study has two main aims.

The first aim is to investigate the relative importance of multiple place-technology narratives (which were used by participants in study 1 and 2 to position various ORE technologies and projects as 'in place' or 'out of place') in explaining public evaluations of specific ORE projects in Guernsey. This builds on previous studies exploring place-based approaches (Devine-Wright, 2009) to understanding how public evaluations of are associated with notions of place-technology fit (McLachlan, 2009). In doing so, this study examined four groups of explanatory factors (adapted from Devine-Wright, 2013a): project-related factors, place-related factors, contextual factors and person-related factors.

The first of these, project-related factors, captures particular representations of ORE technologies and projects that emerged in study 1 and 2 (e.g. offshore wind energy as industrialising Guernsey). Although labelled 'project-related factors' here, many of these factors describe place-technology representations, encompassing both representations of technology and its 'fit' in Guernsey as a place. For instance, a representation of offshore wind as making Guernsey less unique is closely linked to representations of Guernsey as a place characterised by a strong sense of local distinctiveness (Twigger-Ross & Uzzell, 1996). As noted before, many such place-technology arguments have been found in previous studies (e.g. Anderson et al., 2013; Devine-Wright & Howes, 2010; Woods, 2003).

Second, place-related factors encompass particular representations of Guernsey (e.g. Guernsey as vulnerable and too dependent on others) and its coast and sea (i.e. the sea as a 'landscape' that is mainly of visual value versus the sea as a 'place' to explore and utilise; Cresswell, 2004; Lewicka, 2011; Wiseman & Bogner, 2003), as well as local residents' attachments to Guernsey and social identities at multiple scales (Guernsey, Channel Islands, England, Britain).

Third, contextual factors describe how evaluations of ORE projects were found in study 1 and (especially) study 2 to be *relationally* contingent upon representations of the current energy system (e.g. ORE as a 'green' and 'modern' alternative to the current 'old-fashioned' and 'polluting' electricity system), and upon representations of alternative local energy actions (e.g. in study 2 representations of offshore wind became more positive after discussions around the complexities of a local tidal energy project). Such ways in which the wider energy system context can shape energy project evaluations has been reported before (e.g. Firestone & Kempton, 2007; Parkhill et al., 2013; also see section 2.2.1).

Fourth, person-related factors comprise socio-demographic variables, which were not observed as important in studies 1 and 2 (due to their small sample size), but have been found in some previous studies to be significant predictors of public evaluation of local energy projects (e.g. Firestone & Kempton, 2007; Vorkinn & Riese, 2001; also see section 2.2.1). The exact operationalisation of the qualitative findings from study 1 and 2 into quantifiable variables is described in detail in section 6.2.4.

The second main aim of this study is to investigate to what extent public evaluations of ORE projects vary depending on where these proposals are placed and the meanings associated with those places. In other words, it aims to understand the ways in which place-technology representations are used to inform public evaluations of ORE projects at the scale of *specific* parts of Guernsey's coast (e.g. 'Would this project fit Cobo Bay?'), rather than at the scale of Guernsey as a whole ('Would this project fit Guernsey?'; which is the question implicit within this study's first aim). Thus this study aims to understand the relevance of the wide range of place meanings that were used in study 1 and 2 to represent places as (not) fitting ORE development. For instance, places represented as personal favourites or as being very popular were framed as unacceptable for ORE project development by participants in study 1 and 2 (for a summary see Table 5.5 on p.210). This study thus aims to quantify the importance of siting local energy developments in the 'right' place, and to better understand which place meanings are important to understand any differences in the acceptability of different offshore areas as sites for ORE development.

In order to answer these two research questions (see Table 6.1), and as a final component of the overall mixed methods research design adopted in this thesis, a quasi-experimental questionnaire survey methodology was adopted in this study. The next section specifies the production and use of the questionnaire that was used.

RQ1	❖ Which project, place, contextual, and person-related factors explain public evaluation of offshore wind and tidal energy proposals in Guernsey and how do these vary across different proposals?
RQ2	❖ To what extent do public evaluations of ORE proposals vary depending on where these proposals are placed and the meanings associated with that place?

Table 6.1. Research questions study 3

6.2 Methods

6.2.1 Procedure and sample

The questionnaires were distributed through a drop and collect method, individually dropping off and picking up each questionnaire at households across Guernsey. This distribution method was selected for its typically high response rate (Steele et al., 2001), which can help obtain a diverse sample that is fully representative of the adult Guernsey population. To avoid oversampling of those with strong views on renewable energy, the questionnaire was framed as being about 'the future of Guernsey' generally, while five £50 M&S vouchers were also on offer to encourage higher response rates.

In order to obtain a spatially representative sample, a predefined number of households were randomly selected across 26 targeted zones across Guernsey's ten parishes. The questionnaire distribution took place during two weekends (31 January & 1 February and 7 & 8 March 2015), to ensure the inclusion of those working Monday to Friday. The data collection was completed in two rounds because the number of questionnaires returned in the first round was not satisfactory for the purposes of the external stakeholder (as discussed in section 3.4). Sample size was a key concern for the external stakeholder, whose interest in the survey was largely as an opinion poll, to gauge the proportion of residents in support of each technology. This required a larger sample than what would be required to carry the planned statistical analyses. The data collection strategy was therefore designed with the aim of collecting 600 responses. This figure was agreed with the external stakeholder, based on a discussion on what would be an 'acceptable' error rate (the degree to which values in a sample may deviate from values in the population), and partly on a gut feeling on the external stakeholder's part as to what figure would be 'accepted' by the local community and colleagues in Guernsey as representing 'rigorous' and 'reliable' research. In terms of acceptable error rates, depending on the source used (e.g. Bartlett, Kotrlik & Higgins, 2001; Raosoft, 2015), what is considered an 'acceptable' error rate (or how big a sample is considered big enough) varies between 3 and 8%. The final sample size of 468 in this study, for a population of 60,000, represents an error rate of between 4 and 5% (at a 95% confidence interval), which was acceptable for the purposes of this research.

Due to the time-intensive nature of drop and collect survey distribution, and the time constraints posed by working during weekends only, 16 research assistants were recruited to assist with distributing and collecting questionnaires. Of these, 12 were local Sixth Form students (aged 16-17), who earned £1 per completed questionnaire, four others were University of Exeter colleagues who received a free trip to Guernsey in return for their help. In total 638 questionnaires were delivered in person, of which 418 were returned. Due to concerns over data quality (e.g. all responses were 'strongly disagree'), 17 questionnaires were excluded from the dataset [8]. The final number of 401 represents a 63% response rate for this phase.

In addition, during both visits any questionnaires that were left undelivered at the end of the weekend were posted by the researcher on Monday (without return envelope). These included a handwritten message on the front page (to encourage a higher response rate) asking householders to post the completed questionnaire to a specified Guernsey address printed on the front page (see Appendix G). Of the 513 questionnaires distributed this way, 67 were returned, all of which were included in the dataset – a 13% response rate. The data from the drop and collect and the postal distribution were compared, and no significant differences were found on key variables, so all responses were included in the final dataset (N=468, overall response rate 41%).

In terms of sample representativeness, the sample was very similar to the adult Guernsey population on key demographic characteristics (see Appendix H for details). The sample obtained a 50-50 gender split, while spatial distribution of respondents was similar to that of the population (see Appendix H). It also broadly mirrored the population age profile, though with a slight oversampling of those aged between 50 and 69, and an undersampling of those aged 18-29. One explanation for this undersampling could be that this cohort, due to the very high property prices in Guernsey, are less likely to live in their own accommodation and are therefore less likely to be reached by drop and collect sampling. The sample can furthermore be characterised as diverse in terms of education, income and whether or not respondents grew up in Guernsey, although no data were available on a population level to check the representativeness of the sample on these aspects.

6.2.2 Questionnaire design

The questionnaire covered nine sections on ten pages (the full questionnaire can be found in Appendix G). Sections 1-4 measured several predictor

[8] Two Sixth Form distributors returned a further 57 completed questionnaires, which were all excluded from the final dataset due to suspicions that they had completed these questionnaires themselves.

variables on residents' bonds with Guernsey, and their views on numerous energy-related topics. Sections 5-7 presented three hypothetical offshore wind and tidal energy projects, and measured public evaluations of these. These three projects were selected on the basis that they were deemed by the external stakeholder to be the three most likely options to be developed in the (near) future; therefore no wave energy project was included. A key visual component of the information provided were maps showing the developments' potential location, as the use of maps worked very well in study 1 and 2 as a tool to engage participants and elicit spatial information. Section 8 measured willingness to pay for electricity from offshore wind and tidal energy[9]; Section 9 captured socio-demographic data. The questionnaire was designed following good practice guidelines in environmental psychological research (see Hine, Kormos & Marks, 2016), for instance by carefully wording questions to avoid bias, choosing a consistent and widely used response format (Likert scale) and a logical ordering of questions and response options.

As an experimental manipulation, in half the questionnaires the section on offshore wind came first, in the other half the section on tidal energy came first. This was because in study 2 participants became more supportive of offshore wind energy after learning about the complexities of tidal energy in the near-future (costs, risks) – which suggests order effects may occur (i.e. those completing the section on tidal energy first are subsequently more positive towards the offshore wind proposals, because the widely shared understanding of tidal energy as a 'superior alternative' has been challenged – see studies 1 and 2). However, mean evaluation of the small wind and tidal energy proposals were not significantly different between the two conditions (independent samples t-test, $p > .05$), and therefore this variable was not included in further analyses.

The sections and questions were ordered thematically, to make the questionnaire intuitive and user-friendly, while questions measuring predictor variables were, wherever possible, positioned prior to those measuring outcome

[9] This question on willingness to pay for electricity from offshore wind and tidal energy was included for the external stakeholder and not used in the analysis. A number of additional questions were included in the questionnaire for the same reason (e.g. on general levels of support for wave energy and solar energy).

variables, to reduce order effects (Hine et al., 2016). Also, questions about Guernsey and respondents' bonds with Guernsey were asked before any energy technology questions, so as to foreground place-related aspects rather than making the questionnaire overly technology-focused. The questionnaire was piloted by 15 Guernsey residents of various ages recruited from previous participants in study 1 and 2 and their friends and family. They each completed the questionnaire first, and then during an informal face-to-face discussion talked through their answers and pointed out anything that needed clarification. This led to a few minor changes to the information provided, question wording and design of the maps in the questionnaire.

6.2.3 Co-production of the questionnaire

The questionnaire was produced through a process of negotiation between the researcher, main supervisor and the external stakeholder in Guernsey, as the survey study was a key output for the external stakeholder (see chapter 3 for more context on the co-production of this research more broadly). The discussions in particular focused on the choice of projects to describe in the questionnaire, the information to be included on each, and the wording of this information. The three projects described in the final questionnaire represented those projects deemed by the external stakeholder to be most likely to be proposed in the future. Although other local energy options (e.g. wave energy) were available, these were not included to minimise questionnaire length. The external stakeholder provided all information on the various aspects of the likely local manifestation of ORE projects such as costs, timescale and likely ownership model. The wind and tidal turbine images were selected by the researcher to give a basic illustration of both technologies. The external stakeholder also provided the maps used to show potential sites for the small wind and tidal energy projects in the questionnaire (which can be found in Appendix G).

For all the information included in the questionnaire (text and visual), a key objective was to keep the information straightforward and easy to understand, and to avoid overloading respondents with information to process. This was challenging because at the same time it was very important to the external stakeholder that the information provided was both exhaustive and stated with an appropriate level of uncertainty. This was deemed important to protect the external stakeholder from (future) accusations of having misinformed the local community or having held back certain details – in case a future proposal deviates from what was outlined in this questionnaire – and to prevent any public controversy being caused by the survey exercise itself. A key outcome of this process is that the information on the three hypothetical local projects was worded rather tentatively, for instance stating that a development ‘could’ (not ‘would’) be owned by the States of Guernsey. Such imprecision is not helpful from a research perspective, as respondents should ideally be presented with very clear and unambiguous information to help them imagine the project and form a response. This thus illustrates a potential weakness both of working together so closely with an external stakeholder and of adopting an upstream approach to studying the acceptability of local energy projects.

In the interest of user-friendliness, the maps used in the questionnaire represented a simplification of the zones that may potentially be technologically feasible for offshore wind and tidal energy. The zones for each were selected based on the external stakeholder’s judgement on their likely feasibility as sites for ORE development. Also, efforts were made to include zones of equal size in each of the two maps – the large zone to the north of Guernsey which was deemed feasible for offshore wind development was divided into three zones based on the ways in which different parts of this coast were talked about in studies 1 and 2.

As a consequence of these collaborative decision-making processes, finalising the questionnaire was time-consuming. What added to this was that due to the absence of an already proposed local energy project, the external stakeholder had to decide on the most likely manifestation of such projects, which took some additional time. Also, the wider government department that had funded the research, which included elected politicians, the heads of the local electricity company and senior policy makers, was also given the opportunity by the external stakeholder to express their views on what the survey needed to achieve. Therefore, although the researcher had the final say in its design, the final questionnaire (see Appendix G) is clearly the product of many voices and influences.

6.2.4 Measures

Five groups of variables were measured in the questionnaire. One set of outcome variables measured public evaluation of ORE (both in general in Guernsey and for three hypothetical ORE projects in Guernsey; see section 6.2.4.1), and four sets of predictor variables measured multiple project-related (6.2.4.2), place-related (6.2.4.3), contextual (6.2.4.4), and person-related (6.2.4.5) variables. Variables were measured on a 5-point Likert scale (ranging from strongly agree to strongly disagree), unless stated otherwise in the overview below. All items used in the questionnaire were phrased so as to reflect the language used by participants in study 1 and 2.

6.2.4.1 Public evaluation of offshore renewable energy in Guernsey

Public evaluation of local ORE development was measured in three ways: evaluation of the idea of ORE development in Guernsey *in general*, evaluation of three specific ORE projects, and evaluation of specific locations for two of these three specific ORE projects. The three projects that were described are a small offshore wind farm for local use (10 turbines), a large offshore wind farm mainly for export (100-300 turbines), and a small tidal energy farm for local use (25 turbines). These projects were each described in detail, using both text and a visual; this can all be found in Appendix G (see p.328-332), which shows the entire questionnaire that was used.

The initial information on the small wind and tidal energy projects included no information on their likely location, while for the large wind farm one specific location was included in its description. This was because the external stakeholder considered multiple sites to be suitable for the small wind and tidal projects, but not for the large wind farm.

Evaluation of renewable energy technologies in general was measured by asking 'to what extent do you support or object to the development of the following energy technologies in Guernsey?' in reference to four technologies: offshore wind, tidal, wave and solar energy. No further information was provided. This question was included to provide a general sense of the levels of support for each technology *in principle* – a question of great interest to the external stakeholder but also something that remains useful to frame respondents' answers to subsequent questions.

Evaluation of small wind/large wind/tidal energy project was measured using a single item ('I would support [this development]') for each of the three different ORE proposals.

Evaluation of locations for small wind/tidal energy project was measured for two of the proposals outlined in the questionnaire (small wind and tidal energy). For both, a map (see Appendix G) presented three potential sites for development of each proposal, which were each evaluated using two items ('I would support this [development] in [zone A-Z]'; 'I would accept this [development] in [zone A-Z]'), replicating the wording and question ordering used by Batel and colleagues (2013). As these items correlated highly across evaluation of all six zones (for each of the six zones: $r>.93$, $N>392$, $p=.000$, two tailed), they were combined to form single measures of project evaluation in each zone.

6.2.4.2 Project-related variables

Common representations of offshore wind energy that emerged in studies 1 and 2 portrayed the technology as visually unattractive, as industrial, and as making Guernsey less unique and more like everywhere else, but also (like tidal energy) as potentially enhancing Guernsey's resilience and independence, and enhancing global sustainability (see chapters 4 and 5). Unlike offshore wind, tidal energy was represented as making Guernsey more unique, offering an opportunity to improve the local economy, and as something that would 'make sense' in Guernsey, due to the tides being an important part of local everyday life and traditions (see chapters 4 and 5). In addition to these project-related representations, a further condition for support for ORE projects identified in study 2 is that such projects would be locally-owned, which completes the set of items that were used to measure representation of the three ORE projects.

These items were kept similar across the three project descriptions, in particular the small wind and tidal energy projects. The questions on the large wind project were explicitly designed to explain differences in evaluation of the small versus the large wind projects.

Project-related variables: Small offshore wind project

Nine items, drawn from the analysis of studies 1 and 2 were used to measure representation of this proposal, to capture the multiple dimensions of public representations of this technology captured in studies 1 and 2. To reduce these nine items into a lower number of factors to be included in statistical analysis, a principal component analysis (PCA) with direct oblimin rotation was conducted. This data reduction technique is suited for exploring underlying structures or components in larger sets of items, by grouping correlated items into distinct, uncorrelated groups of items called principal components (Field, 2013). The PCA presented in Table 6.2 suggested these nine items can be structured into three components with acceptable to good reliability[10], with each item becoming part only of the component onto which it has the highest factor loading. Component 1 encompasses representations of the concept of the small wind farm (36.1% of variance explained; eigenvalue = 3.25), component 2 captures local ownership preference (17.3% of variance explained; eigenvalue = 1.56), and component 3 includes items on representations of impacts of the small wind project (12.4% of variance explained; eigenvalue = 1.11).

Project appeal (component 1) was measured using a three-item scale ('This development would look visually attractive', 'I like the idea of using this local resource (the wind)', 'I like the idea of this development generating electricity only for Guernsey') with good internal reliability (Cronbach's α = .78). Higher scores on this variable indicate a more positive representation of the appeal of the small wind project.

Ownership preference (component 2) was measured using a two-item scale ('I would prefer this development to be owned by an investor outside Guernsey' (reversed), 'I would prefer this development to be owned by people living in

[10] Brace, Kemp & Snelgar (2009) and Field (2013) both define Cronbach's α scores of .7 and above as representing good reliability.

Guernsey') with acceptable internal reliability (Cronbach's α = .68). Higher scores on this variable signify a stronger preference for local ownership.

Concerns about impacts (component 3) was measured using a four-item scale ('I would not support a development that increases electricity prices by 5-10%', 'I would worry about its impact on wildlife', 'This proposal would industrialise Guernsey', and 'This development would make Guernsey less unique') with acceptable internal reliability (Cronbach's α = .66). Higher scores on this variable indicate more negative representations of the proposal's impacts.

	1	2	3
This development would look visually attractive	**.670**	-.165	.185
I like the idea of using this local resource	**.863**	.022	.079
I like the idea of this development generating electricity only for Guernsey	**.879**	.117	-.161
I would prefer this development to be owned by an investor outside Guernsey (reversed)	-.194	**.903**	.179
I would prefer this development to be owned by people living in Guernsey	.256	**.817**	-.167
I would not support a development that increases electricity prices by 5-10% (reversed)	-.052	.073	**.621**
I would worry about its impact on wildlife (reversed)	-.040	-.109	**.702**
This proposal would industrialise Guernsey (reversed)	.255	.079	**.680**
This development would make Guernsey less unique (reversed)	.494	.067	**.534**
Cronbach's α	.78	.68	.66

Table 6.2. Output of PCA with direct oblimin rotation for the small offshore wind project

Project-related variables: Large offshore wind project

Five items, drawn from the analysis of studies 1 and 2, were used to capture representations of the large offshore wind project. These items were chosen in particular to enable comparison with the small wind project – focusing on factors that make this large wind project different: its scale, focus on export, non-local ownership model, greater impact on local electricity prices, and its location. A PCA with direct oblimin rotation identified a one-factor solution (53.9% of variance explained, eigenvalue = 2.7; see Table 6.3). One of the items within this solution did not load very strongly onto the solution ('This would be the right location for such a development'), and therefore an additional reliability analysis was performed to examine whether scale reliability could be substantially improved by removing this variable, which is an additional step that can be taken to create stronger, more reliable scales (Field, 2013). This found that the reliability of this scale increased substantially (from α = .61 to .82) if entering this item as a separate variable into the analysis – therefore the five project-related items were organised into two variables:

Project appeal was measured using a four-item scale ('I don't think Guernsey should be installing wind turbines if most of the electricity will be exported' (reversed); 'I think this development would be too large-scale for Guernsey' (reversed); 'I object to such a project being owned by an outside investor' (reversed); 'I would not support a development that increases electricity prices by 10-20%' (reversed)), with high internal reliability (Cronbach's α = .82). Higher scores on this variable indicate more positive representations of the proposal.
Location preference was measured using a single item ('This would be the right place for such a development').

	1
I don't think Guernsey should be installing wind turbines if most of the electricity will be exported	.803
I think this development would be too large-scale for Guernsey	.874
I object to such a project being owned by an outside investor	.785
I would not support a development that increases electricity prices by 10-20%	.720
This would be the right location for such a development	-.395
Cronbach's α	.61

Table 6.3. Output of PCA with direct oblimin rotation for the large offshore wind project

<u>Project-related variables: Tidal energy project</u>

Five items drawn from the analysis of studies 1 and 2 were used to measure representation of this proposal, focusing on the same themes as for the small wind project to allow comparison between the projects. A PCA with direct oblimin rotation identified a three-factor solution (see Table 6.4), with component 1 capturing items describing representations of project impacts (32.5% of variance explained; eigenvalue = 2.27), component 2 describing preferences for local ownership of such a project (21.4% of variance explained; eigenvalue = 1.50), and component 3 encompassing representations of project costs (14.3% of variance explained; eigenvalue = 1.00).

Concerns about impacts (component 1) was measured using a four-item scale (‘I like the idea of using this local resource (the tides)’; ‘This proposal would industrialise Guernsey’ (reversed); ‘This development would make Guernsey less unique’ (reversed); ‘I would worry about this development's impact on wildlife’ (reversed)) with acceptable internal reliability (Cronbach’s α = 0.69). Higher scores on this variable indicate more positive representations of the proposal.

Ownership preference (component 2) was measured using a two-item scale (‘I would prefer this development to be owned by an external investor’ (reversed), ‘I would prefer this development to be owned by the local community’) with high internal reliability (Cronbach’s α = .77). Higher scores on this variable signify a stronger preference for local ownership.

Concerns about costs (component 3) were measured using a single item (‘I would not support a development that increases electricity prices by 20-30%’), with higher scores indicating stronger concerns with the price impacts of such a tidal energy project.

	1	2	3
I like the idea of using this local resource	**.672**	.075	.228
This proposal would industrialise Guernsey (reversed)	**.750**	.005	-.279
This development would make Guernsey less unique (reversed)	**.862**	-.045	-.055
I would worry about this development's impact on wildlife (reversed)	**.571**	.009	.174
I would prefer this development to be owned by an external investor (reversed)	.023	**.895**	-.057
I would prefer this development to be owned by the local community	-.029	**.910**	.031
I would not support a development that increases electricity prices by 20-30% (reversed)	.034	-.019	**.934**
Cronbach's α	.69	.77	N/A

Table 6.4. Output of PCA with direct oblimin rotation for the tidal energy project

6.2.4.3 Place-related variables

This category of variables reflects those representations of Guernsey, its coast and sea, and particular places on Guernsey's coast that were prominent across studies 1 and 2. These place-related variables represent two scales at which place meanings have been invoked by participants: Guernsey as a whole (as referred to in RQ1), and specific parts of Guernsey's coast (as referred to in RQ2).

<u>Place-related variables: Guernsey as a whole</u>

Independence: throughout studies 1 and 2 Guernsey was commonly represented as a vulnerable place in need of greater independence and self-sufficiency. This representation was frequently invoked in support of ORE development, which was portrayed as a way to increase Guernsey's independence and resilience. This variable was measured using four statements taken from the analysis of study 1 and 2 ('Guernsey should make use of its natural resources (e.g. wind, tide, sun, wave) to generate electricity locally'; 'Guernsey should not rely as much on other places for its electricity'; 'Being dependent on others for electricity is part and parcel of being an island' (reversed); ‘Guernsey needs to become more self-sufficient for its electricity’). A PCA with direct oblimin rotation found a one-dimensional solution (57.5% of variance explained; eigenvalue = 2.30). Therefore, these items were combined into a single variable (Cronbach’s α = .74). Higher scores on this variable indicate a greater importance placed on Guernsey becoming more independent.

Place attachment variety: place inherited, place discovered, place relative

Place attachment has been a key variable measured in place-based energy acceptability studies, which have typically measured strength of attachment (e.g. Brownlee et al., 2015; Devine-Wright, 2011c; Devine-Wright & Howes, 2010). However, such studies have been critiqued for overlooking different varieties of place attachment; instead, some studies have explored the role of different active, traditional and non-attachment varieties as predictors of support for local energy projects (Bailey, 2015; Devine-Wright, 2013a; see section 2.2.2). In study 1 different ways of engaging with the coast and sea were found; in particular some participants were suggested to have a more ‘active’ attachment to Guernsey, evidenced by an interest in exploring new places and rediscovering familiar ones. These participants were typically also more supportive of ORE (as discussed on p.142-145). To further verify this relationship and to add to the theorisation of different place attachment varieties (e.g. see Lewicka, 2011), three varieties of attachment were included in the analysis: place discovered (an active style of attachment), place inherited (a unself-conscious, traditional style of attachment), and place relative (which describes weak attachment to place).

These three varieties of place attachment (place inherited (PI), place discovered (PD) and place relative (PR)) were measured using three three-item scales, adapted from Lewicka (2011), Devine-Wright (2013a) and Bailey (2015). Items that were found to consistently measure each variety of attachment across multiple studies were used in this study, and adapted to fit the Guernsey context (Appendix I outlines the detailed rationale for choosing these nine items). A PCA with direct oblimin rotation identified three distinct components (see Table 6.5). These broadly represented the three varieties of place attachment hypothesised, although two items that intended to measure the place relative variety instead loaded onto the component representing the place inherited variety (suggesting more work is needed in the construction of reliable scale to measure different varieties of place attachment; Bailey, 2015). Three variables were created based on item groupings as shown in Table 6.5: one five-item scale capturing place inherited (36.6% of variance explained; eigenvalue = 3.30; Cronbach's α = .85), one three-item scale on place discovered (19.4% of variance explained; eigenvalue = 1.75; Cronbach's α = .64), and a single-item place relative variable (11.8% of variance explained; eigenvalue = 1.06). Although variables based on a single item may be less reliable than multi-item scales, it was decided to include the place relative variable because the one item it is based on does seem to capture the essence of the place relative type of attachment (Lewicka, 2011), and the factor loadings do suggest this item represents a fundamentally different component (i.e. it loads weakly onto components 1 and 2).

	1 (PI)	2 (PD)	3 (PR)
I cannot imagine leaving Guernsey for good (PI)	**.873**	.033	.017
Even if there are better places, I am not going to move out of Guernsey (PI)	**.899**	.051	.008
I have never considered if living somewhere else would be better (PI)	**.784**	-.055	.264
There are many places in Britain and the world where I could live (PR)	**-.606**	.110	.338
It wouldn't bother me to leave Guernsey and move elsewhere (PR)	**-.761**	-.102	.140
I often take photographs of various places in Guernsey (PD)	-.100	**.761**	.022
I like to explore Guernsey and discover new places (PD)	-.041	**.831**	-.081
From time to time I discover Guernsey anew (PD)	.209	**.698**	.058
It's more important to me how I live than where I live (PR)	.003	-.010	**.945**
Cronbach's α	.85	.64	N/A

Table 6.5. Outcome of PCA with direct oblimin rotation for the three place attachment varieties

Multiple identities: Local and non-local

Six items were used to measure the extent to which local residents identified with places at different scales. A PCA with direct oblimin rotation was used to reveal a two-factor solution (see Table 6.6), with component 1 (46.2% of variance explained; eigenvalue = 2.77; Cronbach's α = .81) capturing items related to a local/regional identity, and component 2 (22.3% of variance explained; eigenvalue = 1.34; Cronbach's α = .56) capturing items related to non-local identity.

	1	2
I feel like I belong in this parish	**.597**	.395
I feel like I belong in Guernsey	**.832**	.242
I feel like a Guern	**.876**	-.080
I feel like a Channel Islander	**.794**	.177
I feel English	-.529	**.636**
I feel British	-.208	**.825**
Cronbach's α	.81	.56

Table 6.6. Outcome of PCA with direct oblimin rotation for multiple identities

As the local identity component displayed good internal reliability it was used in the analysis. The non-local identity component had a relatively low internal reliability at .56 (Field, 2013), and therefore it was decided to include both items that made up this component as separate items in the analysis. This gave three variables on identity:

Local identity was measured using four items ('I feel like I belong in this parish'; 'I feel like I belong in Guernsey'; 'I feel like a Guern'; 'I feel like a Channel Islander') with good internal reliability (.81). Higher scores on this variable indicate a stronger local sense of identity.

English identity was measured using a single item ('I feel English').

British identity was measured using a single item ('I feel British').

Offshore leisure activity

Another aspect of how local residents engage with their place of residence suggested to be important by study 1 is that those who more frequently engaged in (or photographed) offshore leisure activities (e.g. boating, kayaking, surfing) in study 1 were typically more supportive towards ORE developments. Study 1 also suggested that such individuals were typically more interest in exploring new places (suggesting an active place attachment), and more commonly represented the sea as a resource, rather than as something to be conserved. This idea was operationalised in this third study using a single categorical item (‘Generally speaking, how often do you engage in offshore leisure activities (e.g. boating, sailing, kayaking, surfing)?’) with four options ((Almost) never, Occasionally, Fairly regularly, Frequently). This variable was recoded into a binary variable for linear regression, contrasting those who (almost) never engaged in offshore leisure with those who did so occasionally, fairly regularly or frequently.

Sea as resource

In study 1, two dominant representations of Guernsey’s coast and sea were found; a ‘utilisation’ perspective and a ‘preservation’ perspective, which differ in their view on the extent to which such environments should be used or conserved (Milfont & Duckitt, 2004; Wiseman & Bogner, 2003). Study 1 also suggested that those thinking of the sea as a resource to be utilised are more commonly those with an active place attachment, and those who use the sea more for offshore leisure activities. This variable was measured using a single question (‘Guernsey’s seas are a great resource to be utilised’), on which higher scores indicate a greater agreement with the notion of ‘sea as a place for utilisation’.

<u>Place-related variables: Specific parts of Guernsey’s coast</u>

Across study 1 and 2, a range of different place meanings were invoked to position certain places as acceptable for ORE development and others as unacceptable (e.g. see section 5.5). Although offshore space itself was by no means represented as meaningless (see study 1), most place meanings were ascribed to places on the coast, rather than places offshore. Informed by those previous analyses, and in order to answer RQ2, the importance of six place meanings associated with the nearby coast is examined in relation to the six zones suitable for offshore wind/tidal energy development. This aims to explore whether any differences in support for development in these zones can be explained by the different place meanings associated with the coast near each zone.

Visual beauty was measured using two items (‘The coast near [zone A-Z] is an area of natural beauty’; ‘The coast near [zone A-Z] has fantastic views’), which correlated strongly for all 6 zones (Pearson’s *r* ranged between .73 and .81) and were therefore combined into a single item.

Popularity was measured using a single item (‘The coast near [zone A-Z] is visited by many people’).

Industrialisation was measured using a single item (‘The coast near [zone A-Z] is quite industrial’).

Pristineness was measured using a single item (‘The coast near [zone A-Z] is a pristine natural area’).

Place attachment was measured using a single item (‘The coast near [zone A-Z] is one of my favourite areas’). Although several multi-item scales exist to measure place attachment (see Hernández et al., 2014), these were not used to limit questionnaire length and because the language of ‘favourite places’ reflected the language used by participants in study 1 to talk about their places of attachment.

Symbolic of Guernsey, or the extent to which a place is seen as emblematic of the entire island, was measured using a single item (‘The coast near [zone A-Z] symbolises what Guernsey is all about’).

6.2.4.4 Contextual factors

Throughout studies 1 and 2, ORE was often represented as desirable by contrasting such ‘clean’ and ‘modern’ technology to Guernsey’s existing electricity system, which was instead represented as ‘polluting’ and ‘old-fashioned’. This suggests that the extent to which local residents are (un)happy with the current electricity system influences their support for specific local energy alternatives (i.e. the three projects described in the questionnaire). This hypothesis was captured using one variable:

Electricity system evaluation was measured using a three-item scale (‘I am happy with the current electricity system’; ‘The current electricity system is in need of change’ (reversed); ‘Guernsey’s electricity supply is vulnerable’ (reversed)), with good internal reliability (Cronbach’s α = .71). PCA with direct oblimin rotation confirmed these three items represented a single component

(66.9% of variance explained; eigenvalue = 2.00), with higher scores representing a more positive evaluation of Guernsey's existing electricity system.

6.2.4.5 Person-related variables

Although studies 1 and 2 did not systematically investigate the role of socio-demographic factors, variables such as age, gender, income and education are commonly included in local energy acceptability studies (e.g. Firestone & Kempton, 2007). One further attitudinal measure included in this section captured individuals' environmental attitude, to capture the arguments around global sustainability that were used in favour of ORE in studies 1 and 2.

Gender and *Age* were captured using an open question ('your gender' and 'your age', with blank space adjacent).

Education was measured by asking respondents to indicate the highest education level they had achieved (six options were given). This information was recoded into a binary variable suitable for regression analysis, which distinguished between non-university educated and university-educated participants.

Income was measured by asking respondents to estimate their income in relative terms (which was intended to optimise response rate), choosing between below/around/above average. To produce a binary variable suitable for regression analysis, the smallest group (below average; N=81) was merged with the average income group (N=240), this group was subsequently compared with the above average group (N=127).

Grown up in Guernsey measured whether or not participants had grown up in Guernsey. This is relevant because study 1 found a common representation of 'real locals' being most strongly opposed to ORE (using the phrase 'stubborn donkeys' – see study 1), which contrasted with previous studies finding 'newcomers' into an area objecting more strongly to local energy projects (e.g. Bailey, 2015). This variable was measured using a single binary item ('Did you grow up in Guernsey?').

Environmental attitude was measured using one item ('Guernsey should not be using fossil fuels (which cause climate change) to generate its electricity').

6.2.5 Analytic procedure

In answering RQ1 (about the factors that explain public evaluation of ORE proposals in Guernsey), linear regression analyses were carried out for each of the three described ORE projects using IBM SPSS v20. Linear regression is suited to exploring the relative importance of multiple predictor variables in predicting the score on an outcome variable (Field, 2013). It is therefore well-suited to answering RQ1, which aims to understand the relative importance of multiple factors in explaining varying levels of support for local ORE projects in Guernsey. All predictor variables were entered into the regression models simultaneously (the simultaneous or standard method; Brace, Kemp & Snelgar, 2009). Previous energy acceptability studies have instead used hierarchical linear regression (e.g. Devine-Wright, 2013a), where predictor variables are entered into the regression model in a particular order, inputting what is expected (based on theory or previous research) to be the most important variables into the model first. However, because study 1 and 2 are relatively unclear on the relative importance of each of the factors they identify (because of their small sample size), it was judged that there was not a strong enough rationale for presuming at this point one factor would be more important than others. Therefore, it was decided to use the simultaneous method, which has been described as the 'safest method' to use (Brace et al., 2009). Prior to conducting the regression analyses, correlations between the three outcome variables (evaluation of the three proposals) and the 19 predictor variables were inspected, in order to select only relevant variables for each of the three regression analyses (following Devine-Wright & Batel, 2013). A reduction of the number of variables was not strictly necessary from a sample size perspective, as the sample size of 468 was sufficiently large to meet what has been judged as the 'absolute minimum' requirement of having 10 participants per predictor variable. Nevertheless, it has also been recommended that *"if the circumstances allow, a researcher would have better power to detect a small effect size with approximately 30 participants per variable"* (Van Voorhis & Morgan, 2007, p.48), which in this case would require a sample of 570 participants.

The first part of RQ2 (does the acceptability of ORE proposals vary significantly depending on its location?) was answered using non-parametric tests

(Friedman ANOVA and Wilcoxon tests). As each of the six outcome variables (support for development in zones A-C and X-Z) were not normally distributed, and attempts to normalise the data using transformations were unsuccessful, the assumptions for conducting repeated measures ANOVA were violated. The second part of RQ2 (can variations in place meanings explain any spatial variation in project acceptability?) was answered through visual inspection of the place meaning and acceptability data for each of the six zones, and by using linear regression to verify the importance of the six place meanings for evaluation of each zone as a location for ORE development.

6.3 Results

6.3.1 Overall patterns in public evaluation of ORE

Public evaluations of ORE technologies are summarised in Table 6.7, which shows that tidal energy is the most well-supported technology in principle in Guernsey (mean: 4.38; 86% (strongly) in support; 2% (strongly) objecting). Offshore wind energy was the least favoured ORE technology, albeit still with a majority in support and a score above the midway point of the scale (3.51; 57% in support). For comparison, both wave energy and solar energy were almost but not quite as widely supported as tidal energy (means of 4.22 and 4.23; 79% and 80% in support, respectively).

	Mean	SD	Strongly object	Object	Neither obj. nor supp.	Support	Strongly Support	Don't know
Offshore wind energy	3.51	1.31	11%	12%	15%	32%	25%	5%
Tidal energy	4.38	0.72	0%	2%	8%	38%	48%	4%
Wave energy	4.23	0.84	1%	3%	11%	38%	41%	6%
Solar energy	4.22	0.85	1%	3%	13%	37%	43%	3%

Table 6.7. Evaluation of four renewable energy technologies in general in Guernsey(question asked: *"In general, to what extent do you support or object to the development of the following energy technologies in Guernsey?"*)

Given that in study 1 and 2 participants commonly expressed uncertainty when talking about tidal and wave energy, it is perhaps surprising that only 4-6% of respondents selected the 'Don't know' option, and only 8-11% selected 'Neither object nor support' (compared to 15% for offshore wind energy). This suggests that such uncertainty does not prevent local residents from forming an opinion on the desirability of ORE development locally, and expressing their support for the technology.

Similar questions have been explored in the UK using large representative surveys (although referring to a very different scale, the UK as a whole; DECC, 2015b), which found offshore wind energy to be supported (73% in support) more widely than in Guernsey (57%). However, the technology category 'wave and tidal' was supported less widely (74% in support) than both tidal energy (86%) and wave energy (79%) in Guernsey.

Evaluations of the three specific ORE proposals showed the same pattern, with the tidal energy development being most widely supported (mean = 3.66; 64% in support), the small wind project in second (mean = 3.18; 49% in support), and the large wind project the least supported option (mean = 2.74; 34% in support; see Table 6.8). Table 6.9 provides descriptive statistics for all predictor variables included in the analysis. Although this table is mainly intended as a general description of the data, mean scores on four variables stand out as being relatively high (*Small wind - Ownership preference; Tidal project - Ownership preference; Independence; Sea as resource*). This reaffirms findings from studies 1 and 2 that, in principle, local ownership of ORE projects and Guernsey becoming more independent are both considered particularly important by Guernsey residents. It also suggests that they are in principle not averse to Guernsey's coastal environment being used (or utilising this 'resource'), potentially paving the way for well-supported local energy projects.

	Mean	SD	Strongly agree	Agree	Neither agree nor disagree	Dis-agree	Strongly disagree
Small wind project	3.18	1.28	14%	35%	21%	14%	15%
Large wind project	2.74	1.27	8%	26%	21%	24%	22%
Tidal energy project	3.66	1.05	21%	43%	22%	11%	4%

Table 6.8. Evaluations of the three detailed projects described in the questionnaire (responses to the statement ‘I would support this development’)

	Mean[11]	SD
Public evaluation of the three ORE projects		
Evaluation of small wind project	3.18	1.28
Evaluation of large wind project	2.74	1.27
Evaluation of tidal energy project	3.66	1.05
Project-related variables		
Small wind - Project appeal	3.07	0.96
Small wind - Ownership preference	3.78	0.80
Small wind - Concerns about impacts	3.10	0.78
Large wind - Project appeal	2.45	0.93
Large wind - Location preference	3.15	1.15
Tidal project - Concerns about impacts	3.41	0.67
Tidal project - Ownership preference	3.73	0.81
Tidal project - Concerns about costs	3.48	1.14
Place-related variables		
Independence	3.76	0.66
Place inherited	3.05	1.00
Place discovered	3.55	0.78
Place relative	3.37	1.10
Local identity	3.72	0.91
English identity	2.79	1.37
British identity	3.68	1.15
Offshore leisure activity	1.59	0.49
Sea as resource	4.15	0.90
Contextual variables		
Electricity system evaluation	2.97	0.92
Person-related variables		
Gender (1=male; 2=female)	1.50	0.50
Age	52.02	16.13
Education (1=non-university educated; 2=university-educated)	1.39	0.49
Income (1= (below) average; 2=above a.)	1.28	0.45
Grown up in Guernsey (1=yes; 2=no)	1.32	0.47
Environmental attitude	3.48	1.00

Table 6.9. Descriptive statistics for all outcome and predictor variables

[11] Unless indicated otherwise, these variables were captured using 5-point scales, which means that a mean score of 3.00 indicates the midpoint of the scale.

6.3.2 Factors explaining public evaluation of three ORE local proposals

Correlational analysis

Table 6.10 presents the correlations between the three outcome variables (evaluation of the three projects) and 24 potential predictor variables (excluding those on RQ2, which were analysed separately – see 6.3.4). Variables were only included in subsequent regression models if they correlated significantly with the outcome variable for that particular model.

	Small wind evaluation	Large wind evaluation	Tidal farm evaluation	Included in regression models?
Project-related variables				
Small wind - Project appeal	.83 .000			Included in model 1
Small wind - Ownership preference	.18 .000			Included in model 1
Small wind - Concerns about impacts	-.54 .000			Included in model 1
Large wind - Project appeal		.57 .000		Included in model 2
Large wind - Location preference		.55 .000		Included in model 2
Tidal project - Concerns about impacts			.54 .000	Included in model 3
Tidal project - Ownership preference			.22 .000	Included in model 3
Tidal project - Concerns about costs			-.24 .000	Included in model 3
Place-related variables				
Independence	.28 .000	.26 .000	.30 .000	Included in all models
Place inherited	-.13 .005	-.11 .021	-.02 .627	Included in models 1 & 2
Place discovered	.12 .012	.13 .009	.13 .006	Included in all models

	Small wind evaluation	Large wind evaluation	Tidal farm evaluation	
Place-related variables (continued)				
Place relative	-.02 .647	.04 .375	.04 .367	Not included
Local identity	-.10 .045	-.08 .116	.03 .587	Included in model 1
English identity	.15 .002	.10 .037	.07 .141	Included in models 1 & 2
British identity	.06 .205	.06 .200	.07 .153	Not included
Offshore leisure activity	.14 .003	.14 .003	.16 .001	Included in all models
Sea as resource	.17 .000	.17 .000	.28 .000	Included in all models
Contextual variable				
Electricity system evaluation	-.16 .001	-.14 .002	-.12 .014	Included in all models
Person-related variables				
Gender	.15 .002	.01 .791	-.07 .140	Included in model 1
Age	-.33 .000	-.24 .000	-.02 .721	Included in models 1 & 2
Education	.15 .004	.09 .096	.04 .407	Included in model 1
Income	.07 .142	.08 .081	.07 .160	Not included
Grown up in Guernsey	.04 .348	.06 .247	.10 .033	Included in model 3
Environmental attitude	.25 .000	.20 .000	.06 .241	Included in models 1 & 2

Table 6.10. Correlation coefficients (top figures in each cell), their significance (bottom figures) for the relation between each of the predictor variables and evaluation of the three projects, and the corresponding decision on the regression models each variable was subsequently included in.

Inspection of the correlations in Table 6.10 reveals three findings. First of all, some factors were consistently and significantly correlated with outcome variables. These include all project-related variables, which seem to be very important based on their medium to very large effect sizes[12]. Other variables that were significantly correlated with all three outcome variables were *Independence, Place discovered, Offshore leisure activity, Sea as resource* and *Electricity system evaluation* – although with mostly small to medium effect sizes. These variables were included in all three regression models. Second, some factors did not correlate significantly with any of the three outcome variables, and can therefore be understood as insignificant predictors of support for ORE projects in Guernsey (they are therefore not included in any of the further regression models). These factors are *Place relative, British identity* and *Income*. Third, several variables were significantly correlated with some but not all three outcome variables. Almost all of these were significantly correlated with evaluation of one or both of the wind energy projects but not with evaluation of the tidal energy project (*Place inherited, Local identity, English identity, Gender, Age, Education, Environmental attitude*). In other words, those with a more strongly traditional attachment to Guernsey, a stronger local identity, a weaker English identity, that are male, older, have lower levels of education and weaker environmental attitudes are more negative towards offshore wind energy projects in Guernsey. However, support for tidal energy was not significantly different across any of these groups. By contrast, those who grew up in Guernsey were significantly more supportive of the tidal energy project, but not of the two offshore wind projects.

Regression analyses

Based on this correlational analysis, 15 significant variables were entered into the small wind regression model, 11 variables into the large wind model, and 9 into the tidal energy model. Three linear regression analyses were carried out (summarised in Table 6.11), which met all assumptions underlying linear

[12] Effect sizes for Pearson's correlation coefficient r are typically taken as small when r=.10, moderate when r=.30 and large when r=.50 (Cohen, 1988, 1992; in Field, 2013).

regression[13]. All three regression models were significant (at $p < .001$), and explained between 36% (tidal farm) and 71% (small wind) of variance in support for the three developments (adjusted R^2). This suggests good model fit for all three models, though the lower adjusted R^2 for the tidal energy regression model indicates that there may be other important predictive variables that are not included in the model.

	Model 1: Small wind farm			**Model 2: Large wind farm**			**Model 3: Tidal farm**		
N	313			363			406		
F value	52.272			45.823			26.276		
P	.000			.000			.000		
Adjusted R^2	.711			.577			.360		
	b	**SE B**	**β**	**b**	**SE B**	**β**	**b**	**SE B**	**β**
Constant	0.36	.62	n/a	-2.29	.57	n/a	-0.77	.57	n/a
Project-related variables									
Small wind – Project appeal	**.89****	.05	.66						
Small wind - Ownership preference	.07	.05	.04						
Small wind - Concerns about impacts	**-.34****	.07	-.21						
Large wind – Project appeal				**.69****	.05	.50			
Large wind - Location preference				**.39****	.04	.35			
Tidal project - concern about impacts							**.73****	.07	.46
Tidal project - Ownership preference							**.11***	.05	.09
Tidal project - Concerns about costs							**-.15****	.04	-.17

[13] The Durbin-Watson statistic was very close to 2 in all three models (model 1: 1.937; model 2: 2.016; model 3: 1.843), suggesting independent errors in each models. Multicollinearity was not found to be an issue in any of the models, as VIF values were all between 1.05 and 1.91 (well under the threshold value of 10; Field, 2013), while all the tolerance values were well above 0.2 (between 0.52 and 0.95). Normality of residuals was also met across the models, which was confirmed by visual checks of a histogram and a P-P plot of these residuals for each regression analysis.

	Model 1: Small wind farm (continued)			Model 2: Large wind farm (continued)			Model 3: Tidal farm (continued)		
Place-related variables									
Independence	.02	.08	.01	**.19***	.09	.09	**.21***	.08	.13
Place inherited	.06	.05	.05	.05	.05	.04			
Place discovered	.03	.05	.02	.11++	.06	.07	**.19***	.06	.14
Local identity	-.05	.06	-.04						
English identity	.03	.03	.03	-.03	.03	-.04			
Offshore leisure activity	**.18***	.09	.07	.00	.10	.00	.14	.09	.07
Sea as resource	.06	.05	.04	**.13***	.06	.09	.03	.05	.02
Contextual variable									
Electricity system evaluation	-.02	.07	-.01	.12	.08	.06	.06	.07	.04
Person-related variables									
Gender	.10	.08	.04						
Age	-.00	.00	-.04	**-.01***	.00	-.09			
Education	.13	.09	.05						
Grown up in Guernsey							.08	.09	.04
Environmental attitude	.01	.05	.01	**.15***	.05	.12			

Table 6.11. Output of the three regression models (** = significant at p < .001 ; * = significant at p < .05; ++ = significant at p < .10). Empty spaces signify that a particular predictor variable was not included in that particular regression model.

Overall, seven out of eight project-related variables were significant across the three models. Their importance is also suggested by their comparatively high standardised beta values β, compared to other variables in the model, which indicates that a change in this predictor variable would result in a relatively large change in the score on the outcome variable. The only project-related variable that was non-significant was those measuring respondents' preference for local ownership of the small wind project. However, local ownership preference was a significant predictor of support for the tidal project. The relative role of project-related variables, and of the items used to construct the scales used in this analysis are analysed further in section 6.3.3 below.

In contrast to the project-related variables, only one non-project-related variable was significant across more than one model: those assigning greater importance to Guernsey becoming independent (the variable *Independence*) were significantly more supportive of the large wind and tidal energy projects. The extent to which respondents were traditionally attached to Guernsey (*Place inherited*) did not significantly influence evaluation of the proposals. However, more actively attached individuals (*Place discovered*) were significantly more supportive of the tidal energy project, but of neither of the offshore wind projects. Strength of identification with either Guernsey (*Local identity*) or England (*English identity*) was insignificant in all models. Those engaging in offshore leisure activity more frequently (*Offshore leisure activity)* were significantly more supportive of the small offshore wind farm, but not of the other two ORE projects. Representations of the *Sea as resource* were a significant positive predictor of support for the large wind project but not the other two projects.

The single contextual variable included in the regression models (*Electricity system evaluation*) was not a significant predictor in any of the models. Of the five person-related variables, only *Age* and *Environmental attitude* were significant predictors: Younger people and those with stronger environmental attitudes were more supportive of the large offshore wind project but not the other two projects.

6.3.3 Distinguishing between multiple project-related variables

The above analysis shows that the variables capturing project-related factors are the most important variables in each of the three regression models, as these variables are significant across all three regression models, and display the highest standardised beta values β. However, in each of the models, these variables were created by averaging scores from multiple items which captured different aspects of project representation (e.g. whether it 'industrialises' Guernsey; representation of price impacts). The relative importance of each of these items therefore does not become clear from the above analyses. Therefore, three further linear regression analyses were carried out[14], using

[14] All assumptions underlying linear regression were met. The Durbin-Watson statistic was very close to 2 in all three models (model 1: 1.857; model 2: 1.924; model 3: 2.036), suggesting independent errors in each models (Field, 2013).

only the items that made up significant project-related variables, the results of which are shown in Table 6.12.

	Model 4: Small wind farm			Model 5: Large wind farm			Model 6: Tidal farm		
N	454			447			440		
F value	140.70			97.07			57.045		
P	.000			.000			.000		
Adjusted R^2	.735			.519			.472		
	b	**SE B**	**β**	**b**	**SE B**	**B**	**b**	**SE B**	**β**
Constant	.63	.28	n/a	3.48	.24	n/a	1.66	.39	n/a
'I like the idea of using this local resource (the wind)'	**.53****	.04	.50						
'This development would look visually attractive'	**.25****	.03	.22						
'I like the idea of this development generating electricity only for Guernsey'	**.16****	.04	.14						
'I would not support a development that would increase electricity prices by 5-10%'	**-.14****	.03	-.13						
'This development would make Guernsey less unique'	**-.08***	.04	-.07						
'I would prefer this development to be owned by people living in Guernsey'	.08++	.04	.06						
'This proposal would industrialise Guernsey'	-.03	.04	-.02						
'I would prefer this development to be owned by an investor outside Guernsey'	.01	.04	.01						
'I would worry about its impact on wildlife'	-.00	.03	-.00						

Multicollinearity was not found to be an issue in any of the models, as VIF values were all between 1.03 and 2.60 (well under the threshold value of 10; Field, 2013), while all the tolerance values were well above 0.2 (between 0.38 and 0.97). Normality of residuals was also met across the models, which was confirmed by visual checks of a histogram and a P-P plot of these residuals for each regression analysis.

	Model 4: Small wind farm (continued)	Model 5: Large wind farm (continued)	Model 6: Tidal farm (continued)
'This would be the right location for such a development'		**.44**** .04 .40	
'I think this development would be too large-scale for Guernsey'		**-.38**** .05 -.35	
'I would not support a development that increases electricity prices by 10-20%'		**-.15*** .05 -.13	
'I don't think Guernsey should be installing wind turbines if most of the electricity will be exported'		-.09++ .05 -.09	
'I object to such a project being owned by an outside investor'		-.01 .05 -.01	
'I like the idea of using this local resource (the tides)'			**.73**** .05 .57
'I would not support a development that increases electricity prices by 20-30%'			**-.15**** .03 -.17
'I would worry about this development's impact on wildlife'			**-.08*** .04 -.08
'This development would make Guernsey less unique'			-.06 .05 -.05
'I would prefer this development to be owned by an outside investor'			-.04 .04 -.04
'I would prefer this development to be owned by people living in Guernsey'			.03 .04 .03
'This proposal would industrialise Guernsey'			-.03 .05 -.03

Table 6.12. Regression models using the items that made up the significant project-related variables in regression models 1-3 in Table 6.11 on p.255-256 (** = significant at p < .001 ; * = significant at p < .05; ++ = significant at p < .10)

This analysis shows that some, but not all of the project-related variables are significant predictors of support for each project. The most important predictive variable in both the small wind and tidal energy models (judging by the high standardised beta values β) is whether or not people like the idea of using this particular locally available resource or not. Similarly, concerns about the costs of each development were a consistent negative predictor of support for each of the three projects. By contrast, symbolic representations of projects 'industrialising' Guernsey and preferences for local ownership models were not significant predictors in any of the regression models.

Two further variables were significant predictors in only one regression model. Representations of the project as threatening Guernsey's uniqueness were a significant negative predictor of evaluation of the small wind project, but not the tidal project. Conversely, representation of each project threatening local wildlife was a significant negative predictor for the tidal project, but not for the small wind project, suggesting a fundamental difference in how both technologies are thought of in relation to the risk they pose to wildlife.

A number of further factors were only included in one of the three models, as they were specific to each project. For the small wind project, representations of the project as visually attractive and support for the fact that it would only generate electricity for Guernsey use were both significant positive predictors of evaluations of the small wind project. Although (in line with this finding) the export-focused large wind project was indeed much less widely supported, this analysis suggests this is not associated with objection to its export-focused nature, which was an insignificant variable in regression model 5. Instead, two factors that were significant predictors in the large wind model were representations of the project as being too large-scale for Guernsey, and representations of the project being sited in an appropriate location.

In sum, overall, project-related variables seem to be the strongest predictor of public evaluations of ORE in Guernsey – in particular the extent to which respondents like or dislike the idea of using particular local resources (i.e. the wind and the tides), concerns about the price implications and scale of such projects, and being in the right location. On the other hand, based on this evidence, socio-demographic variables, (non-)local ownership of such projects, and notions of ORE projects as 'industrialising' Guernsey as a whole do not seem to be key explanatory factors underlying public evaluations of ORE projects in Guernsey.

6.3.4 Exploring the importance of site selection and place meanings

To answer the second research question of this study – whether public evaluations of ORE projects depend on their chosen location and the meanings associated with those places – this final set of analyses focused on public evaluations of six zones suitable for either the small wind (zones A-C) or tidal energy project (zones X-Z). Respondents' evaluations of both projects in each of their three respective zones are summarised in Table 6.13. It shows that for the small wind farm, zone C was the most popular (mean evaluation of 3.09), while zone A was evaluated the most negatively (2.49). For the tidal energy farm, zone X was evaluated most positively (3.75), with the least popular zone (Z) being evaluated similarly (3.12) to the most popular zone for the small wind farm (zone C).

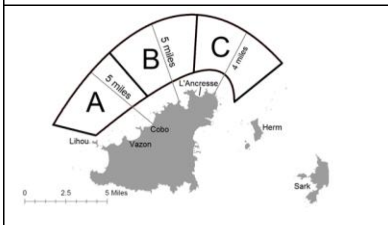
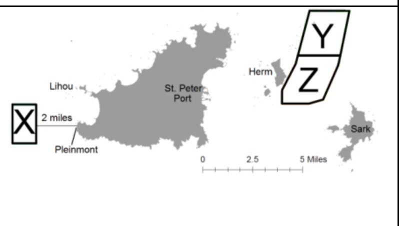
	Small wind project			*Tidal project*		
						
	Zone A	Zone B	Zone C	Zone X	Zone Y	Zone Z
Mean	2.49	2.72	3.09	3.75	3.56	3.12
SD	1.34	1.39	1.44	1.16	1.16	1.33
% Positive evaluation	30%	39%	52%	74%	64%	49%
% Negative evaluation	58%	49%	36%	16%	19%	35%

Table 6.13. Maps of suitable zones used in questionnaire, with statistics on support for an offshore wind/tidal project in each (evaluation of each zone was captured using two items; positive evaluation refers to the proportion of respondents scoring 3.5 or higher on this aggregated variable; negative evaluation refers to the proportion scoring 2.5 or lower).

A Friedman ANOVA test confirmed that zones A, B and C were evaluated significantly differently as sites for the development of a small wind farm (χ^2= 105.8, p = .000). Wilcoxon tests were used to follow up this finding, and confirmed that zone C was evaluated significantly more positively than both zone A (χ^2= 9,897, p = .000, *r* = 0.28) and zone B (χ^2= 2,022.5, p = .000, *r* = 0.21), while zone B was evaluated significantly more positively than zone A (χ^2= 2,998, p = .000, *r* = 0.18).

Similarly, a Friedman ANOVA test confirmed that the three tidal energy zones were also evaluated significantly differently (χ^2= 117.7, p = .000). Wilcoxon tests confirmed that evaluations of zone X were significantly more positive than zone Y (χ^2= 4,099.5, p = .001, *r* = 0.12), and zone Z was evaluated significantly less positively than zone X (χ^2= 2,264.5, p = .000, *r* =0.30), as well as zone Y (χ^2= 395, p = .000, *r* = 0.29). The extent of difference it can potentially make is illustrated by the effect sizes mentioned above, which are up to 0.30 (see *r* values) – a value that represents a medium effect size (Cohen, 1988, 1992; in Field, 2013). In other words, support for both the offshore wind and tidal energy project is to a significant and sizeable extent dependent on its chosen location.

The next question is whether these differences can be explained by the extent to which a proposed project is seen to 'fit' the meanings associated with these places, and if so, which meanings in particular; regression analysis is used to answer this question. Table 6.14 shows how each of the six zones were rated on the six different place meanings that were distilled from previous research including studies 1 and 2.

	Small wind project			Tidal energy project		
	Zone A	Zone B	Zone C	Zone X	Zone Y	Zone Z
Evaluation of energy project per zone	2.49	2.72	3.09	3.75	3.56	3.12
Place meanings of coastal zones						
Visual beauty	4.31	4.20	3.97	4.07	3.80	4.22
Popularity	4.33	4.17	3.90	3.70	3.36	4.00
Industrialisation	1.63	1.76	2.26	1.61	1.79	1.67
Pristineness	3.99	3.91	3.65	4.04	3.97	4.12
Place attachment	3.96	3.80	3.63	3.56	3.26	3.66
Symbolic of Guernsey	4.06	3.89	3.65	3.66	3.37	3.72

Table 6.14. Mean scores for the six zones on public evaluation of offshore wind / tidal energy and on the six place meanings

The figures in Table 6.14 show substantial differences in the place meanings ascribed to each zone. A large number of Wilcoxon tests were carried out (see Appendix J), which found that the difference between pairs of scores (e.g. visual beauty of zone A compared to visual beauty of zone B) was significant for all pairs of scores for the offshore wind zones, and for all but four pairs of scores for the tidal energy zones. This suggests that each zone is associated with a distinct set of place meanings. Visual comparison of these mean scores suggests that for the offshore wind zones (A-C), place meanings follow the same pattern as evaluation of the small wind proposal: Zone A, which was the least popular for offshore wind development, also received the highest scores on all five positive place meanings (compared to zones B and C), and the lowest on the negative meaning (industrialisation). Similarly, the opposite is true for the least popular small wind farm zone, zone C, which received the lowest scores on all positive place meanings but scored the highest on industrialisation. Perhaps intuitively, positive meanings associated with a place seem to go hand in hand with a relatively negative evaluation of that place as a site for energy development, while negative place meanings seem to be associated with a more positive appraisal of energy development in a given place.

A similar pattern was found for tidal energy, where the zone that received the highest scores on the positive place meanings, and the lowest score on industrialisation, was also the least well-supported zone (zone Z). However, contrary to what would be expected based on the patterns for the small wind project, the most supported zone for the tidal project (zone X) was consistently evaluated *more* (rather than less) positively across the six place meanings than the second-most supported zone (zone Y). One explanation for this could be that zone X was further out to sea than zone Y, which may have led to interpretations that tidal energy in zone X would represent less of a threat to these six place meanings.

To explore whether all place meanings are equally important in explaining public evaluations of projects located in each of the six zones, six linear regression analyses were conducted using the scores on the six place meanings for each zone as predictor variables and the evaluation of each zone as a location for the small wind/tidal energy project as outcome variable[15]. All six models are significant at $p < .001$, which suggests that place meanings significantly predict acceptance of ORE projects in a specific location. The small proportion of total variance in the outcome variable explained by each of these models (see adjusted R^2) also suggests that despite their significance, support for ORE projects in specific locations depends to a large extent on other variables – such as the ones already explored in the previous sections.

[15] All assumptions underlying linear regression were met. The Durbin-Watson statistic was very close to 2 in all three models (varying between 1.78 and 2.15), suggesting independent errors in each model (Field, 2013). Multicollinearity was not found to be an issue in any of the models, as VIF values were all between 1.11 and 2.57 (well under the threshold value of 10; Field, 2013), while all the tolerance values were well above 0.2 (between .39 and .90). Normality of residuals was also met across the models, which was confirmed by visual checks of a histogram and a P-P plot of these residuals for each regression analysis.

	Small wind project									Tidal energy project								
	Model A: Evaluation of the small wind project in ***zone A***			*Model B: Evaluation of the small wind project in* ***zone B***			*Model C: Evaluation of the small wind project in* ***zone C***			*Model X: Evaluation of the tidal project in* ***zone X***			*Model Y: Evaluation of the tidal project in* ***zone Y***			*Model Z: Evaluation of the tidal project in* ***zone Z***		
N	380			381			384			377			377			371		
F value	6.285			9.954			14.95			4.763			5.660			4.988		
P	.000			.000			.000			.000			.000			.000		
Adjusted R^2	.077			.124			.179			.057			.069			.061		
	b	**SE B**	**β**	**b**	**SE B**	**β**	**b**	**SE B**	**β**	**b**	**SE B**	**β**	**b**	**SE B**	**β**	**b**	**SE B**	**β**
Constant	3.68	.54	n/a	4.49	.51	n/a	4.72	.46	n/a	4.93	.38	n/a	4.52	.35	n/a	4.81	.48	n/a
Visual beauty	-.02	.14	-.01	.09	.13	.05	-.00	.11	-.00	.08	.10	.06	.08	.09	.07	-.03	.13	-.02
Popularity	.15	.11	.08	-.05	.11	-.03	.04	.10	.03	-.06	.07	-.05	-.08	.07	-.08	-.12	.10	-.09
Industrial-isation	**.20***	.10	.11	**.19***	.09	.12	**.18***	.07	.14	**-.19***	.07	-.14	-.08	.07	-.07	-.07	.08	-.05
Pristineness	**-.26***	.09	-.17	**-.32***	.09	-.21	**-.31****	.09	-.22	.05	.08	.04	.05	.08	.04	.05	.10	.03
Place attachment	-.02	.10	-.01	-.04	.11	-.03	-.05	.09	-.03	-.15^{++}	.08	-.14	**-.27***	.08	-.25	-.14	.09	-.11
Symbolic of Guernsey	**-.23**	.10	-.15	-.22	.11	-.15	**-.22***	.09	-.16	**-.16***	.08	-.15	-.05	.08	-.05	-.17^{++}	.10	-.14

Table 6.15. Regression models exploring the relative importance of six place meanings in predicting evaluation of the small wind and tidal projects across six locations (****** = significant at p < .001 ; * = significant at p < .05; $^{++}$ = significant at p < .10)

Table 6.15 reveals that not all place meanings are equally important as predictors of support for local energy projects. Two place meanings – visual beauty and popularity – were not significant in any of the six models; the extent to which places are seen as visually beautiful and as used by many people do not predict support for ORE in such places. Three place meanings were significant predictors of evaluations of the ORE projects in more than one of the six regression models. In particular, representations of places as industrial or as pristine were consistently significant predictors of support for the offshore wind project in zones A, B and C. In other words, places represented as industrial and not pristine are evaluated significantly more positively. Conversely, in the one tidal energy zone for which perceived industrialness was significant, it was a negative predictor of support; those who represented zone X as more industrial were less supportive of tidal energy in this zone. This could potentially be explained by a notion of fairness (as found in study 2; see Table 5.5 on p.210); some may judge it unfair for already 'industrial' places to be burdened with ever more infrastructure development.

The extent to which places were seen as pristine was an insignificant predictor of support for tidal energy in zones Y and Z. This suggests that support for offshore wind projects depends on finding locations that are considered industrial, while avoiding 'pristine' places. However, these place meanings seem to be largely insignificant when searching for acceptable locations for tidal energy projects.

The other place meaning that was significant across three out of six regression models was the extent to which places were represented as symbolic of Guernsey as a whole; places that are considered to be representative of the island were significantly less supported as sites for ORE development. Finally, place attachment was a significant predictor in none of the wind energy models, but in one of the tidal energy models; respondents who were more strongly attached to the coast near zone Y were less supportive of the tidal energy project in zone Y.

In sum, support for both offshore wind and tidal energy projects varies significantly depending on the location of such projects within Guernsey. Areas devoid of industrialisation, seen as pristine, cherished, and considered as symbolic for Guernsey as a whole are generally considered less acceptable for local ORE projects.

6.4 Discussion

This study aimed to explore key findings from studies 1 and 2 quantitatively, in order to triangulate these research findings using a large, representative sample, and in order to understand the relative importance of the multiple factors associated with the public evaluation of ORE in different places near the Guernsey coast. It found that multiple variables were significant predictors of public evaluations of these projects, representing multiple aspects of a symbolic 'place-technology fit' (McLachlan, 2009) at different scales. It also found that public evaluation of local *tidal energy* projects was explained by fundamentally different factors than public evaluation of local *offshore wind* projects, and that small offshore wind projects are evaluated very differently from large offshore wind projects.

Overall, the small wind project was evaluated much more positively than the large wind project, which suggests support for local energy projects is *conditional* upon the way a technology is deployed locally (Walker et al., 2010; Wolsink, 2007), for instance its scale and location. Previous studies have frequently argued that siting offshore wind projects further offshore is an important way of increasing support for such developments (see Knapp & Ladenburg, 2015). However, the large offshore wind project in this study which was much further offshore was much less widely supported than the nearshore small wind project, which suggests that other project characteristics may be more important than simply siting projects as far away from the coast as possible. In other words, if no other essential project characteristics are taken into account, then distance to the coast may predict evaluation of ORE development (as suggested by the studies reviewed in Knapp & Ladenburg, 2015). However, this study suggests that when considering a wider array of project characteristics within a research design (e.g. its size in relation to its host community), such project attributes are more important than the physical distance to the coast in explaining public evaluations of such projects. This suggests that wind projects which are in tune with local place-related narratives are preferred even when located closer to shore. This is especially important to recognise because siting wind turbines further offshore adds costs and complexity, and may not be technologically or legally feasible in some places (like Guernsey).

Moreover, tidal energy was found to be more widely supported than offshore wind energy, both in general and in terms of specific projects – confirming findings from study 1 and 2. To explain these public evaluations, numerous explanatory variables (derived from study 1 and 2) were tested, at different scales (Guernsey and specific places around Guernsey). Broadly speaking, project-related variables were found to be the most consistently important as predictors of support across the three projects described in the questionnaire. This reaffirms the value of the many previous studies that have examined public responses to specific projects (see discussion in section 2.2.4). This suggests that the value of the alternative, upstream approach taken in this thesis is valuable in *complementing* rather than altogether *replacing* this prominent approach. Moreover, the importance of project-related factors is also consistent with earlier research on public responses to a power line proposal, which looked at multiple project-related factors, including variables both similar (positive and negative project impacts) and different (procedural justice, trust in developer) compared to this study. In that study, the project-related variables explained an additional 31% of variance, on top of the 4% of variance explained by both socio-demographic and place-related variables (Devine-Wright, 2013a). The results reported here also replicate other earlier findings on the relatively minor role of socio-demographic variables, which have often been non-significant or relatively unimportant predictors of public responses to local energy development (e.g. Firestone & Kempton, 2007; Jones & Eiser, 2009; Vorkinn & Riese, 2001).

Although each regression model included similar variables, the proportion of variance explained was substantially lower for the tidal energy model (.360) than the small wind model (.711). This may have been due to diverse and potentially less developed public understandings of tidal energy (see section 4.4.2), which may in turn have informed relatively diverse ways of interpreting the described tidal project by questionnaire respondents. The resultant higher amount of variance in the responses to the tidal proposal could subsequently be explained only in part by the variables included.

Project-related variables

The strongest project-related predictor of public evaluation of both the small wind project and the tidal project was the extent to which respondents liked the idea of using the wind or the tides as a local resource. This suggests such affective components may be relatively important in evaluations of local energy projects in an upstream setting. This importance of respondents' general sentiment towards using such local resources also suggests there may be limits of what can be achieved through designing 'optimal' socially acceptable local energy projects (e.g. which are locally owned (Warren & McFadyen, 2010), offer plenty of local benefits (Haggett, 2011) and are implemented democratically and transparently (Wolsink, 2007)) – though this obviously remains very important. Instead, it suggests the value of communication efforts directed at representing the general notion of using wind or tides as a local resource as something positive. One potential explanation for finding these general views were so important to acceptance may be the 'upstream' nature of this study. This meant that the described projects were new to participants, which may have caused participants to rely on general notions of using the wind or tides to inform their initial responses (see Butler et al., 2011). The information provided being relatively incomplete (given space constraints) and phrased rather tentatively (see section 6.2.3) may also have contributed to this effect. Nevertheless, previous work has found that general attitude towards wind energy is an important variable shaping public responses to specific local developments (Jones & Eiser, 2009), suggesting these general stances towards using such local resources are likely to remain important in later stages of local ORE development in Guernsey (even if public responses are likely to evolve when more details of the development become known).

Local ownership of the described ORE projects was not a significant predictor of support in any of the three models, despite local ownership generally being represented as important (see chapter 5 and Table 6.9 on p.251). This suggests that although local ownership is important to local residents in principle, other factors become more important when evaluating a specific ORE proposal. This is a novel finding, as although existing studies have previously linked local or community ownership models to higher levels of local acceptance (e.g. Breukers & Wolsink, 2007; Warren & McFadyen, 2010), no studies have explored the relative importance of local ownership compared to other project characteristics at an early stage of public engagement. A potential weakness, however, is that this study did not open up preferences for different kinds of local ownership (States of Guernsey, Guernsey Electricity, community ownership, or shared between all three).

Furthermore, export-focused ORE development was found in study 2 to be less acceptable than a development for local use only (ORE as 'something we would do for ourselves'). Some evidence was found for this, as those who liked that the small wind farm would only generate electricity for Guernsey use were significantly more supportive of this proposal. However, representations of the export-focused nature of the large wind farm did not significantly predict evaluations of the large wind project. In other words, this study provides some evidence that the question of where 'local' electricity' goes – i.e. whether a project is for the locality or for 'others' – is an important facet shaping project evaluation. Similar observations have been made in a case study of acceptability of new transmission infrastructure in Scotland – a development represented negatively by local residents as being used to supply *others* (England) with 'Scottish' electricity (Devine-Wright & Devine-Wright, 2009).

A further representation of place prominent in study 1 and 2 was the notion of Guernsey as a place of local distinctiveness (Twigger-Ross & Uzzell, 1996), which was invoked to argue against offshore wind energy – a technology represented as making Guernsey ‘more like everywhere else’. Also, Guernsey’s tides were represented as something that contributed to Guernsey’s distinctiveness, and thus making use of such a distinctive local resource was represented as providing a good fit between place and technology and thereby reinforcing Guernsey’s distinctiveness. In this study these findings were replicated: those representing the small wind project as making Guernsey less unique were significantly less supportive of the small wind project, but such representations were not significant for the tidal energy project. This confirms the notion that technologies that are seen as threatening local distinctiveness (wind energy) are less acceptable, while those that maintain, ‘fit’ or enhance local distinctiveness are more acceptable (as observed previously by Brittan, 2001; Devine-Wright, 2011b; Warren & McFadyen, 2010; see chapter 2). Distinctiveness has been argued to be a key principle underlying individuals’ identification with places (Twigger- Ross & Uzzell, 1996), and thus choosing a locally ‘appropriate’ technology within local energy development may be a very important way to protect such place-related meanings and to galvanise project support.

Although several studies have highlighted distinctiveness as an important principle underlying public evaluations of local energy projects, each has suggested how ideas of distinctiveness can be drawn upon in a slightly different way. One way, as suggested by this research, is by utilising those natural resources that are seen as distinctive to a particular locality (i.e. the tides). A second way could be to use a novel, emerging technology that is distinctive because of being seen or marketed as ‘the first of its kind in the world’ (Devine-Wright, 2011b). A third way may be to add distinctly ‘local’ elements to a project that does not meet the above two criteria – for instance by naming local energy projects using local language (Warren & McFadyen, 2010), or in some other way ensuring that a ‘standardised’ technology that in many ways is the same everywhere it is used is adapted in a locally distinct way, for instance by using local materials (Brittan, 2001). As such, it could be recommended to policy makers and project developers that thinking through these multiple ways in which local projects may affect or build on a sense of local distinctiveness could be beneficial for the design of more acceptable energy developments.

Study 1 and 2 also found a place-technology narrative frequently reported before (e.g. Devine-Wright & Howes, 2010): energy technology being represented as 'industrialising' a 'natural' place. However, in this study's regression analyses, representations of the small wind and tidal energy projects as industrialising Guernsey were not significant predictors of support for either of the projects. Instead, the importance of the notion of wind energy 'industrialising' specific pristine places was found to be significant when considering 'acceptable' locations for this development (as discussed in section 6.3.4 and below). This again illustrates the relevance of thinking critically about the scale at which local energy case studies are conducted (see section 4.5 and 7.2.6). Section 6.3.4 also highlighted that such arguments around industrialisation were insignificant for the acceptability of multiple sites for tidal energy.

One other way in which offshore wind and tidal energy were evaluated differently was with respect to concerns about impact on wildlife: such concerns were a significant predictor of evaluation of the tidal project (as suggested before; Bailey et al., 2011; Devine-Wright, 2011b), but were non-significant for offshore wind.

As described so far, the substantial difference in support for the small and the large offshore wind projects could not be attributed to the large wind project's ownership model, or to its focus on export. Instead, the analysis in Table 6.12 (p.258-259) shows three others factors that explain evaluation of the large offshore wind farm. The first of these is a representation of this project as 'too large-scale for Guernsey', which was a significant negative predictor of project evaluation. This echoes concerns voiced in study 1, which suggested the scale of local ORE projects needed to fit Guernsey ('a small place', see section 4.5.1). It therefore suggests that the decision on the number and size of turbines used in a particular project may be an important consideration in shaping local support. It also confirms previous findings on the scale of offshore wind farms being a key concern for local residents (Devine-Wright & Howes, 2010). The second significant variable predicting support for the large wind farm was a representation of such a project being in the 'right' place, which was a positive predictor of project evaluation. This suggests that this large wind development's location (which is much further offshore than the small wind farm's location) is a key reason for support for this project. The third of these significant variables measured concerns over the electricity price impacts of this development; price concerns were a significant variable for all three projects, while price was also represented as a sensitive issue in studies 1 and 2. This may be a case-specific finding, as elsewhere the financial costs of RE developments are shared by the whole country, and do thus not directly impact nearby residents (except for community-led projects) – who in fact often even stand to (indirectly) gain financially through the provision of community benefits (Cowell, Bristow & Munday, 2011; Walker et al., 2014).

Place-related variables

The second group of explanatory variables explored in this study related to representations of place and people-place bonds. Generally speaking, place-related meanings and place attachments were less important in explaining public evaluation of ORE developments than project-related variables (mirroring Devine-Wright, 2013a). This suggests that these place-related factors can explain a small, but significant, proportion of the patterns within local energy project acceptability.

One very prominent place-related narrative across study 1 and 2 was a notion of Guernsey as vulnerable and in need of becoming more independent. Similarly, this notion was a significant predictor of project support for both the large wind and tidal energy project, suggesting concerns about (energy) independence and imports may play out locally as well as nationally (e.g. Firestone & Kempton, 2007).

A second set of place-related variables focused on three different varieties of place attachment (drawing on Bailey, 2015; Devine-Wright, 2013a and Lewicka, 2011). Two varieties did not significantly influence public evaluation of any of the projects: the extent to which respondents felt unattached (place relative) and attached in a traditional sense (place inherited). Individuals with a more active attachment to Guernsey (place discovered) were significantly more positive towards the tidal project, but not towards either of the offshore wind projects. This contrasts with an earlier study, where a significant negative association between active place attachment and acceptance of a proposed power line was observed (Devine-Wright, 2013a). A potential explanation for this contrasting finding was offered by study 1, which suggested that those with a greater interest in exploring new places and discovering places anew were more supportive of ORE projects. In particular, in study 1, such individuals typically also more frequently engaged in offshore leisure activities, and more commonly represented the sea as a resource to be utilised (for both leisure activities and ORE development). Some evidence was found for this as these three variables (*Place discovered*, *Sea as resource* and *Offshore leisure activity*) were all significantly positively (though weakly) correlated (correlation coefficients between .10 and .18). Also, across the three regression models, each of these three variables was a significant positive predictor of support in one of the three regression models. Although this does not represent a consistently significant trend, these findings nevertheless provide some further evidence for the notion that people with more of an interest in utilising and exploring the coastal environment (as opposed to portraying such spaces as predominantly of visual value – as a 'landscape'; Cresswell, 2004) are typically more supportive of ORE developments in such settings. This is perhaps counterintuitive, given that those people who actively use offshore spaces are potentially most affected by ORE developments. It should also be remembered that this thesis focused on Guernsey residents, as opposed to commercial stakeholders in the marine environment, like fishers, and these conclusions may not extend to such interest groups. Nevertheless, these findings suggest that in designing ORE projects, the views of non-water users are no less important to take into account as those of frequent water users (unlike what is suggested by a predominant focus on marine stakeholders like fishers within studies on tidal and wave energy; e.g. Alexander, Potts & Wilding, 2013; Reilly et al., 2015).

Finally, this third study to some extent further opened up the difference between 'locals' and 'incomers' – building on previous work where 'incomers' to scenic or holiday destinations have been found to be more strongly opposed to change to such places than those already living there (see Bailey, 2015; Devine-Wright, 2013a). This study found that those who had grown up in Guernsey were indeed *more* supportive of the tidal energy project (though no effect was found on support for the two wind projects). On the other hand, those with a stronger local identity were *less* supportive towards the small offshore wind project (but no effect was found for the other two ORE proposals). However, both of these relations had small effect sizes, and neither were significant predictors of project support in subsequent regression analyses. This study therefore finds no substantial evidence backing up these earlier conclusions (e.g. Bailey, 2015; Devine-Wright, 2013a), or for participants' assertions in study 1 that 'real locals' ('Guernsey donkeys') are more opposed to change. This may seem surprising, given that Guernsey was represented as possessing a distinctly 'local' dimension made up of some of the themes found in studies 1 and 2 (and which is also for instance embodied in the fact that there is a local housing market on the island; see chapter 3). The results of this study thus suggest that such culturally shared themes (e.g. independence, the tides as locally distinctive) may be more important in shaping public responses to local energy developments than questions around individual 'localness'.

Contextual variables

The findings from study 1 and 2 suggested that evaluations of particular ORE technologies are *relational*, or dependent on the comparative evaluations of wider energy systems, policies and alternatives. One way in which this finding was investigated in this study was by implementing an experimental manipulation, where half of respondents completed the offshore wind sections first, and the other half completed the tidal energy section first. It was expected that those who completed the tidal energy section first, and in doing so learned about tidal energy's high price and technological uncertainty, would subsequently evaluate offshore wind energy more positively than those in the other condition (see section 5.4). However, no significant effects were found. This may be because particular ideas may not be easily changed, especially ones that were suggested by study 1 to be deeply rooted in a longstanding experiential and cultural connection with the tides. As such, it is perhaps unsurprising that the provision of one small information box may not have transformed such culturally-grounded social representations.

Person-related variables

Of the six person-related variables included in this study, the only significant predictors of support were environmental attitude and age: both younger and more environmentally-minded individuals were more supportive of the large wind project, but not of either of the other two proposals. No significant effect was found in any of the regression models for gender, income, education and having grown up in Guernsey. However, these broad conclusions need to be understood in the context of a consistent pattern observed in the correlations between these person-related variables (see Table 6.10 on p.252-253), which were consistently significantly correlated with both wind projects but not the tidal project. In particular, men, older people, those with lower levels of education and those with weaker environmental attitudes were significantly more supportive of at least one of the wind energy projects – yet none of these variables were significantly correlated with support for tidal energy. By contrast, the opposite was found for the one remaining person-related variable: those having grown up in Guernsey were significantly more supportive of the tidal project, but this variable was not correlated with support for either wind project. In other words, unlike offshore wind, tidal energy enjoys similar levels of support across almost all strata of Guernsey society, regardless of gender, age, education or environmental attitude. This suggests a fundamental distinction between the local evaluation of both technologies, which implies one has to be careful to presume findings from the mostly wind energy-oriented energy acceptability literature apply equally to other technologies (Wiersma & Devine-Wright, 2014).

The relevance of finding the 'right' location

The analyses in section 6.3.4 found that, along with the variables identified above, the *location* of a local ORE development shapes public evaluations of such projects: both the small wind and tidal energy projects were evaluated significantly differently depending on where they would be located, when three zones were suggested for each (with medium effect sizes illustrating the relevance of this finding). This finding mirrors earlier conclusions on the importance of site selection in shaping local energy acceptability (e.g. Alexander et al., 2012; Jobert et al., 2007). The crucial importance of finding the ‘right’ place for deployment of a given technology was illustrated by the finding that a very well-supported technology (tidal energy) sited in a poorly chosen location (zone Z) was found to be equally supported as a relatively poorly-supported technology (offshore wind) sited in a well-selected place (zone C; see Table 6.13 on p.261). Also, the substantial differences in support for the tidal energy project across its three potential locations suggests that even for ‘invisible’ tidal energy technology the matter of finding its ‘right’ location remains very important – adding to previous suggestions that marine energy is not ‘out of sight out of mind’ (Bailey et al., 2011), as sometimes presumed by tidal energy developers (McLachlan, 2010). Instead, these results suggest that regardless of the physical manifestation of such ORE technologies, local residents are still likely to prefer these to be located away from the most valued places.

The analysis also found that the variation in acceptability of different zones was reflected in variation in place meanings associated with the nearby coast; those places more strongly associated with positive place meanings were generally less acceptable as sites for ORE. One exception was zone X, a place with very positive place meanings, which was nevertheless evaluated relatively positively as a site for tidal energy. One potential explanation could be that zone X was located further away from the coast – and was therefore potentially judged to be relatively less impactful upon those place meanings. Another explanation is that zones Y and Z are both in areas that were represented in studies 1 and 2 as valued for their wildlife. That this particular place meaning was not included in the set of six place meanings is a limitation of this study.

Of the six place meanings that were measured, four were significant predictors of support in at least one of the six regression models. First of all, it was found that the extent to which places were represented as industrial and not pristine were significant positive predictors of support for the small wind project in each of its three zones – yet the same was not found for tidal energy. In other words, arguments around ‘industrial’ energy technology spoiling ‘pristine natural’ places seem to be more relevant to wind energy (e.g. Devine-Wright & Howes, 2010) than to tidal energy. Although this finding may be to some extent due to portraying tidal energy technology as entirely submerged/invisible in the questionnaire, it is nevertheless consistent with previous findings on wave energy, which was represented by some as ‘at one with mother nature’, rather than industrial – and thus was positioned as ‘in place’ in ‘natural’ settings (McLachlan, 2009). In Devine-Wright (2011b) mean scores on whether a single tidal energy converter would ‘industrialise the area’ were also well below the midpoint of the scale, which also suggests that tidal energy may not necessarily be seen as ‘industrial’ in the same way as wind energy (although this may also partially be the result of tidal energy projects being relatively small-scale to date). This again suggests that care needs to be taken extrapolating conclusions – generated from wind energy case studies (Petrova, 2013) – on the supposed ‘industrialness’ of RE to other technologies, like tidal and wave energy. Moreover, the finding that representations of ‘industrialisation’ seemed irrelevant at the scale of Guernsey, but were significant when considering specific parts of Guernsey’s coast, highlights the importance of critically considering the issue of scale in energy acceptability research (see sections 4.5 and 7.2.6).

Another key place meaning – significant in predicting support in three out of six regression models – was found to be the extent to which places are seen as symbolic of a wider locality. This suggests that people may be particularly protective of places that are seen as more central than others to constituting what a locality ‘is all about’ – such as those places represented in study 1 as ‘iconic’ or ‘classic Guernsey’. As such, the suitability of a location for ORE development should not be understood as being dependent on its ‘objective’ or ‘inherent’ visual beauty or pristineness – instead a relational perspective on how places become meaningful may help to understand the relative acceptability of particular sites for ORE projects.

Place attachment was a significant predictor of support for wind/tidal in one of the six regression analyses, highlighting that attachments to places of residence (e.g. Devine-Wright & Howes, 2010) are not the only relevant types of place attachment. Instead, attachment to non-residential places (like places valued for their beauty, memories or leisure opportunities) can also be significant predictors of local energy support (see study 1). This reaffirms the potential value of moving away from a NIMBY-like focus on people's places of residence (their 'backyards') towards a much broader conception of the ways in which a multitude of places may be meaningful to people, as suggested by Batel and Devine-Wright (2015a).

By contrast, the extent to which zones were seen as places of visual beauty or as very popular were non-significant predictors of support in all six regression models. Especially the lack of influence of visual beauty arguments is slightly puzzling, as the existing energy acceptability literature is overwhelmingly in agreement on the importance of visual impacts (e.g. Devine-Wright & Howes, 2010; Haggett, 2011; Wolsink, 2007). One explanation for this finding is that judgements of the coast near each zone as visually beautiful were 'wrapped up' in the other five place meanings measured (e.g. places seen as visually beautiful are also more likely to be people's favourite places, and more likely to be seen as symbolic of Guernsey as a whole). Therefore, the variance that would be explained by the visual beauty variable is already explained by (several of) the other place meaning variables in the model.

These findings taken together suggest that objection to offshore wind energy in specific places may be due to a lack of 'fit' between this technology and pristine, non-industrialised places; though such place meanings were not significant for tidal energy. Also, objection may not necessarily stem from a purely visual objection to such developments, but equally from the general idea that valued places should be 'left alone' – in particular places that are iconic or symbolic of the wider locality or as personal favourites.

Limitations

A number of potential limitations of this study could be identified. First of all, despite efforts to make the information presented about the three projects as clear and easy to understand as possible, it was phrased in rather tentative and uncertain terms (due to external stakeholder concerns; see sections 3.4 and 6.2.3), which may have made interpreting, evaluation and responding to such proposals relatively difficult for respondents. Second, only a limited number of characteristics of each energy project could be presented in the questionnaire due to space constraints, which means that potentially important aspects of such local developments (e.g. community benefits (e.g. Cowell et al., 2011), trust in important stakeholders (e.g. Barry et al., 2008), local employment opportunities (e.g. Kerr et al., 2014)) were not discussed. Therefore this study is unable to determine the relative importance of these facets in shaping public evaluation of energy developments. Third, the measurement of 'acceptable' locations has been crude in this study, as each of these zones represented a relatively large area. Therefore nuances in preferences for siting within particular parts of each zone were not captured in this study. Finally, the quantitative measurement of different place attachment varieties is an emerging field (Lewicka, 2011), in which key constructs (e.g. place inherited, place discovered) have been measured using slightly different scales across studies, yielding diverging results (Bailey, 2015; Devine-Wright, 2013a). This suggests that further research is needed to confirm an appropriate and consistent operationalisation of these concepts, and that the findings on the significant role of active attachment varieties in this study need to be interpreted with care.

In conclusion, this third and final study has confirmed the relevance of multiple place-technology representations at different scales. In particular, it found that some place-technology representations that were prominent in study 1 did not significantly predict support for specific ORE projects (e.g. local ownership, notions of such projects 'industrialising' Guernsey), while others were found to be very important predictors (e.g. general representation of using a particular local resource). Finding a location that 'fits' offshore wind and tidal energy projects was found to make a potentially substantial contribution to their evaluation. More specifically, it was found that a well-supported technology that is poorly sited (from an acceptability point of view) may not be any more acceptable than a relatively poorly-supported technology that is sited in the most socially acceptable location. Also, the study found that public evaluation of local energy projects can be substantially different depending on which technology is employed within such projects; various variables played an entirely different role in explaining public evaluations of the wind and tidal projects. Finally, the diversity of significant predictive variables, the large amounts of variance explained by the regression models, and the substantial differences in support for each of the ORE project options all suggest that it is possible and useful to quantitatively open up these processes of public evaluation of local energy alternatives at an early, upstream stage.

Chapter 7. General discussion

7.1 An upstream, place-based approach to local energy deliberations

Public support for renewable energy projects is a crucial ingredient for a successful transition towards sustainable, decarbonised energy systems, and has therefore been investigated by a growing literature on 'local energy acceptability' (e.g. see Devine-Wright, 2011; Petrova, 2013; Upham et al., 2015). This thesis identified four limitations of this body of work, which are all a consequence of the predominant use of single case study research designs (also see Wiersma & Devine-Wright, 2014), typically aimed at understanding why local residents opposed a specific proposed or sited wind farm (e.g. Aitken, McDonald & Strachan, 2008; Devine-Wright & Howes, 2010; Ellis et al., 2007; Firestone & Kempton, 2007; Jones & Eiser, 2009; Woods, 2003).

The first limitation of this prevailing approach is that the literature has been predominantly focused on understanding opposition, or 'place-protective action' (Devine-Wright, 2009; Stedman, 2002), and subsequently has relatively little to say about the construction of public support for local energy projects (Aitken, 2010). Second, by focusing on 'public responses' (Batel et al., 2013) to energy projects, many (though not all) energy acceptability studies have operationalised a reactive conception of the role of communities in local energy development. Although this may reflect current practices (Rydin et al., 2015), and has clearly been very effective in better understanding local energy acceptability (see sections 2.2.1 and 2.2.2), it nevertheless overlooks the potentially constructive role that could be played by local communities, which have been argued to be *"willing and fully capable of engaging critically with energy system transformation"* (Parkhill et al., 2013, p.4). Third, by focusing mostly on public responses to single (wind energy) projects without exploring potentially more widely supported local alternatives (e.g. demand reduction), achieving community acceptance of wind energy has been treated as a goal in itself within parts of this literature. It can therefore be critiqued as being relatively unambitious, given that many studies have tended to overlook the many alternative potential ways in which local communities could contribute to global sustainability (Barry & Ellis, 2011; Wiersma & Devine-Wright, 2014). Fourth, by focusing on enhancing the acceptability of wind energy projects, the literature has not systematically explored the important question of whether wind energy was the 'right' choice of technology in each case (a notion that is absent altogether in review papers such as Petrova, 2013), as the majority of case studies continue to adopt a single project-focused approach. Using 'downstream' case studies where such important decisions on technology choice and site selection have already been made by project instigators (and are therefore not included as relevant factors in such studies) therefore is not entirely able to offer a full, comprehensive understanding of how to achieve well-supported local contributions to more sustainable energy systems.

To counter such shortcomings, this thesis instead responds to calls for more 'upstream' public engagement, focusing on the local energy futures envisaged by communities, beyond the 'expert'-led establishment of relevant energy-related 'problems' and 'solutions' (Barry & Ellis, 2011; Whitton et al., 2015). Situated with the wider 'participatory turn' within environmental planning (Healey, 2006; Hindmarsh & Matthews, 2008), such approaches have been argued to give communities a chance to contribute to wider sustainability, beyond the narrow objective of getting communities to (resentfully) accept local wind farms (Barry & Ellis, 2011). Crucially, a focus on the reactive, hostile role played by local communities in some contexts is replaced by more constructive notions of communities who want and expect energy system change and are willing and able to contribute to this locally (Parkhill et al., 2013). Although such deliberative, participatory approaches offer no guarantee of better, fairer or more sustainable outcomes when applied as a political decision-making tool (Cooke & Kothari, 2007), its potential as a way to better understand local energy deliberations (i.e. as an approach to social science research that complements the existing prominent 'downstream' approach) nevertheless has remained largely unexplored.

Adopting a place-based approach (Devine-Wright, 2009), the overall approach taken in this thesis was to explore, at an 'upstream' stage, what locally-relevant values and meanings may be threatened by potential local energy projects, and which may 'fit' (Brittan, 2001; McLachlan, 2009) or be 'enhanced' (Devine-Wright, 2011b) by such projects. This is attempted by adopting a relational place-based approach, where place is understood explicitly in relation to an (imagined or constructed) 'outside', rather than as possessing authentic, inherent meaning (Jonas, 2012; Varró & Lagendijk, 2013). This approach was complemented by adopting a social representational approach, a broadly social constructivist (Burr, 2015) perspective where social knowledge is understood as collective, as well as residing within individuals (Wagner & Hayes, 2005), as reflected in this thesis' use of the concept of *social representations*. Being grounded in SRT has meant that the thesis has considered participants' statements as *social representations*: socially active objects, which are formed by, and in turn form collective ways of talking about particular places, objects or concepts. Thus the focus of this research was to understand public evaluation of ORE technologies and projects at an early stage of public engagement, by exploring the 'fit' (McLachlan, 2009) between representations of place and technology. The key research aims and findings in relation to each of these aims are critically reviewed in the next section.

7.2 Key findings, reflections and recommendations

The key findings of this research are summarised in Table 7.1 and discussed in more detail in the sections below.

Key finding	Based on
❖ An upstream approach to local energy deliberations can identify many ways in which local energy projects may 'fit' or enhance a place	Study 1 & 2
❖ Several upstream factors were found that have been largely overlooked by previous energy acceptability studies: technology choice, site selection, and systemic arguments	Study 1, 2 & 3
❖ A relational understanding of places and the meanings ascribed to them suggests that maintaining or enhancing a sense of local distinctiveness is crucial for achieving local energy acceptance	Study 1, 2 & 3
❖ Defining an 'appropriate' scale and place in considering place-technology fit is an essential step in research which needs to be critically reviewed	Study 1 & 3
❖ Offshore settings need to be understood as valued in their own right, as well as deriving meaning relationally from the onshore	Study 1
❖ Energy projects located further offshore may not necessarily be more acceptable than those nearshore	Study 3
❖ Project-related aspects are very important factors in predicting public evaluations of local energy projects, while person-related aspects are less so	Study 3

Table 7.1. Overview of overall key findings of this research

7.2.1 The value of an 'upstream' approach

In this research, the value of an upstream research approach manifested itself in several ways. Many rationales for both support (e.g. ORE as enhancing Guernsey's independence) and opposition (e.g. ORE as industrialising Guernsey's natural beauty) were expressed by participants throughout its three studies (especially in study 1 and 2; chapter 4 and 5). This suggests the potential of this approach for going beyond an emphasis on opposition (Aitken, 2010) – although a weakness remains a relative lack of focus on other stances such as indifference or ambivalence (see below). Also, by exploring local energy acceptability through the deliberation of multiple local alternatives, a number of additional factors have been foregrounded as potentially important in shaping local energy acceptance. In particular, technology choice, site selection and systemic arguments were found to be important factors especially in study 2 and 3 (discussed further below). This is important as these three upstream factors have largely been neglected in the existing energy acceptability literature (e.g. they are absent from review papers like Petrova, 2013).

This study suggests that individuals and groups not only can and want to be engaged in national energy system change (Ashworth et al., 2011; Parkhill et al., 2013), but that the same applies to being engaged in local energy futures – although the participant recruitment experiences from study 2 suggest in practice some are more likely to voice their views than others. This highlights how reconceptualising local communities from being reactive and latently hostile (e.g. Knapp & Ladenburg, 2015), 'responding' (Batel et al., 2013) to local energy projects, to being a resource of local knowledge (Burgess, 2014; Jasanoff, 2006; Whatmore & Landström, 2011) and an essentially constructive, helpful audience for local energy development (Demski et al, 2015; Barry & Ellis, 2011; Parkhill et al., 2013) can make a contribution to further understanding the construction of local energy acceptance.

What all this suggests is that the underlying message the acceptability literature conveys to developers and policy-makers may need to be changed. At present it – to some extent – reifies the notion of communities as fickle and unpredictable, in need of careful handling, as the frail and precious general support that may exist among communities can turn into objection in an instant (though some studies have explicitly set out to nuance this notion; e.g. Bell et al., 2013). This is implicit in long lists of factors that need to be handled in 'the right way' by project instigators (e.g. procedural and distributional fairness, trust, technology risk) identified by some review papers (e.g. Huijts et al., 2012; Petrova, 2013). While this thesis did not focus on these factors in any depth, and thus does not have much to say about them, the results reported here do

suggest that there is value in focusing more on factors that are linked to support, rather than (avoiding) opposition (like the need for a fair process).
In particular, the constructive public engagement and diverse local preferences found in this research suggests that the many ways in which local communities can be supportive towards, and contribute to the design of, local energy projects also deserves greater emphasis within the overall message that is conveyed by the energy acceptability literature to project developers and policy-makers. In other words, a greater representation of the 'positive', constructive side of local communities within this literature may be a way to contribute to breaking the 'cycle of NIMBYism' (Devine-Wright, 2011d), because it changes the fundamental way in which 'achieving acceptance' is talked about within the literature. At the same time, it needs to be remembered that all this is not to dismiss the value of previous single case-study research. Instead, these findings suggest that exploring acceptability in an upstream stage needs to complement well-developed existing approaches which are project-focused and 'downstream'.

One way in which this greater focus on local narratives of support could potentially be achieved is through the study of existing community energy initiatives – where such processes of local communities deliberating and shaping their local energy futures are already underway (e.g. Seyfang, Park & Smith, 2013). The experiences from such voluntary, bottom-up exercises in achieving locally acceptable energy projects could potentially be investigated in more detail with a view to translating these experiences to the context of market-led, large-scale renewable energy deployment; in particular with regard to the methods or processes that can be utilised to ensure such projects are locally supported.

Upstream approaches have typically been argued to be participatory ways of empowering local communities in decision-making (Barry & Ellis, 2011; Whitton et al., 2015). Similar arguments have been made for the visual (Johnsen et al., 2008; Loopmans et al., 2012) and deliberative (Coleman & Gøtze, 2001) components of this thesis, while this thesis was described in chapter 2 as being interested in giving local communities a greater voice through giving local perspectives and knowledge an important place in the research design. However, the way this thesis has operationalised an upstream approach (as a research approach, rather than a political decision-making process) suggests that such an approach may have more complex power implications that simply being empowering. Arguably, the main empowering aspect of the work was that perspectives from local residents were given a voice at an early stage in local energy development processes, and that deliberation was informed by the latest insights from local policy makers – contrasting with the usual research approach of analysing public responses to existing proposals. However, four critical reflections can also be made on the empowering potential of the approach adopted in this research.

First of all, the research was strongly geared towards being useful for local policy-makers (who were very involved – see chapter 3) in terms of understanding and therefore being better able to deal with the social dimensions of future local energy projects. This could be seen to represent a predominantly instrumental imperative for public participation (i.e. to achieve a certain end: minimising public controversy) rather than a normative or substantive imperative for public participation (Stirling, 2008). As such, the external stakeholder could be seen as the main beneficiary of the work – the research was co-produced with them (see chapter 3), and they were provided with information that could be used to take forward their own agendas. This may be a logical consequence of the implicit intention of this research being the enhancement of understanding of how to achieve local community acceptance, which broadly aligns with the external stakeholder's objectives). Consequently, there is no guarantee that the views shared by participants will be taken into account: if anything, the research findings may be used to develop effective strategies to marginalise certain 'unwanted' community perspectives.

Second, views expressed by participants were mediated by researcher interpretation, analysis and production of summary reports and presentations, before reaching local policy-makers. This means that the power afforded to communities to convey their views is somewhat diminished, as those views only reach policy-makers indirectly – and may therefore lose some of their nuance or meaning.

Third, the research design limited the variety of local contributions to sustainability deliberated by participants; therefore participants were not empowered to express preferences beyond energy-related options (e.g. reduced car use, climate change adaptation). Instead, the focus was mostly on eliciting views on offshore wind and tidal energy. A truly empowering approach could instead focus more on affording research participants greater freedom in defining the sustainability challenge at hand, and identifying locally desirable actions – including the option of rejecting all renewable energy and proposing another way to achieve similar objectives instead (e.g. reduced car use).

Fourth, a key question is *who* is empowered by upstream approaches. Participants in the deliberative focus group discussions of study 2 seemed to have a particular existing interest in renewable energy, suggesting perspectives from those less interested in energy technology may have been overlooked. This raises questions over the representativeness of community viewpoints elicited using such deliberative methods, which may require an active interest in the topic, and the potential marginalisation of alternative views. This is important if an upstream approach is to be used to understand the array of community visions of desirable local energy futures (e.g. Whitton et al., 2015), in which case the empowerment and inclusion of *all* within such a community needs to be a central objective.

In sum, it can be questioned to what extent this upstream research process has empowered its participants or wider Guernsey communities, suggesting a need to remain critical of making presumptions on the benefits of such approaches. One potential route to greater empowerment is to reduce the role of the researcher's interpretation of the data, by returning to research participants with the key findings of the researcher's data interpretation. This more participatory approach would give participants greater agency in shaping how their views are subsequently represented to local policy makers and beyond. Another way could be through adopting co-production approaches, where (local) 'experts' (e.g. policy-makers, technology and project developers) and ‘publics’ are brought together to jointly define the ‘problems’ and potential solutions at hand (Burgess, 2014; Jasanoff, 2006; Whatmore & Landström, 2011). Given the highly engaged local external stakeholder in this research, this potentially represents a missed opportunity in this research context.

In addition, to address the potential risk of upstream approaches to exclude those with less interest in rather abstract ideas around future energy system change, there is the potential for greater use of methods like auto-photography, which offer participants a different, potentially more exciting or inviting ‘way in’ to contributing to the research. Future research adopting an upstream place-based approach could also adopt other methods that capture what is valued about places spatially (without having to focus on energy-related issues), such as interactive stakeholder mapping (Alexander et al., 2012), or public participation GIS and volunteered geographic information (Brown, 2013). By avoiding the recruitment of participants by talking about energy, such approaches could potentially help to obtain diverse perspectives at an upstream stage.

One further important finding is that although this study took place in an upstream context where there was no relevant public engagement process to examine, and where procedural aspects were not a prominent part of the research design, issues around process still emerged as important. For instance, some of this thesis’ recommendations suggest ways in which the next steps of ORE development process could be improved (see 7.2.5), while the value of the upstream approach adopted was argued earlier (in chapters 4 and 5) to offer a better understanding of the factors that will become relevant in later stages of public engagement processes. So, even though issues of process were not a key focus of this research design, they still emerged as important, which reaffirms the importance of procedural aspects to achieving well-supported local energy projects, even in research that takes place at early stages of local energy development.

Finally, the findings of the three studies combined arguably show a familiar, NIMBY-like pattern where technologies in general are widely supported but become more strongly opposed when made more specific (especially apparent in studies 2 and 3). However, they do not represent evidence to support the NIMBY notion that local communities inevitably object to nearby energy developments. To the contrary, the findings illustrate that it is worth opening up the conditions upon which support for local energy projects depends; especially as these studies found participants were very supportive of local projects that met certain criteria (e.g. being of the right scale). Study 3 also found that a small nearshore wind project was much more popular than a much larger wind farm further offshore, and that choosing the 'right' nearshore location can also significantly improve local acceptance. This research thus provides further evidence against the NIMBY-idea that public opposition to local energy projects in a locality is inevitable due to being concrete rather than abstract and proximate rather than distant.

7.2.2 Studying upstream engagement using a place-based approach

Overall, a focus on the ways in which places are meaningful was found to complement an upstream approach. In particular, it was found to provide a useful starting point for participant interviews and discussions – framing the conversation around something other than energy. This served well to engage and recruit participants who would possibly not have participated in a study primarily about energy (see chapter 4). Throughout the three studies conducted for this research, many different place-technology representations were used to portray local ORE development as (not) fitting Guernsey (e.g. ORE as reducing Guernsey's vulnerability; offshore wind as 'industrialising' Guernsey's 'natural' coast; in particular see chapter 4). The diversity of relevant place-technology representations suggests that an upstream place-based approach that explores the meanings associated with both places and technologies has the potential to contribute to in-depth understanding of local energy deliberations around multiple technologies.

Although the place-technology fit concept has been used by previous research in case studies of single existing or proposed energy developments (Anderson et al., 2013; Devine-Wright, 2011b; Devine-Wright & Howes, 2010), this thesis suggests the concept also offers a useful conceptual tool when investigating support for a diversity of local energy projects. In particular, although a place-based approach recommends a focus on the ways in which places become meaningful – an emphasis on both place *and* technology has the ability to explore the acceptability of multiple, different technologies – suggesting the value of replacing a focus on 'place-protective action' (Devine-Wright, 2009; Stedman, 2002), with the concept of place-technology fit, which offers the potential to understand why projects may be represented as 'in place' or 'out of place' (Cresswell, 1996).

The many 'place enhancing' (Devine-Wright, 2009) place-technology representations (e.g. tidal energy as enhancing Guernsey's distinctiveness; ORE as increasing Guernsey's independence) suggest an upstream place-based approach is well-suited to understanding the construction of support as well as opposition (although such narratives have also been found in 'downstream' place-based studies; Devine-Wright, 2011b). As such, a place-based upstream approach may not only be able to contribute to a better academic understanding of public support and opposition, but may also be able to contribute to instrumental (Stirling, 2008) objectives around achieving more acceptable local energy development practices.

Nevertheless, the use of a place-based approach, and the concept of place-technology fit in particular also has a number of limitations in an upstream context. First of all, it potentially overemphasises local aspects. Global environmental arguments have been commonly found to be important reasons to support a local energy project (e.g. Warren et al., 2005), yet such arguments may not be captured when foregrounding place meanings at a local scale (though of course this depends on the research design and the questions asked by the researcher). Similarly, aspects that may not always be place-related, such as procedural dimensions, may also be overlooked if the emphasis is on place meanings.

Second, the meanings ascribed to technologies in an upstream stage may be very undeveloped and changeable; in study 1, despite giving rich and diverse descriptions of imagined technologies, participants nevertheless struggled to describe and imagine tidal and wave technologies (which is perhaps unsurprising due to the upstream stage of this study). In study 2, these technology representations readily transformed in many ways upon the introduction of additional information about the technologies (e.g. representations of tidal energy became more negative compared to study 1, highlighting the associated economic and environmental risk). This suggests that eliciting place-technology representations at such an early, upstream stage, in the context of potentially unfamiliar, novel technologies like tidal and wave energy, although useful in many ways (for instance making clear which conditions need to be met in subsequent local energy development further downstream), does not offer an altogether straightforward way to achieving acceptance, due to the potential changeability of such representations (also see Flynn et al., 2011). It nevertheless also highlights the importance of opening up the ways in which local communities understand energy technologies (as opposed to ignoring this altogether; e.g. DECC, 2015b), as these ways of understanding were found to shape acceptance of various alternative local energy options in many ways throughout study 1 and 2.

Third, foregrounding the meaning of technology risks the overlooking of the many other project-related factors that were found to be important in this study (e.g. ownership model, benefits, location, project size) and previous work (e.g. Devine-Wright & Howes, 2010; Warren & McFadyen, 2010). Therefore, this thesis suggests that in the future, research should consider replacing an interest in ‘place-technology fit’ and ‘symbolic interpretations of the technology’ (McLachlan, 2009) with an interest in ‘place-project fit’. This would instead place greater emphasis on the many aspects of local energy projects that are likely to shape acceptability, alongside an interest in meanings associated with the technology that may be deployed. By incorporating as many dimensions of a future local energy project as possible at an early stage, a more comprehensive picture can be built of how local residents will engage with future local energy proposals.

Adopting the concept of place-project fit may also help to overcome the changeability of views elicited at an upstream stage, as it may capture wider non-technology related, culturally significant themes that were said to be very important by participants and may potentially be more stable over a longer term (e.g. an importance placed on independence) and therefore will continue to be important once a specific local energy project is proposed. Within the Guernsey context for instance, it can be imagined that the need for local energy projects to be for local use rather than export and to contribute to Guernsey's independence may be relatively stable in the longer term and could therefore remain important considerations in the design of local energy projects. As such, replacing the concept of 'place-technology fit' with an interest in the broader 'place-project fit' offers the potential of a more robust kind of upstream research on local energy acceptability.

7.2.3 Local distinctiveness

A further key finding is that when taking an upstream approach looking at multiple options, those options that are seen as fitting in with, or enhancing, local distinctiveness are most well-supported. A notion of Guernsey being a unique place in the world was conveyed by participants by representing for example its beauty, sunsets and tides as unique (see chapter 4 and 5). Such representations were subsequently invoked to argue in favour of local energy projects that were interpreted as drawing on these locally distinct meanings (e.g. using the tides for tidal energy as something that fits 'what Guernsey is about' – see study 1). Similarly, they were also used against local energy projects that were interpreted to threaten these values, and thereby Guernsey's distinctiveness (e.g. offshore wind energy as making Guernsey 'more like everywhere else'; ORE projects that would threaten Guernsey's unique sunsets – study 1 and study 3). This confirms similar earlier findings that some local energy projects may be interpreted not only as 'destroying local character' (Brittan, 2001), but also as place-enhancing by contributing a sense of local distinctiveness (Devine-Wright, 2011b). Following Devine-Wright (2009; 2011b), the importance of a sense of local distinctiveness could be theorised to be important because such place meanings contribute to individuals' identities

(Twigger-Ross & Uzzell, 1996). This suggests that notions of maintaining distinctiveness may be particularly important for those strongly attached to a place, but not to those who identify less with a place – meaning its relevance may not be equal across different groups within a community.

The importance of these inherently relational arguments around local distinctiveness is perhaps a logical effect of the *relational* (Cresswell, 2014) understanding of place meanings adopted in this thesis, where place meanings are understood as inherently derived from their relation to 'other' places. Therefore, investigating how places are represented to be distinct from other places can be a productive way of understanding the place-related meanings that may be threatened or enhanced by local energy development. This suggests the value of a place-based approach (Devine-Wright, 2009) that pays greater attention to the relational foundations of place meanings, which in this thesis has helped to highlight the importance of representations of local distinctiveness as a factor shaping local energy acceptability.

Within upstream approaches that are interested in identifying locally acceptable energy projects, these findings suggest that the idea of local distinctiveness could play a key role. This could take the shape of identifying a resource that is considered as locally distinct, or implementing a project in such a way that it adds to a sense of local distinctiveness – rather than as something which seems identical to energy projects elsewhere. From a developer perspective this strongly suggests that the design of any local energy project needs to consider how such a project may affect a local sense of distinctiveness as a guiding design principle (though this already happens to some extent; e.g. see Bell & York, 2010), and aim to make a project in some way distinctive: e.g. project name (e.g. Warren & McFadyen, 2010), turbine arrangements (Sørensen et al., 2002), using a distinctive local resource (this research), using local materials (Brittan, 2001), integrating the project into wider local improvements (e.g. Swansea tidal lagoon), and connecting the project to local stories about why places are relevant to local individuals and groups. In other words, local energy projects are likely to be more acceptable if they are meaningful in ways that are not just about the generation of electricity. If local energy projects can be designed or framed as being a project that *fits* or ideally *improves* the local area in a diversity of ways, drawing on wider locally-relevant meanings and values, then this seems likely to enhance local support for such projects. This research suggests that the use of engaging, participatory methods which are not purely about energy but about the ways in which local communities represent the needs and specifics of their place (e.g. auto-photography), have the potential to inform the design of such place-enhancing energy projects.

Although the concept of distinctiveness has been found to be important before in other coastal case studies (Devine-Wright, 2011b; Devine-Wright & Howes, 2010), it could be questioned whether the importance of a sense of distinctiveness in this research was foregrounded by using a rather idiosyncratic case study. For instance, many places may not possess a distinct natural resource like Guernsey's tides. Further research could therefore further develop our understanding of the relevance of distinctiveness as a concept by examining local energy project development in other (non-coastal) contexts, places with no distinct natural resource, or in places with weaker discourses of uniqueness (if such places exist).

7.2.4 The importance of technology choice and site selection

With regard to the potential of finding locally acceptable energy projects, the overall conclusion offered by all three empirical studies is that support for local energy development depends to a very substantial extent on the technology employed, and the location chosen for such a development. These conclusions suggest that an upstream approach is valuable in its potential to open up such factors shaping acceptability in substantial depth and in a locally-sensitive manner.

Across the three studies, local energy projects using tidal energy were consistently preferred over offshore wind projects (as were solar energy and demand reduction options – see chapter 5). Tidal energy – unlike wind energy – was also found in study 3 to be equally supported across all strata of society (see chapter 6), suggesting support for the idea of using the tides for local benefit may be linked to wider cultural or experiential dimensions. This suggests that the choice of which renewable energy technology to use in a particular location can have important repercussions for the acceptability of local energy projects – and suggests the value of an upstream approach to opening up this question. As previous studies have typically considered single projects (usually wind farms) only (see Petrova, 2013), the questions of whether this may simply be the 'wrong technology' for a certain place has not been considered – this thesis suggests this is an important omission.

Many differences between public evaluation of tidal energy and offshore wind energy were found across these three studies. For instance, offshore wind energy was represented as 'obtrusive', 'industrialising' 'unspoilt' natural places, and making Guernsey more like everywhere else (mirroring earlier findings; e.g. Devine-Wright & Howes, 2010), such arguments were not made for tidal energy (see chapter 4 and 5). Instead, tidal energy was represented as contributing to a sense of local distinctiveness, offering an economic opportunity but also as a threat to wildlife (which were non-significant factors for offshore wind acceptance). What these differences suggest is that the dominance of case studies of wind energy projects within the local energy acceptability literature may be problematic, as some of the common themes and key conclusions around acceptability of wind energy projects do not necessarily apply equally to other renewable energy technologies, such as tidal energy.

The importance of site selection

However, this research also suggests that these strong overall preferences are not straightforward predictors of support for specific projects in a specific place (this difference is well-studied; Batel & Devine-Wright, 2015a). The results in particular highlight the importance of site selection as a factor determining public evaluation of local energy projects; as the vast majority of local residents expressed preferences for ORE developments to be located in particular coastal areas but not others. This importance of finding the 'right' location in achieving a well-supported local energy development was illustrated in particular by the key finding that, despite a near-universal preference for tidal energy across all three studies, a well-sited offshore wind project was evaluated equally positively as a poorly-sited tidal energy project (see chapter 6). In other words, choosing a particularly socially unacceptable site for a local energy project has the potential to erode even strong local support for a given energy technology. This suggests the importance of considering multiple 'upstream' factors (technology choice, site selection) simultaneously, when exploring the acceptability of multiple local energy projects, and giving a greater role to communities in choosing the technology and location of a local energy project (Barry & Ellis, 2011). The same conclusion is also supported by the finding that surface-piercing tidal energy devices were portrayed as suited to spaces with other, pre-existing visually 'similar' objects (e.g. buoys, lights, markers, boats), while offshore wind turbines were represented as visually more suited to open, empty spaces. In other words, spaces considered 'acceptable' for one technology may not be acceptable for another. However, this finding from study 2 was not explored further in study 3, so could provide a productive strand of future research. One caveat to note here is that choosing a socially acceptable site out of multiple technologically feasible sites is only possible if there are multiple sites to choose from – limiting the usefulness of these conclusions to some extent. Another thing to note is that not all methods (i.e. study 1 and 2) will produce clear and unequivocal findings on which locations are the most 'socially acceptable'. Indeed, the variety in preferred locations found in studies 1 and 2 reiterates that it should not be expected that such preferences are necessarily uniform or consistent across local communities. Therefore, any attempts at an 'upstream' elicitation of which locations are 'acceptable' to communities need to carefully consider the method that is selected to reflect this variety.

In all three studies, these strong differences in support for ORE in different locations were associated with the meanings associated with those places. Previous studies have reported similar findings about the importance of place attachment and perceived industrialisation of natural places (e.g. Devine-Wright & Howes, 2010), usually referring to such notions at a local scale. This thesis suggests that such concepts can be equally useful in site selection processes at a 'micro' scale, and can complement existing research on the role of distance to the shore as the key determinant of support (see Knapp & Ladenburg, 2015). In particular, the conclusion of this thesis runs counter to one of the key findings of that literature (that people always prefer wind farms further offshore), by finding a nearshore offshore wind project to be more widely-supported than a wind farm further offshore. This was found in study 3 because of the other project characteristics of the nearshore wind farm (e.g. for local use, smaller scale) – which in previous studies have typically not been taking into account. This suggests that although distance from the coast may be important to people in principle, when no other key considerations about project characteristics are taken into account (as is the case in the studies cited above), its importance diminishes when a more comprehensive account of local energy projects is developed, where distance is only one of many project characteristics. This suggests that studies on locational preferences need to consider location not in isolation, but in conjunction with other factors that are evidently important in shaping public responses to such proposals.

One obvious weakness of the approach taken in study 1 and 2 (but not study 3) of this thesis is that all locations around the island were represented as technically feasible – which in practice they are unlikely to be. Therefore, opening up the question of location risks misleading local communities on the potentially available options, and also risks coming up with ‘acceptable’ locations that are technically unworkable. This suggests the value of co-produced research in conjunction with parties that are aware of the technological and economic constraints of multiple options – making these exercises less hypothetical and more ‘real’. Also, while this approach may work well for technologies like wind energy or solar energy, where the resource is not confined to single locations, this approach may be less feasible for tidal energy in many locations, which is only available in very specific places. In any case, these findings suggest that the design of a local energy project should not be approached as a technocratic exercise, but that there are very real benefits to achieving public acceptability by conducting early stage public engagement. Finally, as this thesis focused on the location of offshore energy projects, it remains unclear to what extent these findings apply to onshore energy projects – in particular the dynamics around finding ‘acceptable’ locations may be different due to different usage patterns, ownership structures, access rights and varieties of land uses that make the onshore a fundamentally different setting than the offshore. Further research is therefore required to open up the generalisability of these findings beyond this island case study.

7.2.5 Systemic arguments

A further key finding linked to the finding of strong preferences for particular energy technologies across the three studies was that these preferences did not shape the acceptance of just the use of that specific technology – instead these preferences were found to shape acceptability of *other* energy projects as well. In particular, the strong preference for a local energy project using tidal energy technology was invoked to question local energy projects using wind energy technology. Moreover, negative opinions on the current electricity system were used as arguments in favour of local ORE projects. Also, support for specific ORE projects was represented as conditional upon how such a project would fit in a wider, coherent energy strategy, which could also contain measures aimed at demand reduction for instance. This clearly suggests the need to understand acceptability *relationally* – as shaped not only by views on the project itself, but also by views on the alternatives that are (perceived to be) available. Some evidence for this has been found before (e.g. Firestone & Kempton, 2007; Parkhill et al., 2013; Setiawan & Cuppen, 2013; Westerberg et al., 2013), yet no study has opened up these arguments in detail. It suggests the usefulness of going beyond the study of responses to specific projects only (e.g. Devine-Wright & Howes, 2010; Ellis et al., 2007; Firestone & Kempton, 2007) to a wider approach that understands these projects to be situated within wider, multi-dimensional energy system change processes.

This is reminiscent of, and confirms, recent calls for a reconceptualization of the promotion of renewable energy production as a social change process, which more explicitly understands local energy projects as embedded within wider policy processes and socio-historical contexts (Batel & Devine-Wright, 2015b). Although the research in this thesis is already in line with calls for a more contextualised approach to environmental change problems by adopting a place-based approach (Clayton et al., 2015), this finding suggests that there is scope within the energy acceptability literature to further contextualise such studies and situate these more clearly within broader energy policy and systemic frameworks. Future studies addressing these needs may also contribute to bridging the gap between social science research on energy supply and demand – which have been disjointed to date.

Subsequently, this finding has clear implications for communication strategies around local energy projects: it may help to be transparent on why other options were not put forward (e.g. in Guernsey, public responses to a proposed offshore wind project may be more supportive if the rationale behind choosing a wind project over a local tidal energy project is made clear in project communications). Other considerations on how a particular project fits into an overall systemic strategy, and thereby addresses important long-term goals, may therefore also be important aspects to communicate to local communities (also see Demski et al., 2015).

In Guernsey, all energy policy plays out on a local level (as UK energy policy does not affect Guernsey), and therefore energy system and energy policy arguments may be more important because these are locally-relevant. By contrast, in countries like the UK, the wider energy system is a much bigger and more complex socio-technical system, governed at a national level, and which therefore may be more psychologically distant as well as harder to understand (e.g. see Devine-Wright & Devine-Wright, 2009). Therefore, the relevance of the wider energy system and policy may be less important in case studies outside of Guernsey, though more research is needed to better understand the relative importance of systemic factors in shaping local energy acceptability across diverse contexts.

The potential importance of systemic factors was mainly observed in study 1 and 2. However, the experimental condition in study 3 did not confirm these observation (see chapter 6), and therefore the relative importance of this finding was not quantitatively verified using a larger, representative sample. This is important because the sample in study 2 was small and biased towards those with an existing interest in energy-related matters – therefore it could be that these systemic factors are mostly important for those with an existing interest in these topics. The relevance of such factors among general populations is therefore an important topic for future research.

7.2.6 Scaling place-based approaches

This research contrasted with previous place-based energy acceptability studies in its multi-scalar approach, exploring meanings associated with Guernsey as a whole (understood here as the 'local' scale), as well as different places on its coast (the 'micro' scale). It found that certain key concepts play out differently depending on the scale at which they are operationalised. For instance, although perceptions of the small offshore wind project as 'industrialising' Guernsey were insignificant predictors of support in study 3, at the same time places on the Guernsey coast represented as more 'industrial' were generally judged to be more acceptable for this project. Also, place attachments were relevant at both the local and the micro scale – but in different ways (see chapter 6).

This suggests that previous findings on the relevance of such key concepts may have been the result of a particular scalar operationalisation of such concepts – usually looking at meanings and attachments associated with respondents' hometowns (e.g. Brownlee et al., 2015; Devine-Wright, 2011c; Devine-Wright & Howes, 2010). Three recommendations can therefore be made based on this thesis.

First of all, in order to fully understand how scale, and the way explanatory concepts like place attachment and place-technology fit are 'scaled' through researchers' operationalisation of such constructs, future place-based studies need to be more critically reflective on choices made with regard to scale. Future studies examining 'local' energy developments need to be more critical of presuming a single particular scale (and thereby a particular 'community' and set of place meanings) to be naturally 'the most relevant' (Woods, 2003) – considering key issues such as: at what scale to operationalise 'place'? Which community to involve? ‘Attachment’ to what (settlement, coastal area, region, beach)? (see Devine-Wright, 2013b).

Secondly, other scales than the ‘local’ need to be considered. Previously, arguments have already been made for exploring the role of national and global place attachments as determinants of local energy acceptability (Devine-Wright, 2013b). However, in study 3, none of the multiple identities measured (Guernsey, Channel Island, English, British) were significant predictors of support for the three projects described in study 3. Instead, this thesis suggests that the ‘micro’ may be a more significant scale to consider in addition to the local, because diverse places at this scale (such as particular beaches, headlands, rocks, or parts of the sea) were found in study 1 to be meaningful to local residents in a diversity of ways, which was found to inform specific preferences on ‘acceptable’ locations for local energy projects across all three studies.

Thirdly, this thesis contrasts with previous studies (e.g. Devine-Wright & Howes, 2010) in its emphasis on how attachments to non-residential places (e.g. places valued for their leisure opportunities, history, or sense of escape) are important in shaping local energy acceptability. This suggests there is scope for widening the ways in which concepts of people-place bonds are used in acceptability research, especially in going beyond a NIMBYist focus on attachments to places of residence like hometowns (e.g. Brownlee et al., 2015) towards a more pluralistic understanding of the multiplicity of places that may be meaningful to people beyond the home(town) (Batel & Devine-Wright, 2015a).

7.2.7 Understanding the offshore as a setting for energy projects

This thesis focused on public evaluation of offshore rather than onshore RE developments – an area that has been relatively unexplored to date (Wiersma & Devine-Wright, 2014; see chapter 2), yet is important given increased deployment of ORE technologies across the world (Kerr et al., 2014).

This research also set out to explore meanings associated with offshore spaces themselves – in response to the observation that many studies have emphasised the visual component of offshore spaces (e.g. 'seascapes' (Gee, 2010), visual 'amenity' (Knapp & Ladenburg, 2015), or 'the view of the horizon' (Devine-Wright & Howes, 2010)). The literature has thus largely overlooked non-visual ways in which offshore spaces may become meaningful (with some exceptions; e.g. Alexander et al., 2012; Firestone & Kempton, 2007). Across study 1, specific offshore places were frequently talked about as meaningful in a multitude of ways; for instance as offering opportunities for sailing, photography, diving, angling and spotting wildlife (see chapter 4). This suggests that offshore spaces are meaningful in non-visual ways not just to marine stakeholders like fishers or sailors (Alexander et al., 2012), but also to 'ordinary' local residents. Therefore, future studies of public evaluation of ORE projects – in particular those taking a place-based approach interested in relevant place meanings – would benefit from a greater acknowledgement of the ways in which such offshore places may be meaningful in their own right beyond as a visual backdrop to land-based coastal experiences.

However, at the same time, many place meanings ascribed to Guernsey's coast and sea in study 1 were focused on specific places on the land rather than the sea itself. This may have been a result of the research methods employed – for instance photographing offshore places may be more challenging. This suggests the value of place-based research approaches that are better suited to exploring offshore places – for instance by not requiring participants to photograph such places, but instead using other verbal or visual prompts (narrative interviews, map-based discussions), or by developing an offshore equivalent to methodologies like walking interviews (e.g. on a boat or ferry).

A further key conclusion on conceptualising the meaning of the offshore is that in this thesis it was observed that the coast and sea in Guernsey derived its meaning *relationally* from the land: it was seen as a space offering peacefulness and quiet that could not be found in the 'crowded' island. This confirms earlier findings suggesting that wherever offshore environments are highly valued (e.g. marine national parks), ORE development may be less acceptable than in onshore locations (McCartney, 2006), while in highly valued places on the land (e.g. in countries like the UK with a strong tradition of protecting the countryside) offshore energy may be comparatively more acceptable. Therefore, the finding that meanings of the sea and coast were defined relationally – in contrast to the land – also suggests the value of understanding the broader context of coastal and offshore locations through such a relational lens. This suggests that future local energy acceptability studies need to broaden their spatial scope, and consider places where local energy projects are proposed more explicitly as part of their wider spatial context, including their relations with 'other' places.

7.3 Limitations and recommendations

Three overall limitations of this work can be identified, in addition to those already noted earlier in this chapter and those regarding the three empirical studies (see chapters 4 to 6 for reflections on each of the methods used). First of all, this study only focused on place-technology representations among Guernsey residents, and did not investigate alternative or potentially conflicting representations or visions among either professional marine stakeholders (e.g. local fishers), developing stakeholders (e.g. States of Guernsey, industry stakeholders), media, tourists, or those living in other parts of the Bailiwick of Guernsey (e.g. Herm, Sark). This research could therefore be argued to offer a relatively limited perspective on social representations of place and ORE technology, and the ways in which these are defined, communicated, interpreted and contested (see Devine-Wright, 2009). There remains a need to go beyond relatively one-sided accounts of the ways in which local energy projects are produced and evaluated in social, cultural and historical contexts of multiple stakeholder interests and competing representations (Batel & Devine-Wright, 2015b; Walker et al., 2011). This could for example be achieved through examining media coverage of (local) energy-related topics (e.g. see Woods, 2003), studying previous energy projects or controversies in a place, or focusing on the ways in which places are represented (e.g. as distinct or as a place of natural beauty) by particular (powerful) actors like government bodies or in tourism campaigns.

Second, an obvious limitation of an upstream approach is that it offers no guarantees regarding the public responses that will emerge once an actual local energy project is proposed (Flynn et al., 2011). Although this thesis seems to suggest various avenues to influence the future reception of local energy projects, no evidence is available on the effectiveness of these recommendations. There is therefore a need for longitudinal research that begins with upstream work similar to this thesis, but complements this by tracking public responses in the following stages of project implementation. Such work would be better able to comment on the usefulness of conducting extensive upstream work for predicting and influencing public responses to a specific project at later stages. Also, in order to ensure any upstream work is both relevant to local policy-makers and accurate in the information it provides to the local community, a more strongly co-productive approach with a stronger involvement of the local community and policy-makers in the research process itself may also ensure the benefits of upstream work in later stages of local energy project development.

Third, this research has focused predominantly on support for and opposition to local energy projects constituting diverse local energy futures, and has therefore not focused on other potential positions, such as indifference and ambivalence. This is a limitation that afflicts virtually all studies on local energy acceptability, which have typically focused on understanding support and objection (some studies in particular focused on vocal objectors and supporters; e.g. Barry et al., 2008; McLachlan, 2009; Read et al., 2013; Woods, 2003). Aside from important basic considerations of representativeness, important questions therefore remain unanswered, for instance on the potential of such indifferent stances to transform into either supportive or oppositional stances and vice versa – and the conditions under which that may occur. Future research could address this through focusing on hard-to-reach groups and by using more inclusive approaches that may pique the interest of diverse audiences, including those with no strong views on renewable energy (such as auto-photography or a 'marine' or offshore-friendly adaptation of this method).

7.4 Conclusion

This thesis adopted an upstream place-based approach to understanding local energy deliberations around multiple offshore renewable energy technologies in Guernsey. It found that investigating the meanings associated with technologies and places, at multiple scales, and the 'fit' between these meanings, can be a very productive way of achieving a better understanding of which local energy projects may be supported in the future, and under which conditions. Three key findings were that local energy acceptance depends to a substantial extent on the technology it uses, the location chosen for the project, and on how the project is interpreted *in relation to* alternatives that were available locally (including continuing the current energy system unchanged). The research suggests that adopting an upstream, place-based approach, where local communities are conceptualised as willing and able to contribute to the development of acceptable, sustainable local energy futures, may have the potential to both achieve a better academic understanding of the acceptability of local energy projects, and to contribute to the development of more acceptable energy development practices in the future.

Appendix A – Study 1 participant consent form

<u>My contact details:</u>

Bouke Wiersma

University of Exeter

Room 386, Amory Building, Rennes Drive

EX4 4RJ

bw282@exeter.ac.uk

‘Personal connections with Guernsey’s coast and sea’ project

Participation consent form

The research

This independent academic study is carried out by Bouke Wiersma, PhD student at the University of Exeter, department of Geography, which is part of the College of Life and Environmental Science. He is supervised by Prof. Patrick Devine-Wright, Prof. Alan Lewis (University of Bath), and Dr. Saffron O’Neill. The research is jointly funded by the UK Economic and Social Research Council (ESRC), through the South West Doctoral Training Centre and as part of the Environment, Energy & Resilience pathway, and by the States of Guernsey through Commerce & Employment’s Renewable Energy Team (RET). Both the ESRC and RET have no direct influence on the research, which is entirely independent.

This study aims to explore what people on Guernsey value about Guernsey’s coast and sea. To this end, this study involves participants taking new and collecting old photographs that illustrate their personal connections with Guernsey’s coast and sea, and a consequent 1-hour face-to-face interview with the researcher in which the photographs are discussed. The second part of this interview is about electricity on Guernsey and the potential future development of offshore renewable energy. A copy of the participant-selected photographs will be used in the analysis, alongside verbal data from the interview.

All participants to this study and the next study will be entered into a prize draw to win prizes worth £200.

Your participation

By signing below, you indicate that you agree to participate in this study, and understand that your participation is voluntary, that you have the right to decline answering any of the questions or to withdraw from the study at any time for any reason. Any information you provide will be treated with full confidentiality and, if published, will not be identifiable as yours – you will also have the opportunity after the interview to indicate whether or not you would like to give permission for your photographs to be used for academic, non-commercial purposes related to this study.

Print name:	**Date:**
Signature:	

Appendix B – Study 1 photograph reproduction consent form

UNIVERSITY OF EXETER

My contact details:

Bouke Wiersma

University of Exeter

Room 386, Amory Building, Rennes Drive

EX4 4RJ

bw282@exeter.ac.uk

‘Personal connections with Guernsey’s coast and sea’ project

Photo reproduction consent form

This form refers to photographs that you have taken as part of this study on ‘personal connections with Guernsey’s coast and sea’. As discussed with you, photographs may be used in the analysis of this study. We would also like to use photographs (in electronic or print form) in any presentations and publications resulting from this study, and in two Guernsey-based follow-up studies taking place in the next year. Your photographs will not be shared with any external party that is not involved with this research.

Please sign one of the boxes below to indicate whether or not you are happy for copies of your photos to be used for these academic, strictly non-commercial purposes. If you only want certain images to be used, this can be indicated under option 2.

Please sign option 1, 2, or 3 below:

1. I give my consent for these photographs to be archived and reproduced for educational and / or non-commercial purposes, in reports, presentations, publications and websites connected to the PhD research. I understand that real names will NOT be used with the photographs unless I choose this to be the case. Signed...Date.................................. ....

OR

2. If you would like to give permission to archive and reproduce some, but not all, of the photos please indicate which photos you do not want used further:

Photograph(s) not to be used further: *(please describe so we can identify them)* …………..……...

………………………………………………………………………………………..………

……………………..

Signed..Date.................................

....

OR

3. I do not wish any of these photographs to be reproduced.

Signed..Date.................................

....

Thank you for participating in this project. If you have any queries about this form or the project, please do not hesitate to contact Bouke Wiersma (bw282@exeter.ac.uk).

Appendix C – Study 1 interview protocol

- Signing consent form
- Recording the interview
- Make a copy of the photographs

To start off, there are a few generic questions I need to ask:

- Age group (18-29 / 30-39 / 40-49 / 50-59 / 60+)
- Were you born on Guernsey? How long have you lived here?
- Is your family from Guernsey?
- Are you working at the moment?
- How would you describe Guernsey to an outsider like me?

<u>Part 1: Place meanings / photographs (25 mins)</u>

- Can you tell me about this photo?
- Where was it taken?

If PLACE	If VALUE
What makes this place special?	Have you always valued this about Guernsey?
Do you visit this place often?	Is there a particular place where this value is most apparent?
Have you always valued this place?	Could this photo have been taken anywhere on Guernsey? Is it linked to a particular place?
How did your connection to this place emerge?	
How unique is this place – are there any others on Guernsey that have a similar value to you?	

Part 2: Non-photographed places (10 mins)

Are there any places on Guernsey and the sea around it that are also very important to you but which you have not photographed?

PROMPTS: Further out to sea? Or places that have nothing to do with the sea?

- Why are those places important to you?
- Is there any particular reason you have not photographed those places?

Are there any places on Guernsey or its coast and sea which are not important at all to you, which you do not particularly value?

- Tell me about those places

Part 3: Electricity on Guernsey (5 mins)

Moving on to the other aspect I wanted to discuss with you: electricity on Guernsey. Thinking about the electricity you use every day < insert example >, where do you think this electricity comes from?

PROMPTS: Do you think it is generated on the island? Where on the island?

If cable: Where do you think the electricity that goes into the cable comes from?

- How is it generated? (what kind of fuel is used?)
- Who generates it?

Do you have any particular views or opinions about the way in which electricity is currently provided on Guernsey?

PROMPTS: Are there any aspects you are happy or unhappy about?

- Do you think there is a *better* way of providing electricity for Guernsey?

Part 4: Offshore renewable energy (10 mins)

There has been some discussion of change to the ways in which electricity is managed and produced on Guernsey. Have you heard of this at all?

One of the things that have been talked about has been the use of devices for generating electricity which are located in or on the sea around Guernsey, have you heard of this at all?

- What have you heard about <the technology>? Where have you heard this?

- What image springs to mind when thinking about <this technology>?
- What positive and negative impacts do you expect from this?

If only mentioned one: Besides <technology>, have you heard of any other devices or technologies for generating electricity that are located in or on the sea? **Offshore wind, tidal, wave?**

How would you feel would there be a proposal for the use of these technologies in the seas around Guernsey? Why?

- Do you think ORE would fit Guernsey?
- Do you think Guernsey would be a better place with or without these technologies?

<u>Part 5: ORE in places (10 mins)</u>

Thinking about the places you have photographed, how would you feel about development of ORE technologies in any of these locations?

<u>PROMPTs</u>: Offshore wind, wave, tidal?

- Would you be against developments in some places more than in others?
- Are there any places where you wouldn't mind ORE development?

Some areas may be more suitable for wind, tidal or wave energy developments, for example the Big Russel, the West coast and north of Herm. How would you feel about development in these locations?

<u>End of interview:</u>

- Photo reproduction form
- Participation in future research
- Snowballing
- Prize draw details

Appendix D – Study 2 focus group protocol

<u>Part 1. Intro (10 mins)</u>

Welcome and introduction to workshop:

- Background of the PhD & what will happen with the data
- Recording the session – verbal consent
- 1.5 – 2 hours – everyone able to stay?
- Ground rules: open, informal, friendly, no wrong answers, only different opinions, one main conversation, confidential

Aim of the workshop:

- Not to convince, just gauge opinion, group discussions
- Interest in personal views
- CAVEAT: only intended to illustrate potential future projects

Everyone to introduce themselves and their connection to Guernsey. I'll start.

<u>< Moderator to introduce the current energy system ></u>

➢ Q: What are your views on Guernsey's current electricity system?

Probe: Do you think there is a need for change?

<u>< Moderator to introduce Guernsey energy policy ></u>

<u>TASK</u>

Using the markers provided, write on the big map what each coastal or marine location means to you – this could be positive or negative.

<u>Part 2. Offshore wind (30-40 mins)</u>

➢ Q: Where do you expect offshore wind to be potentially developed around Guernsey?

< Moderator to introduce the technology and potential project details >

- Q: What would be your views on such a development? (positive, negative, neutral)

Probe: Do you think most people on Guernsey would agree with that?

Probe: What changes to such a development would change your position towards it? (Costs, scale, timeframe)

TASK

"Could you all have a think and stick one single red sticky note on there to signify which place you would personally find least acceptable for offshore wind development, and one single green sticky note to signify which place you would find most acceptable? Then we'll discuss the resulting map briefly."

- Q: So why did you choose those places (both red and green)? What do these locations mean to you personally?

Probe: Level of agreement on both red and green sticky notes

< Moderator to provide information on where an offshore wind farm could be located >

- Q: What do you think about these locations as sites for potential offshore wind development? What would be your views if development was to go ahead in these sites?
- Q: Would it change in a positive or negative way your personal connection to those places or to Guernsey as a whole?
- Q: Do you prefer any of these locations over the other ones?
- Q: Would it make Guernsey more distinctive?

Probes: What if a 100-turbine farm off the west coast was proposed? Does this make the supportive people oppose the project? How important is the size of the project?

<u>Part 3. Tidal energy (30-40 mins)</u>

- Q: Where do you expect tidal energy to be potentially developed around Guernsey?

< Moderator to introduce the technology and potential project details >

- Q: What would be your views on such a development? (positive, negative, neutral)

Probe: Do you think most people on Guernsey would agree with that?

Probe: What changes to such a development would change your position towards it? (Costs, scale, timeframe)

TASK

"Could you all have a think and stick one single red sticky note on there to signify which place you would personally find least acceptable for tidal energy development, and one single green sticky note to signify which place you would find most acceptable? Then we'll discuss the resulting map briefly."

- Q: So why did you choose those places (both red and green)? What do these locations mean to you personally?

Probe: Level of agreement on both red and green sticky notes

< Moderator to provide information on where a tidal energy farm could be located >

- Q: What do you think about these locations as sites for potential tidal energy development? What would be your views if development was to go ahead in these sites?
- Q: Would it change in a positive or negative way your personal connection to those places or to Guernsey as a whole?
- Q: Do you prefer any of these locations over the other ones?
- Q: Would it make Guernsey more distinctive?

Part 4. Cross-cutting themes (if not discussed already)

Ownership models:

- Q: Would you have a preference for any of these?
- Q: How important is this?

Export versus local use / Independence:

- Q: Would your opinion of the development change if the electricity it produced was for Guernsey only or, let's say, for France only, or a mix of the two?
- Q: How important is this to you personally?

Local economic benefits:

- Q: Do you think Guernsey would benefit economically from offshore wind or tidal energy development? In what ways?
- Q: Do you think it should? How important is this to you personally?

Link to other energy options for Guernsey

- Q: Do you think any of these proposals represent the best way forward for Guernsey? Or do you prefer alternative, potentially land-based, solutions? (e.g. insulation, cables, solar)

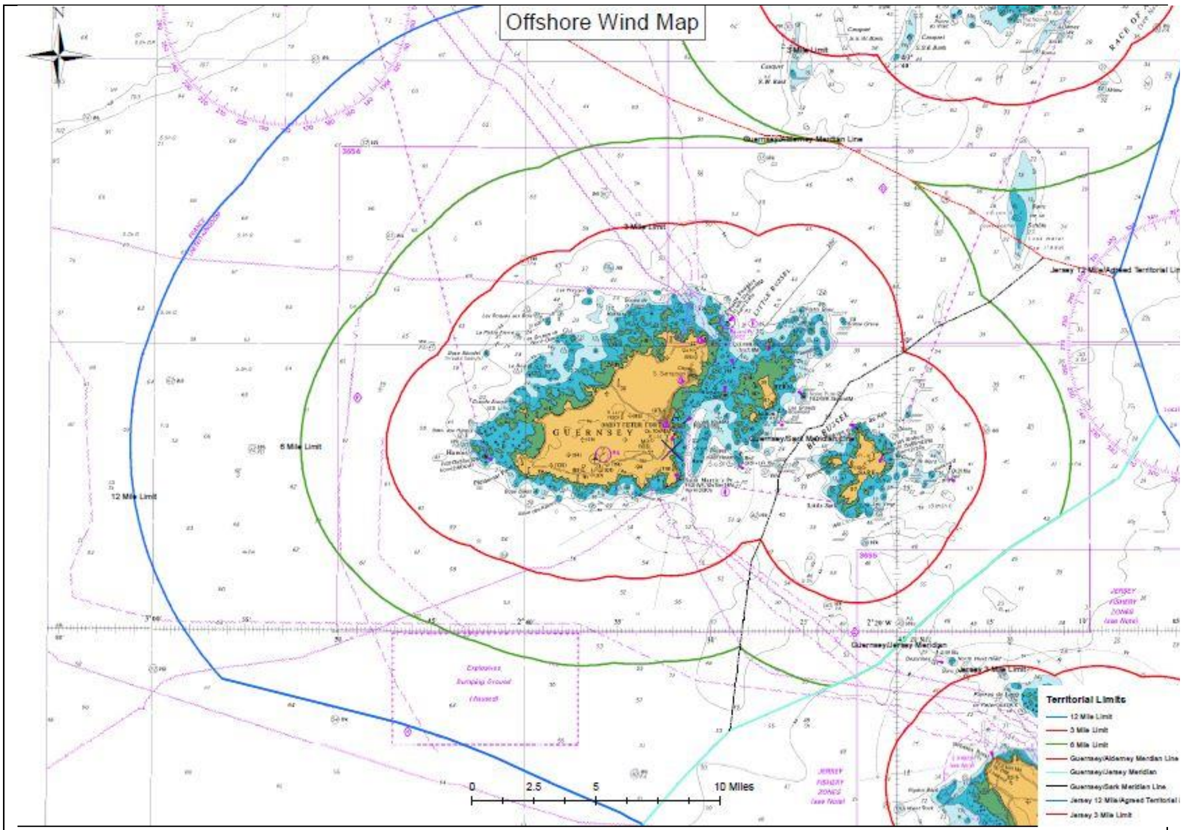
Part 5. Conclusion (10 mins)

- Q: Did anyone have any further questions or comments?

Many thanks * **switch off recorder ***

- Prize draw for £200 gift vouchers
- Information / further reading

Appendix E – Visuals used to illustrate ORE technologies

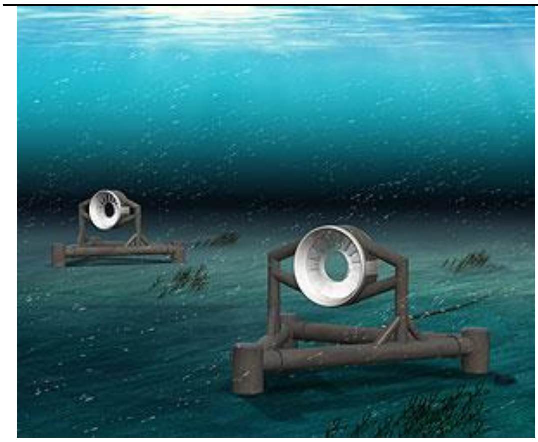


The A1 map that was placed at the middle of the table during each focus group session. The map shows Guernsey's territorial waters up to the 3, 6 and 12 mile nautical limit (red, green and blue lines), which in various places touches the jurisdictions of Sark, Alderney, Jersey and France (i.e. these areas fall outside of Guernsey's jurisdiction). It also shows depth of the seabed, and various other marine landmarks. (Source: States of Guernsey Renewable Energy Team)

Source: http://windenergiecourant.nl/offshore/dong-energy-loopt-vertraging-op-bij-borkum-riffgrund/

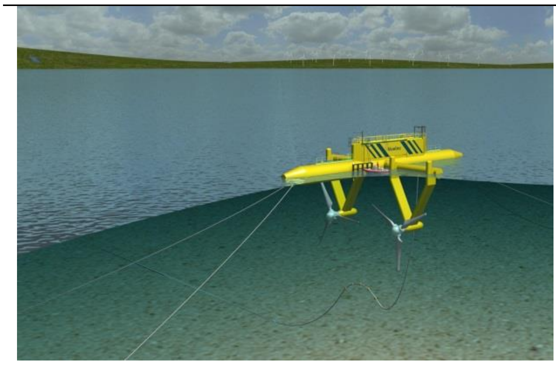
Lilgrund wind farm, Denmark (Source: http://www.siemens.com/press/en/presspicture/?press=/en/presspicture/2009/renewable_energy/ere20080806-10.htm

General offshore wind energy visuals (no written captions were used when presenting these images during the focus groups)



Open-Centre Turbines, developed by Open Hydro. Source: http://www.openhydro.com/technology.html

Open-Centre Turbine, developed by Open Hydro. Source: http://www.openhydro.com/company.html



BlueTEC tidal energy device, developed by Bluewater Energy Services, and tested at the EMEC facility. Source: http://www.emec.org.uk/about-us/media-centre/gallery/

SeaGen tidal energy converter, installed at Strangford Lough in Northern Ireland. Source: https://commons.wikimedia.org/wiki/File:SeaGen,_Strangford,_June_2011_(02).JPG

General tidal energy visuals (no written captions were used when presenting these images during the focus groups)

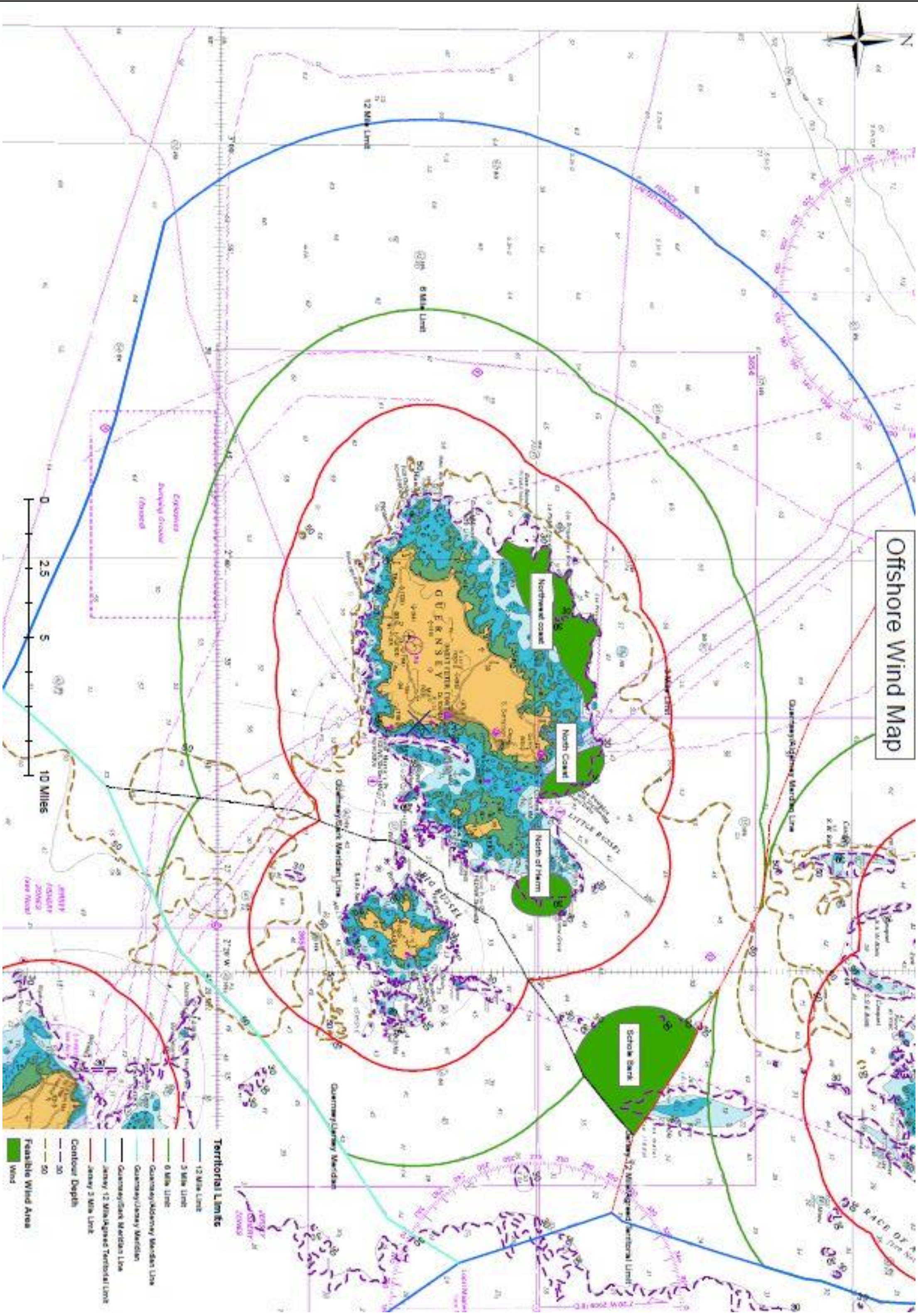
Added caption: 'Teesside offshore wind farm, 1.5 km off Redcar'
Image source:
http://www.stopvesterhavsyd.dk/eksempler-paa-lignende-eksisterende-parker/

Added caption: 'Scroby Sands offshore wind farm, 2.5 km off Great Yarmouth'
Image source:
http://www.tournorfolk.co.uk/greatyarmouth.html

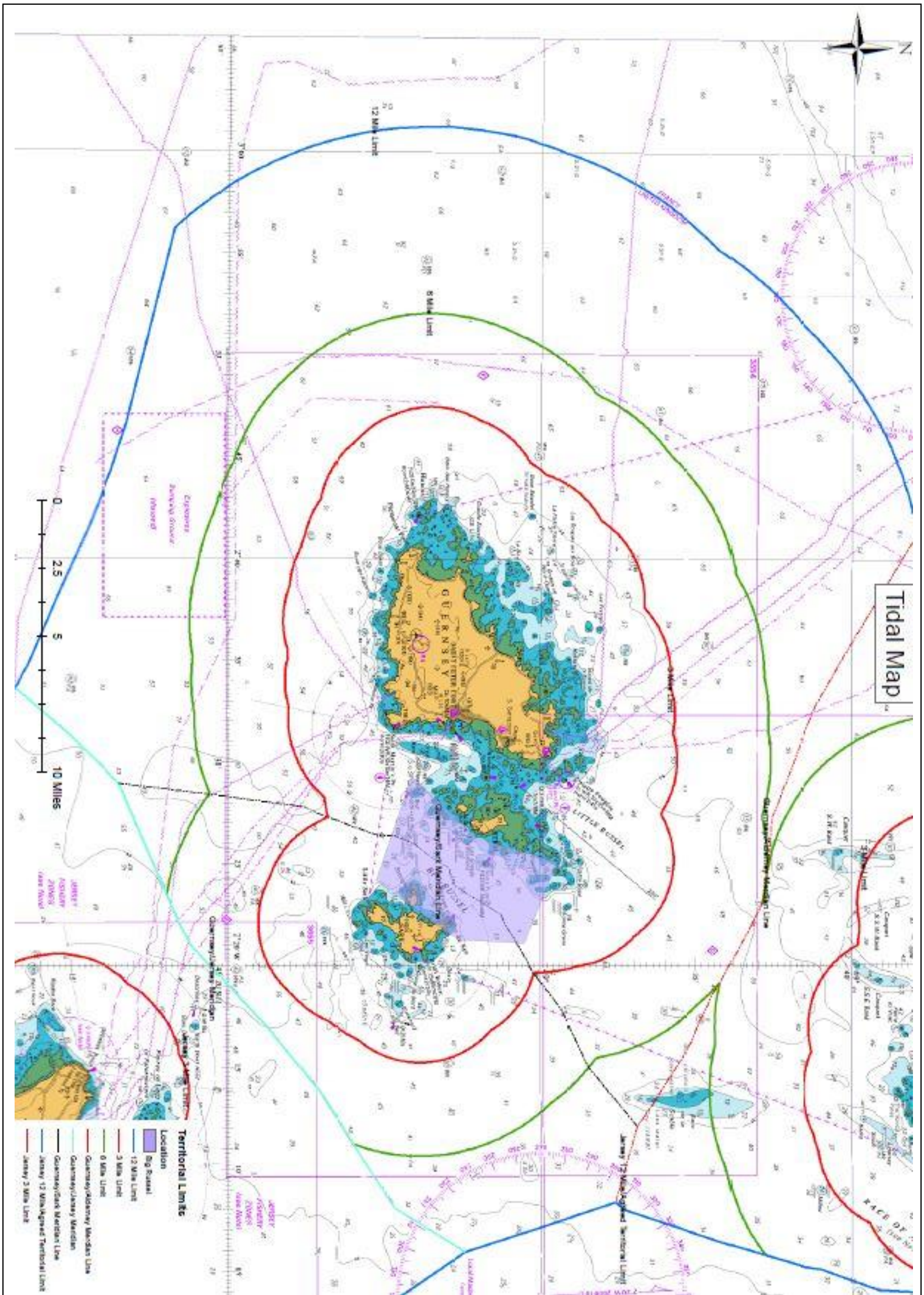
First of two visualisations shown to illustrate what a nearshore wind farm might look like (Source: States of Guernsey Renewable Energy Team)

Second of two visualisations shown to illustrate what a nearshore wind farm might look like (Source: States of Guernsey Renewable Energy Team)

Appendix F – Maps used in study 2 to show four feasible locations for offshore wind and tidal energy development



Labels read (clockwise): Northwest coast, North coast, North of Herm, Schole Bank (source: States of Guernsey Renewable Energy Team)



Source: States of Guernsey Renewable Energy Team

Appendix G – Questionnaire used* in study 3

** Layout has been adjusted slightly to fit the questionnaire into this thesis and to include copyright messages*

Your views on Guernsey and its future

Fill in this 20-minute survey and enter a prize draw to **win** one of five **£50 M&S vouchers!**

Please make sure you've answered all the questions and have completed the entire survey.

If you have any questions please contact Bouke Wiersma at **bw282@exeter.ac.uk**

THANK YOU FOR YOUR HELP!

If this questionnaire has not been collected by Thursday 5 February, we would be very grateful if you could send it to:
Peter Barnes
Raymond Falla House
PO Box 459, Longue Rue, St Martin
GY1 6AF

About this questionnaire

This questionnaire is part of the research carried out in Guernsey by Bouke Wiersma, PhD student at the Geography department of the University of Exeter. His research is supported by the States of Guernsey's Renewable Energy Team (which is part of the Commerce & Employment Department), and will assist in informing States policy. More information about the Renewable Energy Team can be found at **www.guernseyrenewableenergy.com**
All data collected in this survey will be stored safely and anonymously.

Section 1 - Your personal relation with Guernsey

Please indicate to what extent you agree or disagree with each statement below by circling one number only for each statement: 1 means that you strongly disagree with a statement; 5 means that you strongly agree with a statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I cannot imagine leaving Guernsey for good	1	2	3	4	5
2. I often take photographs of various places in Guernsey	1	2	3	4	5
3. I like to explore Guernsey and discover new places	1	2	3	4	5
4. Even if there are better places, I am not going to move out of Guernsey	1	2	3	4	5
5. From time to time I discover Guernsey anew	1	2	3	4	5
6. There are many places in Britain and the world where I could live	1	2	3	4	5
7. I have never considered if living somewhere else would be better	1	2	3	4	5
8. It's more important to me how I live than where I live	1	2	3	4	5
9. It wouldn't bother me to leave Guernsey and move elsewhere	1	2	3	4	5
10. Guernsey's seas are a great resource to be utilised	1	2	3	4	5
11. Guernsey's seas should be left alone as much as possible	1	2	3	4	5

Section 2 - Identity

Please indicate to what extent you agree or disagree with each statement below by circling one number only for each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I feel like I belong in this parish	1	2	3	4	5
2. I feel like I belong in Guernsey	1	2	3	4	5
3. I feel like a Guern	1	2	3	4	5
4. I feel like a Channel Islander	1	2	3	4	5
5. I feel English	1	2	3	4	5
6. I feel British	1	2	3	4	5

→ *If you have any comments about any of the topics in this questionnaire, you can write these in the comments box on the final page.*

Section 3 - Guernsey's current electricity system

At present electricity in Guernsey comes from two sources. On average, about 70% comes from France, through a cable on the seabed (this is mostly nuclear energy with some renewable), and the other 30% is generated by the power station at the Bridge (using oil).

Please indicate to what extent you agree or disagree with each statement below by circling one number only for each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I am happy with the current electricity system	1	2	3	4	5
2. The current electricity system is in need of change	1	2	3	4	5
3. Guernsey's electricity supply is vulnerable	1	2	3	4	5
4. Guernsey should make use of its natural resources (e.g. wind, tide, sun, wave) to generate electricity locally	1	2	3	4	5
5. Guernsey should not rely as much on other places for its electricity	1	2	3	4	5
6. Being dependent on others for electricity is part and parcel of being an island	1	2	3	4	5
7. Guernsey needs to become more self-sufficient for its electricity	1	2	3	4	5
8. Electricity in Guernsey is unreasonably expensive	1	2	3	4	5
9. Guernsey should not be using fossil fuels (which cause climate change) to generate its electricity	1	2	3	4	5

Section 4 - Renewable energy in Guernsey

In general, to what extent do you support or object to the development of the following energy technologies **in Guernsey**? *Please circle one number only for each technology*

	Strongly object	Object	Neither object nor support	Support	Strongly Support	Don't know
1. Offshore wind energy	1	2	3	4	5	0
2. Tidal energy	1	2	3	4	5	0
3. Wave energy	1	2	3	4	5	0
4. Solar energy	1	2	3	4	5	0

Section 5 - Offshore wind energy in Guernsey

In the future, an offshore wind farm could be developed near Guernsey, which would make its electricity supply more diverse and secure, and reduce its carbon emissions. One option could be to build a group of 10 wind turbines like the one pictured here (each 100 meters tall).

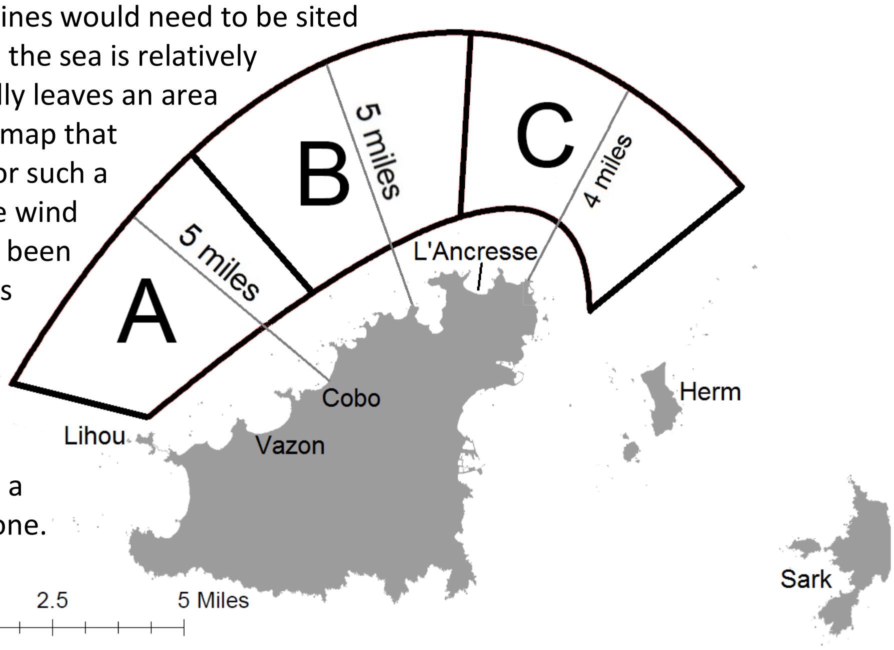
- The electricity produced by these 10 turbines would all be used in Guernsey, and they could produce about 25% of all the electricity consumed in Guernsey annually.
- Such a development could be wholly owned by the States of Guernsey.
- Such a proposal is estimated to increase electricity prices by 5-10%, adding £45 - £90 to the average annual electricity bill.
- This would be subject to a full Environmental Impact Assessment.

Wind turbine image source: http://www.hetkanwel.net/2013/08/27/grootste-duitse-windpark-op-zee-geopend/

Please indicate to what extent you agree or disagree with each statement below by circling one number only for each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I would support this development	1	2	3	4	5
2. This development would look visually attractive	1	2	3	4	5
3. I like the idea of using this local resource (the wind)	1	2	3	4	5
4. I like the idea of this development generating electricity only for Guernsey	1	2	3	4	5
5. I would not support a development that increases electricity prices by 5-10%	1	2	3	4	5
6. I would worry about its impact on wildlife	1	2	3	4	5
7. This proposal would industrialise Guernsey	1	2	3	4	5
8. This development would make Guernsey less unique	1	2	3	4	5
9. I would prefer this development to be owned by an investor outside Guernsey	1	2	3	4	5
10. I would prefer this development to be owned by people living in Guernsey	1	2	3	4	5

Offshore wind turbines would need to be sited in a location where the sea is relatively shallow. This broadly leaves an area as outlined on this map that could be suitable for such a 10-turbine offshore wind farm. This area has been divided into 3 zones which have been labelled A, B and C. A 10-turbine development would only take up a small part of any zone.



Please indicate to what extent you agree or disagree with <u>both</u> statements below, **for each zone**, by writing one number (1-5) **in <u>each</u> cell** of this table:

Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	2	3	4	5

	Zone A	**Zone B**	**Zone C**
FOR EXAMPLE:	**4**	**4**	**3**
1. I would support this 10-turbine wind farm in…			
2. I would accept this 10-turbine wind farm in…			

Now think of the COAST near these zones…

Please indicate to what extent you agree or disagree with each statement, **for each zone**, by writing down one number (1-5) **in <u>each</u> cell** of the table below:

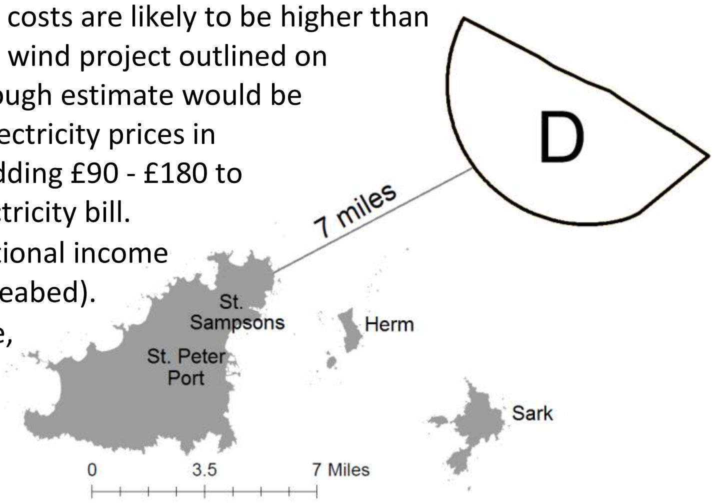
Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	2	3	4	5

	The coast near Zone A…	**The coast near Zone B…**	**The coast near Zone C…**
FOR EXAMPLE:	**2**	**5**	**3**
…is an area of natural beauty			
…has fantastic views			
…is visited by many people			
…is quite industrial			
…is a pristine, unspoilt natural area			
…is one of my favourite areas			
...symbolises what Guernsey is all about			

Section 6 - Offshore wind energy on a larger scale

A different option to make Guernsey's electricity supply more diverse and secure, and reduce its carbon emissions, is to install a much larger wind farm (100-300 turbines), for which a different area may be more suitable: zone D. Such a development would produce electricity mainly for export, with some for Guernsey's use.

- As it is further offshore, costs are likely to be higher than for the smaller offshore wind project outlined on the previous pages; a rough estimate would be that it could increase electricity prices in Guernsey by 10-20%, adding £90 - £180 to the average annual electricity bill.
- Guernsey may get additional income (e.g. from lease of the seabed).
- Due to its increased size, it is more likely to be majority owned by an outside investor rather than the States of Guernsey.



Please indicate to what extent you agree or disagree with <u>each</u> statement below by circling <u>one number only</u> for each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I would support this development	1	2	3	4	5
2. I would prefer a smaller wind farm that only produces electricity for Guernsey	1	2	3	4	5
3. I don't think Guernsey should be installing wind turbines if most of the electricity will be exported	1	2	3	4	5
4. I think this development would be too large-scale for Guernsey	1	2	3	4	5
5. I object to such a project being owned by an outside investor	1	2	3	4	5
6. I would not support a development that increases electricity prices by 10-20%	1	2	3	4	5
7. I would rather have a wind farm that increases electricity prices by less, even if that would be closer to the land	1	2	3	4	5
8. This would be the right location for such a development	1	2	3	4	5

Section 7 - Tidal energy in Guernsey

In the future, Guernsey might be able to use its strong tidal currents by developing a tidal energy farm near its coast. This would make its electricity supply more diverse and secure, and reduce its carbon emissions. One option could be to build a group of 25 tidal turbines that are fixed to the seabed (see image).

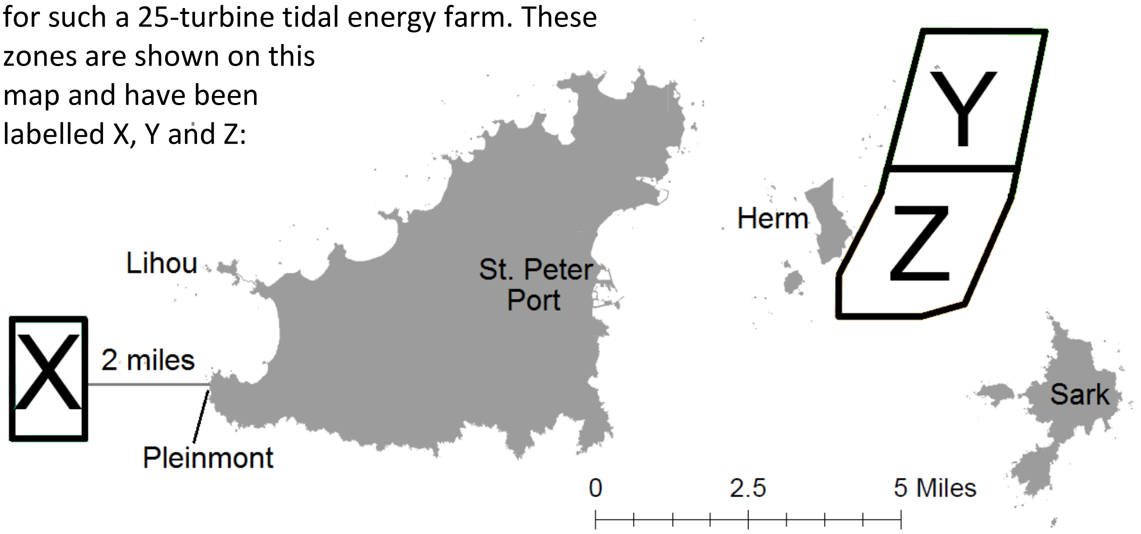
- These could be described as 'underwater wind turbines'. They could be 25 meters high but deep enough to allow ships to pass over, with slowly rotating, 11-meter long blades.
- The electricity produced by these 25 turbines would all be used in Guernsey, and they could produce about 25% of all the electricity consumed in Guernsey annually.
- Such a development could be wholly owned by the States of Guernsey.
- This would be subject to a full Environmental Impact Assessment.

At present tidal energy technology is still very expensive, though in the future these costs may potentially come down gradually. In one scenario this 25-turbine development would increase electricity prices in Guernsey by 20-30%, adding £180 - £270 to the average annual electricity bill.

Tidal energy image showing the HS1000 tidal energy converter. Source: http://www.iberdrola.es/press-room/gallery/businesses/generation/solar-biomass-marine-energy/

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I would support this development	1	2	3	4	5
2. I would not support a development that increases electricity prices by 20-30%	1	2	3	4	5
3. I like the idea of using this local resource (the tides)	1	2	3	4	5
4. This proposal would industrialise Guernsey	1	2	3	4	5
5. This development would make Guernsey less unique	1	2	3	4	5
6. I would worry about this development's impact on wildlife	1	2	3	4	5
7. I would prefer this development to be owned by an external investor	1	2	3	4	5
8. I would prefer this development to be owned by the local community	1	2	3	4	5
9. I would object to tidal energy if it wasn't fully submerged and 'invisible'	1	2	3	4	5

Such a tidal energy development needs to be sited in a location with strong tidal currents and a suitable seabed. This broadly leaves three zones that could be suitable for such a 25-turbine tidal energy farm. These zones are shown on this map and have been labelled X, Y and Z:



Please indicate to what extent you agree or disagree with <u>both</u> statements below, **for each zone**, by writing one number (1-5) **in <u>each</u> cell** of this table:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

	Zone X	Zone Y	Zone Z
FOR EXAMPLE:	**3**	**4**	**4**
1. I would support this 25-turbine tidal farm in...			
2. I would accept this 25-turbine tidal farm in...			

Now think of <u>the COAST</u> near these zones...

Please indicate to what extent you agree or disagree with each statement, **for each zone**, by writing down one number (1-5) **in <u>each</u> cell** of the table below:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

	The coast near Zone X...	The coast near Zone Y...	The coast near Zone Z...
FOR EXAMPLE:	**2**	**5**	**3**
...is an area of natural beauty			
...has fantastic views			
...is visited by many people			
...is quite industrial			
...is a pristine, unspoilt natural area			
...is one of my favourite areas			
...symbolises what Guernsey is all about			

Section 8 - Costs

1. How much would you (as a household) be willing to pay per year, on top of what you pay already, for a portion of your electricity to come from **offshore wind energy** in Guernsey? *(please circle only one option)*					
Nothing at all	Less than £50 per year	Between £50 and £99 per year	Between £100 and £149 per year	Over £150 per year	Don't know

2. How much would you (as a household) be willing to pay per year, on top of what you pay already, for a portion of your electricity to come from **tidal energy** in Guernsey? *(please circle only one option)*					
Nothing at all	Less than £50 per year	Between £50 and £99 per year	Between £100 and £149 per year	Over £150 per year	Don't know

3. How would you like to pay for this? *(please circle only one option)*				
I don't want to pay anything	Through my electricity bill	Through other taxes in Guernsey	No preference	Don't know

4. Are you currently paying your own electricity bills?	Yes	No

Section 9 - About you

1. Your gender: ………………………… ☐ Prefer not to say

2. Your age: ………………………… ☐ Prefer not to say

3. Please select the highest education level that you have achieved by circling the appropriate number. *Please select only one option.*

None	1	Undergraduate degree, BA, BSc	4
O level, GCSE, NVQ level 1-2	2	Postgraduate degree, MA, MSc, PhD	5
A level, AS/A2 level, NVQ level 3-4	3	Other	6

4. Would you say your income is: *(please select only one option)*

Below the Guernsey average	1	Around the Guernsey average	2	Above the Guernsey average	3

5. How long have you lived in Guernsey? …………………… years

6. Did you grow up in Guernsey? Yes / No

7. Generally speaking, how often do you engage in offshore leisure activities (e.g. boating, sailing, kayaking, surfing)? *Please select only one option.*

(Almost) never	1	Occasionally	2	Fairly regularly	3	Frequently	4

8. Do you have a direct financial interest in the seas around Guernsey? Yes / No

If you would like to be entered into the **prize draw** to win one of five £50 M&S vouchers please provide your email or postal address so that the voucher can be sent to you if you're one of the winners. These details will be stored separately from your other responses so will not be traceable back to you (keeping your responses anonymous), and will not be shared with third parties.

………………………………………………………………………………..

………………………………………………………………………………

Tick this box if you would like to receive a summary of the results of this survey: ☐
(if so please provide your email address above)

Many thanks for your help with this research!

If you have any final comments please write them here:

Appendix H – Data on representativeness of study 3 sample

	Population data	Sample data	
Parish	**% of population**	**Number of respondents**	**% of valid responses in sample**
Male	50%	219	50%
Female	50%	221	50%
Subtotal	*100%*	*440*	*100%*
No data		28	
Total		**468**	

Number and proportion of respondents from each gender in the sample as compared to the population (source: States of Guernsey, 2015a).

	Population data	Sample data	
Age cohort	**% of population aged 20+**	**Number of respondents**	**% of valid responses in sample**
20-29	16.4%	41	9.8% (18-29)
30-39	15.8%	61	14.6%
40-49	19.8%	76	18.2%
50-59	17.8%	97	23.3%
60-69	14.8%	77	18.5%
70+	15.4%	65	15.6%
Subtotal	*100%*	*417*	*100%*
No data		51	
Total		**468**	

Number and proportion of respondents from each age group in the sample as compared to the population (source: States of Guernsey, 2015a)

	Population data	Sample data	
Parish	**% of population**	**Number of respondents**	**% of valid responses in sample**
Castel	14.1%	72	15.6%
South East	14.0%	69	15.0%
St Peter Port	30.1%	119	25.8%
St Sampson	14.5%	84	18.2%
Vale	15.3%	60	13.0%
Western parishes	12.0%	57	12.4%
Subtotal	*100%*	*461*	*100%*
No data		7	
Total		**468**	

Number and proportion of respondents from electoral district in the sample as compared to the population (source: averaged from the 2001 Census data on population per parish & 2013 Population Bulletin data on number of ‘domestic property units’ per parish).

	Population data	Sample data	
Parish	**% of population**	**Number of respondents**	**% of valid responses in sample**
None	Not available	57	12.6%
O level, GCSE, NVQ level 1	Not available	105	23.3%
A level, AS/A2 elvels, NVQ level 3-4	Not available	77	17.1%
Undergraduate degree, BA, BSc	Not available	98	21.7%
Postgraduate degree, MA, MSc, PhD	Not available	53	11.8%
Other	Not available	61	13.5%
Subtotal		*451*	*100%*
No data		17	
Total		**468**	

Number and proportion of respondents that achieved each education level in the sample (no data available for population)

	Population data	Sample data	
Parish	**% of population**	**Number of respondents**	**% of valid responses in sample**
Below the Guernsey average	Not available	81	18.1%
Around the Guernsey average	Not available	240	53.6%
Above the Guernsey average	Not available	127	28.3%
Subtotal		*448*	*100%*
No data		20	
Total		**468**	

Number and proportion of respondents in each self-estimated relative income group in the sample.

	Population	Sample	
Parish	**% of population**	**Number of respondents**	**% of valid responses in sample**
Grown up in Guernsey	Data not available	309	67.6%
Grown up elsewhere	Data not available	148	32.4%
Subtotal		*457*	*100%*
No data		11	
Total		**468**	

Number and proportion of respondents that did and did not grow up in Guernsey in the sample (no data available for population)

Appendix I – Procedure for selecting items for measuring three place attachment varieties

Two main studies were used to compose the three three-item scales used to measure place inherited, place discovered and place relative. Generally speaking, only those factors that clearly loaded strongly onto only one component consistently in both studies were selected (i.e. those for which Devine-Wright, 2013a was able to replicate Lewicka's 2011 findings).

For place inherited, the three items that loaded most strongly on this component in Lewicka's study were the only three that clearly mapped onto place inherited in Devine-Wright's study – without also loading onto the place discovered component. Therefore these three were selected to form a three-item scale on place inherited in this study ('Even if there are better places to live, I am not going to move out of Guernsey'; 'I cannot imagine leaving Guernsey for good'; 'I have never considered if living somewhere else would be better').

For place discovered, only three of Lewicka's original six factors clearly measured place discovered in Devine-Wright's study, so these three were selected to measure place discovered in this study ('I like to explore Guernsey and discover new places'; 'From time to time, I discover Guernsey anew'; 'I often photograph various places around Guernsey').

For place relative, Lewicka (2011) was the only published study that measured this construct, as Devine-Wright (2013a) did not measure the concept. These were compared with the in-progress work of Bailey (2015) to decide on the three most appropriate items which most consistently seemed to measure place relative ('There are many places in Britain and the world where I could live'; 'It wouldn't bother me to leave Guernsey and move elsewhere'; 'It's more important to me how I live than where I live'). One of these was not included in Lewicka's study in this form, but was rephrased: Lewicka's item 'I could equally well live here as in any other city' was changed into 'It wouldn't bother me to leave Guernsey and move elsewhere'.

Appendix J – Overview of Wilcoxon tests performed to test differences between place meanings ascribed to zones

36 separate Wilcoxon tests were performed to assess the difference between scores on each place meaning, for each pair of small wind project zones and each pair of tidal project zones, the results of which are summarised in the table below:

	A vs B	**A vs C**	**B vs C**	**X vs Y**	**X vs Z**	**Y vs Z**
Visual beauty	χ^2= 665 p = .000 *r* = -0.17	χ^2= 1,525 p = .000 *r* = -0.29	χ^2= 1,925 p = .000 *r* = -0.23	χ^2= 9,548 p = .000 *r* = -0.18	χ^2= 12,912 p = .001 *r* = 0.12	χ^2= 10,674 p = .000 *r* = 0.34
Visited frequently	χ^2= 387 p = .000 *r* = -0.19	χ^2= 635 p = .000 *r* = -0.31	χ^2= 1,474 p = .000 *r* = -0.22	χ^2= 9,268 p = .000 *r* = -0.17	χ^2= 15,270 p = .000 *r* = 0.17	χ^2= 12,320 p = .000 *r* = 0.35
Industrial	χ^2= 1,233 p = .000 *r* = 0.16	χ^2= 11,152 p = .000 *r* = 0.34	χ^2= 9,355 p = .000 *r* = 0.29	χ^2= 2,365 p = .000 *r* = 0.16	χ^2= 1,007 p = .074 *r* = -0.06	χ^2= 210 p = .000 *r* = -0.14
Unspoilt naturalness	χ^2= 777 p = .003 *r* = -0.10	χ^2= 1,889 p = .000 *r* = -0.24	χ^2= 1,494 p = .000 *r* = -0.21	χ^2= 3,208 p = .109 *r* = -0.06	χ^2= 3,596 p = .0.35 *r* = 0.07	χ^2= 2,848 p = .000 *r* = 0.15
Favourite area	χ^2= 3,050 p = .000 *r* = -0.12	χ^2= 5,744 p = .000 *r* = -0.17	χ^2= 4,723 p = .001 *r* = -0.12	χ^2= 6,867 p = .000 *r* = -0.16	χ^2= 10,198 p = .167 *r* = 0.05	χ^2= 8,616 p = .000 *r* = 0.27
Symbolic of Guernsey	χ^2= 504 p = .000 *r* = -0.18	χ^2= 837 p = .000 *r* = -0.28	χ^2= 1,499 p = .000 *r* = -0.18	χ^2= 3,665 p = .000 *r* = -0.18	χ^2= 5,409 p = .237 *r* = 0.04	χ^2= 5,141 p = .000 *r* = 0.26

References

Abelson, J., Forest, P. G., Eyles, J., Smith, P., Martin, E., & Gauvin, F. P. (2003). Deliberations about deliberative methods: issues in the design and evaluation of public participation processes. *Social Science & Medicine*, 57(2), 239-251.

Adger, W. N., Barnett, J., Chapin III, F. S., & Ellemor, H. (2011). This must be the place: Underrepresentation of identity and meaning in climate change decision-making. *Global Environmental Politics*, 11(2), 1-25.

Agterbosch, S., Meertens, R. M., & Vermeulen, W. J. (2009). The relative importance of social and institutional conditions in the planning of wind power projects. *Renewable and Sustainable Energy Reviews*, 13(2), 393-405.

Aitken, M. (2010). Why we still don't understand the social aspects of wind power: A critique of key assumptions within the literature. *Energy Policy* 38, 1834-1841.

Aitken, M., McDonald, S., & Strachan, P. (2008). Locating 'power' in wind power planning processes: The (not so) influential role of local objectors. *Journal of Environmental Planning and Management*, 51(6), 777-799.

Alexander, K.A., Janssen, R., Arciniegas, G., O'Higgins, T.G., Eikelboom, T. & Wilding, T.A. (2012). Interactive marine spatial planning: siting tidal energy arrays around the mull of Kintyre. *PloS One,* 7:e30031.

Alexander, K. A., Potts, T., & Wilding, T. A. (2013). Marine renewable energy and Scottish west coast fishers: Exploring impacts, opportunities and potential mitigation. *Ocean & Coastal Management*, 75, 1-10.

Altman, I. & Low, S. (1992). *Place attachment*. New York: Plenum Press.

Amin, A. (2004). Regions unbound: Towards a new politics of place. *Geografiska Annaler. Series B, Human Geography*, 86(1), 33–44.

Anderson, N. M., Williams, K. J., & Ford, R. M. (2013). Community perceptions of plantation forestry: The association between place meanings and social representations of a contentious rural land use. *Journal of Environmental Psychology*, 34, 121-136.

Ansolabehere, S., & Konisky, D. M. (2009). Public attitudes toward construction of new power plants. *Public Opinion Quarterly,* 73(3), 566-577.

Aravena, C., Martinsson, P. & Scarpa, R. (2008). Does money talk? The effect of a monetary attribute on the marginal values in a choice experiment. *Workshop Empirical Methods in Energy Economics, Zürich*, 2008.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216-224.

Ashworth, P., Littleboy, A., Graham, P. & Niemeyer, S. (2011). Turning the heat on: Public engagement in Australia's energy future. In P. Devine-Wright (Ed.), Renewable Energy and the Public: From NIMBY to participation. (pp. 131-148). London: Earthscan.

Bailey, E. (2015). Understanding local public responses to a high-voltage transmission power line proposal in South-West England: Investigating the role of life-place trajectories and project-related factors. PhD thesis; University of Exeter.

Bailey, I., West, J. & Whitehead, I. (2011). Out of sight but not out of mind? Public perceptions of wave energy. *Journal of Environmental Policy and Planning,* 13(2), 139–157.

Baldwin, C., & Chandler, L. (2010). “At the water's edge”: community voices on climate change. *Local Environment*, 15(7), 637-649.

Barnett, J., Burningham, K., Walker, G. & Cass, N. (2012). Imagined publics and engagement around renewable energy technologies in the UK. *Public Understanding of Science,* 21(1), 36-50.

Barry, J., & Ellis, G. (2011). Beyond consensus? Agonism, contestation, republicanism and a low carbon future. In P. Devine-Wright (Ed.), Renewable Energy and the Public: From NIMBY to participation. (pp. 29-42). London: Earthscan.

Barry, J., Ellis, G. & Robinson, C. (2008). Cool rationalities and hot air: A rhetorical approach to understanding debates on renewable energy. *Global Environmental Politics*, 8(2), 67–98.

Bartlett, J.E., Kotrlik, J.W. & Higgins, C.C. (2001). Organizational research: Determining appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43-50.

Batel, S. & Devine-Wright, P. (2015a). A critical and empirical analysis of the national-local 'gap' in public responses to large-scale energy infrastructures. *Journal of Environmental Planning and Management,* 58(6), 1076-1095.

Batel, S., & Devine-Wright, P. (2015b). Towards a better understanding of people's responses to renewable energy technologies: Insights from Social Representations Theory. *Public Understanding of Science*, 24(3), 311-325.

Batel, S. & Devine-Wright, P. (2015c). "I'm a NIMBY", "we are all NIMBYs" or "we are custodians of this area"? The different uses of NIMBY as a discursive resource for members of local communities to negotiate responses to high voltage power lines in the UK. Paper presented at the RGS-IBG annual conference, University of Exeter, 2 September 2015.

Batel, S., Devine-Wright, P. & Tangeland, T. (2013). Social acceptance of low carbon energy and associated infrastructures: a critical discussion. *Energy Policy,* 58, 1–5.

Beilin, R. (2005). Photo-elicitation and the agricultural landscape: ‘Seeing’ and ‘telling’ about farming, community and place. *Visual Studies*, 20(1), 56-68.

Bell, D., Gray, T., & Haggett, C. (2005). The ‘Social Gap’ in wind farm policy siting decisions: Explanations and policy responses. *Environmental Politics*, 14, 460–477.

Bell, D., Gray, T., Haggett, C. & Swaffield, J. (2013). Re-visiting the ‘social gap’: public opinion and relations of power in the local politics of wind energy. *Environmental Politics,* 22(1), 115–135.

Bell, S. E., & York, R. (2010). Community economic identity: The coal industry and ideology construction in West Virginia. *Rural Sociology, 75*(1), 111-143.

Bidwell, D. (2013). The role of values in public beliefs and attitudes towards commercial wind energy. *Energy Policy,* 58, 189-199.

Bishop, I.D. & Miller, D.R. (2007). Visual assessment of off-shore wind turbines: The influence of distance, contrast, movement and social variables. *Renewable Energy* 32(5), 814-831.

Bosco, F. J. (2006). Actor-network theory, networks, and relational approaches in human geography. In: Aitken, S. & Valentine, G. (Ed.), Approaches to human geography (pp. 136-146). London: Sage.

Boyd, A.D. & Paveglio, T.B. (2015). “Placing” energy development in a local context: Exploring the origins of rural community perspectives. *The Journal of Rural and Community Development*, 10(2), 1-20.

Brace, N., Kemp, R. & Snelgar, R. (2009). *SPSS for psychologists*. Basingstoke: Palgrave McMillan.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.

Breakwell, G. (1986). *Coping with threatened identities*. London: Methuen.

Brehm, J.M., Eisenhauer, B.W. & Stedman, R.C. (2013). Environmental concern: Examining the role of place meaning and place attachment. *Society & Natural Resources,* 26(5), 522-538.

Breukers, S., & Wolsink, M. (2007). Wind power implementation in changing institutional landscapes: an international comparison. *Energy Policy*, 35(5), 2737-2750.

Brewer, J., Ames, D. P., Solan, D., Lee, R., & Carlisle, J. (2015). Using GIS analytics and social preference data to evaluate utility-scale solar power site suitability. *Renewable Energy*, *81*, 825-836.

Brickell, K. (2012). Visual critiques of tourist development: host-employed photography in Vietnam. *Tourism Geographies*, 14(1), 98-116.

Brittan, G. (2001). Wind, energy, landscape: Reconciling nature and technology. *Philosophy & Geography*, 4, 171–178.

Brown, G. (2013). Relationships between spatial and non-spatial preferences and place-based values in national forests. *Applied Geography*, 44, 1-11.

Brown, G., Raymond, C. M., & Corcoran, J. (2015). Mapping and measuring place attachment. *Applied Geography*, 57, 42-53.

Brownlee, M.T.J., Hallo, J.C., Jodice, L.W., Moore, D.D., Powell, R.B. & Wright, B.A. (2015). Place attachment and marine recreationists' attitudes toward offshore wind energy development. *Journal of Leisure Research,* 47(2), 263–284.

Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? *Qualitative Research,* 6(1), p. 97-113.

Bryman, A. (2012). *Social research methods, 4th edition*. Oxford: Oxford University Press.

Buijs, A., Hovardas, T., Figari, H., Castro, P., Devine-Wright, P., Fischer, A., Mouro, C. & Selge, S. (2012). Understanding people's ideas on natural resource management: research on social representations of nature. *Society & Natural Resources*, *25*(11), 1167-1181.

Burgess, M.M. (2014). From 'trust us' to participatory governance: Deliberative publics and science policy. *Public Understanding of Science,* 23(1), 48-52.

Burningham, K. (2000). Using the language of NIMBY: a topic for research, not an activity for researchers. *Local environment*, 5(1), 55-67.

Burningham, K., Barnett, J. & Walker, G. (2015). An array of deficits: Unpacking NIMBY discourses in wind energy developers' conceptualizations of their local opponents. *Society & Natural Resources,* 28(3), 246-260.

Burr, V. (2015). Social constructionism. London: Routledge.

Butler, C., Parkhill, K.A. & Pidgeon, N. (2011). From the material to the imagined: public engagement with low carbon technologies in a nuclear community. In: Devine-Wright P, ed. *Renewable Energy and the Public: From NIMBY to Participation*. London: Earthscan.

Butler, C., Parkhill, K.A. & Pidgeon, N. (2013). Deliberating energy transitions in the UK – Transforming the UK energy system: Public values, attitudes and acceptability. UKERC: London.

Carlisle, J.E., Kane, S.L., Solan, D. & Joe, J.C. (2014). Support for solar energy: Examining sense of place and utility-scale development in California. *Energy Research & Social Science,* 3, 124-130.

Cass, N. & Walker, G. (2009). Emotion and rationality: The characterisation and evaluation of opposition to renewable energy projects. *Emotion, Space and Society,* 2(1), 62–69.

Cass, N., Walker, G. & Devine-Wright, P. (2010). Good neighbours, public relations and bribes: The politics and perceptions of community benefit provision in renewable energy development in the UK. *Journal of Environmental Policy & Planning,* 12(3), 255-275.

Castro, P., & Gomes, I. (2005). Genetically modified organisms in the Portuguese press: Thematization and anchoring. *Journal for the Theory of Social Behaviour*, *35*(1), 1-17.

Cheng, A. S., Kruger, L. E. & Daniels, S. E. (2003). "Place" as an integrating concept in natural resource politics: Propositions for a social science research agenda. *Society &Natural Resources*, 16(2), 87-104.

Cherry, T.L., García, J.H., Kallbekken, S. & Torvanger, A. (2014). The development and deployment of low-carbon energy technologies: The role of economic interests and cultural worldviews on public support. *Energy Policy,* 68, 562-566.

Claval, P. & Entrikin, J.N. (2004). Cultural geography: Place and landscape between continuity and change. In: Benko, G. & Strohmayer, U. (eds) Human Geography: A History for the 21st Century. London: Arnold.

Clayton, S., Devine-Wright, P., Swim, J., Bonnes, M., Steg, L., Whitmarsh, L., & Carrico, A. (2015). Expanding the role for psychology in addressing environmental challenges. *American Psychologist*.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences (2nd Ed.). New York: Academic Press.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112 (1), 155–159.

Cohen, J.J., Reichl, J. & Schmidthaler, M. (2014). Re-focussing research efforts on the public acceptance of energy infrastructure: A critical review. *Energy,* 76, 4-9.

Coleman, S. & Gøtze, J. (2001). Bowling together: Online public engagement in policy deliberation. London: Hansard Society.

Colley, H. (2014). What (a) to do about 'impact': a Bourdieusian critique. *British Educational Research Journal*, 40(4), 660-681.

Collins, D. & Kearns, R. (2010). ''It's a gestalt experience": Landscape values and development pressure in Hawke's Bay, New Zealand. *Geoforum,* 41(3), 435-446.

Conway, F., Stevenson, J., Hunter, D., Stefanovich, M., Campbell, H., Covell, Z. & Yin, Y. (2010). Ocean space, ocean place: the human dimensions of wave energy in Oregon. *Oceanography,* 23(20), 82–91.

Cooke, B. & Kothari, U. (eds.) (2007). *Participation: The new tyranny?* 4th edition. London: Zed Books.

Cooper, Y. (2007). To achieve affordable housing, we'll fight selfish nimbyism. The Guardian, 22 July 2007. Retrieved from http://www.theguardian.com/commentisfree/2007/jul/22/comment.politics1.

Cotton, M., & Devine-Wright, P. (2013). Putting pylons into place: a UK case study of public perspectives on the impacts of high voltage overhead transmission lines. *Journal of Environmental Planning and Management*, 56(8), 1225-1245.

Cowell, R., Bristow, G., & Munday, M. (2011). Acceptance, acceptability and environmental justice: the role of community benefits in wind energy development. *Journal of Environmental Planning and Management*, 54(4), 539-557.

Cresswell, T. (1996). *In Place, Out of Place: Geography, Ideology and Transgression*. Minneapolis: University of Minnesota Press.

Cresswell, T. (2004). *Place: A short introduction*. Oxford: Blackwell.

Cresswell, T. (2013). *Geographic thought: a critical introduction*. Oxford: Wiley-Blackwell.

Dalton, G.J., Lockington, D.A. & Baldock, T.E. (2008). A survey of tourist attitudes to renewable energy supply in Australian hotel accommodation. *Renewable Energy,* 33(10), 2174–2185.

De Rosa, A. (1993). Social representations and attitudes: Problems of coherence between the theoretical definition and procedure of research. *Papers on Social Representations,* 2, 1-192.

Demski, C., Butler, C., Parkhill, K.A., Spence, A. & Pidgeon, N.F. (2015). Public values for energy system change. *Global Environmental Change,* 34, 59-69.

DECC (2015a). UK Greenhouse Gas Emissions, Final Figures 2013. London: Department of Energy and Climate Change (DECC).

DECC (2015b). Public attitudes tracking survey – Wave 15. Department of Energy and Climate Change (DECC). Retrieved from https://www.gov.uk/government/collections/public-attitudes-tracking-survey.

DECC (2015c). 2050 Energy Calculator. Department of Energy and Climate Change (DECC). http://2050-calculator-tool.decc.gov.uk/.

Delli Carpini, M.X., Cook, F.L., & Jacobs, L.R. (2004). Public deliberation, discursive participation, and citizen engagement: A review of the empirical literature. *Annual Review of Political Science*, 7, 315-344.

Devine-Wright, P. (2005). Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy,* 8(2), 125-139.

Devine-Wright, P. (2009). Rethinking NIMBYism: the role of place attachment and place identity in explaining place-protective action. *Journal of Community and Applied Social Psychology,* 19, 426–441.

Devine-Wright, P. (2011a). *Renewable energy and the public*. London: Earthscan.

Devine-Wright, P. (2011b). Enhancing local distinctiveness fosters public acceptance of tidal energy: a UK case study. *Energy Policy,* 39, 83–93.

Devine-Wright, P. (2011c). Place attachment and public acceptance of renewable energy: a tidal energy case study. *Journal of Environmental Psychology,* 31, 336–343.

Devine-Wright, P. (2011d). Public engagement with large-scale renewable energy technologies: breaking the cycle of NIMBYism. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(1), 19-26.

Devine-Wright, P. (2013a). Explaining "NIMBY" objections to a power line: the role of personal, place attachment and project-related factors. *Environment and Behavior*, 45(6), 761–781.

Devine-Wright, P. (2013b). Think global, act local? The relevance of place attachments and place identities in a climate changed world. *Global Environmental Change*, 23(1), 61-69.

Devine-Wright, P. (2015). Local attachments and identities: A theoretical and empirical project across disciplinary boundaries. *Progress in Human Geography*, 39(4), 527–530.

Devine-Wright, P., & Batel, S. (2013). Explaining public preferences for high voltage pylon designs: an empirical study of perceived fit in a rural landscape. *Land Use Policy*, 31, 640-649

Devine-Wright, H., & Devine-Wright, P. (2009). Social representations of electricity network technologies: Exploring processes of anchoring and objectification through the use of visual research methods. *British Journal of Social Psychology*, 48(2), 357-373.

Devine-Wright, P. & Howes, Y. (2010). Disruption to place attachment and the protection of restorative environments: a wind energy case study. *Journal of Environmental Psychology,* 30, 271–280.

Devine-Wright, P., & Wiersma, B. (2013). Opening up the “local” to analysis: exploring the spatiality of UK urban decentralised energy initiatives. *Local Environment*, 18(10), 1099-1116.

Di Masso, A., Dixon, J. & Durrheim, K. (2014). Place attachment as discursive practice. In: Manzo, L. & Devine-Wright, P. (2014). Place Attachment: Advances in Theory, Methods and Applications. London: Routledge.

Dixon, J. & Durrheim, K. (2000). Displacing place-identity: a discursive approach to locating self and other. *British Journal of Social Psychology*, 39(1), 27-44.

Eccles, L. (2015). Housing experts declare war on the 'selfish nimbys' who block home building and ‘deny their children a place on the property ladder’. Daily Mail, 25 June. Retrieved from http://www.dailymail.co.uk/news/article-3138107/Housing-experts-declare-war-selfish-nimbys-block-home-building-deny-children-place-property-ladder.html.

Ek, K. (2006). Quantifying the environmental impacts of renewable energy: the case of Swedish wind power. In: Pearce D, ed. *Environmental Valuation in Developed Countries: Case Studies*. Cheltenham: Edward Elgar.

Ellis, G., Barry, J., & Robinson, C. (2007). Many ways to say no, different ways of saying yes: Applying Q-methodology to understand public acceptance of wind farm proposals. *Journal of Environmental Planning and Management*, 50, 517–551

ETI & UKERC (2014). Marine Energy Technology Roadmap 2014. Energy Technologies Institute & UK Energy Research Centre. Retrieved from http://www.eti.co.uk/wp-content/uploads/2014/04/Marine-Roadmap-FULL-SIZE-DIGITAL-SPREADS-.pdf.

Fast S. (2013). Social acceptance of renewable energy: trends, concepts, and geographies. *Geography Compass,* 7(12), 853–866.

Fast, S. & Mabee, W. (2015). Place-making and trust-building: The influence of policy on host community responses to wind farms. *Energy Policy,* 81, 27-37.

Fast, S, Mabee, W. & Blair, J. (2015). The changing cultural and economic values of wind energy landscapes. *The Canadian Geographer,* 59(2), 181–193.

Fearon, J. D. (1998). *Deliberation as discussion*. In J. Elster (Ed.), Deliberative Democracy (pp. 44–68). Cambridge: Cambridge University Press.

Fergen, J. & Jacquet, J.B. (2016). Beauty in motion: Expectations, attitudes, and values of wind energy development in the rural US. *Energy Research & Social Science*, 11, 133-141.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics: And sex and drugs and rock ‘n’ roll*. London: SAGE.

Firestone, J., & Kempton, W. (2007). Public opinion about large offshore wind power: underlying factors. *Energy Policy*, 35(3), 1584-1598.

Firestone, J., Kempton, W., Lilley, M.B. & Samoteskul, K. (2012). Public acceptance of offshore wind power: does perceived fairness of process matter? *Journal of Environmental Planning and Management,* 55(10), 1387–1402

Fischer, A., Peters, V., Neebe, M., Vávra, J., Kriel, A., Lapka, M., & Megyesi, B. (2012). Climate change? No, wise resource use is the issue: Social representations of energy, climate change and the future. *Environmental Policy and Governance*, 22(3), 161-176.

Flynn, R., Bellaby, P., & Ricci, M. (2011). The limits of upstream engagement in an emergent technology: Lay perceptions of hydrogen energy technologies. In: Devine-Wright, P., ed. *Renewable Energy and the Public: From NIMBY to Participation*. London: Earthscan.

Gauntlett, D., & Holzwarth, P. (2006). Creative and visual methods for exploring identities. *Visual Studies*, 21(1), 82-91.

Gee, K. (2010). Offshore wind power development as affected by seascape values on the German North Sea coast. *Land Use Policy*, 27(2), 185-194.

Gieryn, T. (2000). A space for place in sociology. *Annual Review of Sociology*, 26, 463-469.

Gormally, A.M., Pooley, C.G., Whyatt J.D. & Timmis, R.J. (2014). “They made gunpowder … yes down by the river there, that's your energy source”: attitudes towards community renewable energy in Cumbria. *Local Environment,* 19(8), 915-932.

Graham, B. (2000). The past in place: Historical geographies of identity. In: Graham, B. & Nash, C. (eds). Modern Historical Geographies. Harlow: Pearson Education.

Graham, K. & Rudolph, D. (2014). Geography, communities and energy futures: Alternative research paths. *Scottish Geographical Journal,* 130(3), 143-151.

Gray, T., Haggett, C. & Bell, D. (2005). Offshore wind farms and commercial fisheries in the UK: A study in stakeholder consultation. *Ethics, Place & Environment,* 8(2), 127-140.

Gross, C. (2007). Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance. *Energy Policy*, 35, 2727–2736.

Guernsey Electricity Ltd (2014). Strategy confirms investment in cable links is vital. Retrieved from http://www.electricity.gg/news/policy-council-report/.

Guernsey Electricity Ltd (2015). Key statistics. Retrieved from https://www.electricity.gg/about/annual-reports/.

Habermas, J. (1984). *The theory of communicative action: Vol 1: Reason and the rationalisation of society*. London: Polity Press.

Haggett, C. (2008). Over the sea and far away? A consideration of the planning, politics and public perception of offshore wind farms. *Journal of Environmental Policy & Planning,* 10(3), 289–306.

Haggett, C. (2011). Understanding public responses to offshore wind power. *Energy Policy,* 39, 503–510.

Haggett, C. & Aitken, M. (2015). Grassroots energy innovations: The role of community ownership and investment. *Current Sustainable/Renewable Energy Reports*, *2*(3), 98-104.

Haggett, C. & Toke, D. (2006). Crossing the great divide: Using multi-method analysis to understand opposition to windfarms. *Public Administration*, 84, 103–120.

Hall, D.M. & Lazarus, E.D. (2015). Deep waters: Lessons from community meetings about offshore wind resource development in the U.S. *Marine Policy,* 57, 9-17.

Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*, 17(1), 13-26.

Hartig, T., Mang, M., & Evans, G. W. (1991). Restorative effects of natural environment experiences. *Environment and Behavior*, 23(1), 3-26.

Harvey, D. (2001). *Spaces of capital: Towards a critical geography*. London: Routledge.

Healey, P. (2006). *Collaborative planning: Shaping places in fragmented societies*. Basingstoke: Palgrave MacMillan.

Heidenreich, S. (2015). Sublime technology and object of fear: offshore wind scientists assessing publics. *Environment and Planning A*, 47(5), 1047-1062.

Hernández, B., Hidalgo, M.C. & Ruiz, C. (2014). Theoretical and methodological aspects of research on place attachment. In: Manzo, L. & Devine-Wright, P. (2014). Place Attachment: Advances in Theory, Methods and Applications. London: Routledge.

Hindmarsh, R., & Matthews, C. (2008). Deliberative speak at the turbine face: community engagement, wind farms, and renewable energy transitions, in Australia. *Journal of Environmental Policy & Planning*, 10(3), 217-232.

Hine, D.W., Kormos, C., & Marks, A.D. (2016). Agree to disagree: A practical guide to conducting survey research in environmental psychology. In: Gifford, R. (ed.). Research methods for environmental psychology. Chichester: Wiley Blackwell.

Holmes, E.A., & Mathews, A. (2010). Mental imagery in emotion and emotional disorders. *Clinical Psychological Review*, 30, 349-362.

Hopkins, R. (2008). *The transition handbook: from oil dependency to local resilience*. Totnes: Green books.

Horlick-Jones, T., Prades, A., & Espluga, J. (2012). Investigating the degree of “stigma” associated with nuclear energy technologies: A cross-cultural examination of the case of fusion power. *Public Understanding of Science*, 21(5), 514-533.

Howarth, C., Kalampalikis, N. & Castro, P. (2011). Editorial: 50 Years of Research on Social Representations: Central Debates and Challenging Questions. *Papers on Social Representations,* 20, 9.1-9.11.

Huijts, N. M. A., Molin, E. J. E., & Steg, L. (2012). Psychological factors influencing sustainable energy technology acceptance: A review-based comprehensive framework. *Renewable and Sustainable Energy Reviews*, *16*(1), 525-531.

Hummon, D. (1992). Community Attachment, Local Sentiment and Sense of Place. In: Altman, I. & Low, S. (1992) *Place Attachment*. New York: Plenum Press.

IPCC (2014a). Summary for Policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea & L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1132 pp.

IPCC (2014b). Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Janssen, R., Arciniegas, G., & Alexander, K. A. (2015). Decision support tools for collaborative marine spatial planning: identifying potential sites for tidal energy devices around the Mull of Kintyre, Scotland. *Journal of Environmental Planning and Management*, 58(4), 719-737.

Jasanoff, S. (Ed.) (2006). *States of knowledge: the co-production of science and the social order*. London: Routledge.

Jaspal, R., & Nerlich, B. (2014). Fracking in the UK press: Threat dynamics in an unfolding debate. *Public Understanding of Science*, 23(3), 348-363.

Jay, S., Ellis, G. & Kidd, S. (2012). Marine Spatial Planning: A New Frontier? *Journal of Environmental Policy & Planning,* 14(1), 1-5.

Jacquet, J.B. & Stedman, R.C. (2014). The risk of social-psychological disruption as an impact of energy development and environmental change. *Journal of Environmental Planning and Management,* 57(9), 1285-1304.

Jobert, A., Laborgne, P., & Mimler, S. (2007). Local acceptance of wind energy: Factors of success identified in French and German case studies. *Energy Policy*, 35(5), 2751-2760.

Joffe, H. (2011a). Public apprehension of emerging infectious diseases: are changes afoot? *Public Understanding of Science,* 20(4), 446-460.

Joffe, H. (2011b). Thematic analysis. In D. Harper & A. R. Thompson (Eds.), Qualitative research methods in mental health and psychotherapy: A guide for students and practitioners (pp. 209–223). Chichester: John Wiley & Sons.

Johnsen, S., May, J. & Cloke, P. (2008). Imag(in)ing ‘homeless places’: Using auto-photography to (re)examine the geographies of homelessness. *Area,* 40(2), 194-207.

Jones, C.R. & Eiser, J.R. (2009). Identifying predictors of attitudes towards local onshore wind development with reference to an English case study. *Energy Policy,* 37(11), 4604–4614.

Jonas, A. E. (2012). Region and place - Regionalism in question. *Progress in Human Geography*, 36(2), 263-272.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology,* 15(3), 169-182.

Kempton, W., Firestone, J., Lilley, J., Rouleau, T., & Whitaker, P. (2005). The offshore wind power debate: Views from Cape Cod. *Coastal Management*, 33(2), 119–149.

Kerr, S., Watts, L., Colton, J., Conway, F., Hull, A., Johnson, K., Jude, S., Kannen, A., MacDougall, S., McLachlan, C., Potts, T. &Vergunst, J. (2014). Establishing an agenda for social studies research in marine renewable energy. *Energy Policy,* 67, 694–702.

Khorsand, I., Kormos, C., MacDonald, E. G., & Crawford, C. (2015). Wind energy in the city: An interurban comparison of social acceptance of wind energy projects. *Energy Research & Social Science*, 8, 66-77.

Knapp, L. & Ladenburg, J. (2015). How spatial relationships influence economic preferences for wind power—A review. *Energies,* 8, 6177-6201.

Krueger, A.D., Parsons, G.R. & Firestone, J. (2011). Valuing the visual disamenity of offshore wind projects at varying distances from the shore. *Land Economics,* 87(2), 268–283.

Krueger, R. (1998). *Moderating focus groups.* Thousand Oaks: SAGE.

Lachapelle, P., Emery, M., & Hays, R. L. (2010). The pedagogy and the practice of community visioning: evaluating effective community strategic planning in rural Montana. *Community Development*, 41(2), 176-191.

Ladenburg, J. (2008). Attitudes towards on-land and offshore wind power development in Denmark; choice of development strategy. *Renewable Energy,* 33(1), 111–118.

Ladenburg, J. (2009). Stated public preferences for on-land and offshore wind power generation—a review. *Wind Energy,* 12(2), 171–181.

Ladenburg, J. & Dubgaard, A. (2007). Willingness to pay for reduced visual disamenities from offshore wind farms in Denmark. *Energy Policy,* 35(8), 4059–4071.

Ladenburg, J. & Dubgaard, A. (2009). Preferences of coastal zone user groups regarding the siting of offshore wind farms. *Ocean & Coastal Management,* 52(5), 233–242.

Ladenburg, J. & Möller, B. (2011). Attitude and acceptance of offshore wind farms—the influence of travel time and wind farm attributes. *Renewable and Sustainable Energy Reviews,* 15(9), 4223–4235.

Ladenburg, J. & Lutzeyer, S. (2012). The economics of visual disamenity reductions of offshore wind farms—review and suggestions from an emerging field. *Renewable and Sustainable Energy Reviews,* 16(9), 6793–6802.

Landry, C. E., Allen, T., Cherry, T., & Whitehead, J. C. (2012). Wind turbines and coastal recreation demand. *Resource and Energy Economics*, 34(1), 93-111.

Lewicka, M. (2011). On the varieties of people's relationships with places: Hummon's typology revisited. *Environment and Behavior,* 43(5), 676-709.

Lilley, M.B., Firestone, J. & Kempton, W. (2010). The effect of wind power installations on coastal tourism. *Energies,* 3(1), 1–22.

Lilley, J. & Firestone, J. (2013). The effect of the 2010 Gulf oil spill on public attitudes toward offshore oil drilling and wind development. *Energy Policy*, 62, 90–98.

Lombard, M. (2013). Using auto-photography to understand place: Reflections from research in urban informal settlements in Mexico. *Area*, 45(1), 23-32.

Loopmans, M., Cowell, G., & Oosterlynck, S. (2012). Photography, public pedagogy and the politics of place-making in post-industrial areas. *Social & Cultural Geography*, 13(7), 699-718.

Manzo, L. C. (2005). For better or worse: Exploring multiple dimensions of place meaning. *Journal of Environmental Psychology*, 25(1), 67-86.

Manzo, L. C. & Devine-Wright, P. (2014). *Place attachment: Advances in theory, methods and applications*. London: Routledge.

Marcu, A., Gaspar, R., Rutsaert, P., Seibt, B., Fletcher, D., Verbeke, W., & Barnett, J. (2014). Analogies, metaphors, and wondering about the future: Lay sense-making around synthetic meat. *Public Understanding of Science*, 24(5), 547-562.

Markard, J., Raven, R., & Truffer, B. (2012). Sustainability transitions: An emerging field of research and its prospects. *Research Policy*, 41(6), 955-967.

Marková, I. (2000). Amédée or how to get rid of it: Social representations from a dialogical perspective. *Culture & Psychology*, 6(4), 419-460.

Marková, I. (2003). *Dialogicality and social representations: The dynamics of mind*. Cambridge: Cambridge University Press.

Massey, D. (1997). *A global sense of place*. In: Gray, A. & McGuigan, J. Studying culture. London: Edward Arnold.

Massey, D. (2005). *For space*. London: Sage.

Martin, B. R. (2011). The Research Excellence Framework and the 'impact agenda': are we creating a Frankenstein monster? *Research Evaluation*, 20(3), 247-254.

McCartney, A. (2006). The social value of seascapes in the Jurien Bay Marine Park: an assessment of positive and negative preferences for change. *Journal of Agricultural Economics,* 57(3), 577–594.

McKinley, E. & Fletcher, S. (2012). Improving marine environmental health through marine citizenship: A call for debate. *Marine Policy,* 36(3), 839-843.

McLachlan, C. (2009). 'You don't do a chemistry experiment in your best china': Symbolic interpretations of place and technology in a wave energy case. *Energy Policy,* 37, 5342–5350.

McLachlan, C. (2010). A stakeholder assessment of the barriers and opportunities for tidal stream energy in the UK. Tyndall Working Paper 144, eScholarID:95328.

Mekonnen, A. D., & Gorsevski, P. V. (2015). A web-based participatory GIS (PGIS) for offshore wind farm suitability within Lake Erie, Ohio. *Renewable and Sustainable Energy Reviews*, 41, 162-177.

Midden, C.J.H. & Huijts, N.M.A. (2009). The role of trust in the affective evaluation of novel risks: the case of CO2 storage. *Risk Analysis*, 29(5), 743–51.

Milfont, T. L., & Duckitt, J. (2004). The structure of environmental attitudes: A first-and second-order confirmatory factor analysis. *Journal of Environmental Psychology*, 24(3), 289-303.

Ministry of Justice (undated). Fact sheet on the UK's relationship with the Crown Dependencies. Retrieved from https://www.justice.gov.uk/downloads/about/moj/our-responsibilities/crown-dependencies.pdf.

Moloney, G., Gamble, M., Hayman, J. & Smith, J. (2015). Without anchor: Themata and blood donation*. Papers on Social Representations,* 24.

Moscovici, S. (1963). Attitudes and opinions. *Annual Review of Psychology,* 14,231-260.

Moscovici, S. (1993). Introductory address. *Papers on Social Representations,* 2(3), p. 1-11.

Mulvaney, K. K., Woodson, P., & Prokopy, L. S. (2013). Different shades of green: A case study of support for wind farms in the rural Midwest. *Environmental Management*, 51(5), 1012-1024.

O'Connor, C. (2012). Using social representations theory to examine lay explanation of contemporary social crises: The case of Ireland's recession. *Journal of Community & Applied Social Psychology*, 22(6), 453-469.

Olausson, U. (2011). "We're the ones to blame": Citizens' representations of climate change and the role of the media. *Environmental Communication, 5*(3), 281-299.

Otto, A. & Leibenath, M. (2014). The interrelation between collective identities and place concepts in local wind energy conflicts. *Local Environment,* 19(6), 660-676.

Parkhill, K., Demski, C., Butler, C., Spence, A. & Pidgeon, N. (2013). Transforming the UK energy system: Public values, attitudes and acceptability – Synthesis report. London: UKERC.

Pedersen, E. & Johansson, M. (2012). Wind power or uranium mine: appraisal of two energy-related environmental changes in a local context. *Energy Policy,* 44, 312–319.

Perlaviciute, G. & Steg, L. (2014). Contextual and psychological factors shaping evaluations and acceptability of energy alternatives: Integrated review and research agenda. *Renewable and Sustainable Energy Reviews,* 35, 361–381.

Peters, K. (2010). Future promises for contemporary social and cultural geographies of the sea. *Geography Compass,* 4(9), 1260-1272.

Petrova, M.A. (2013). NIMBYism revisited: public acceptance of wind energy in the United States. *WIREs Climate Change,* 4(6), 575–601.

Proshansky, H., Fabian, H. K. & Kaminoff, R. (1983). Place identity: Physical world socialisation of the self. *Journal of Environmental Psychology*, 3(1), 57–83.

Radley, A., & Taylor, D. (2003). Images of recovery: A photo-elicitation study on the hospital ward. *Qualitative Health Research*, 13(1), 77-99.

Raosoft (2015). Sample size calculator. http://www.raosoft.com/samplesize.html

Read, D.L., Brown, R.F., Thorsteinsson, E.B, Morgan, M. & Price, I. (2013). The theory of planned behaviour as a model for predicting public opposition to wind farm developments. *Journal of Environmental Psychology,* 36, 70-76.

Reilly, K., O'Hagan, A. M., & Dalton, G. (2015). Attitudes and perceptions of fishermen on the island of Ireland towards the development of marine renewable energy projects. *Marine Policy*, 58, 88-97.

Renewable Energy Team (2015). About RET. Retrieved from http://www.guernseyrenewableenergy.com/about/About-RET.aspx.

Rose, G. (2007). *Visual methodologies: An introduction to the interpretation of visual materials.* 2nd edition. London and Thousand Oaks: Sage.

Royal Central (2015). The Queen gives Jersey ownership of its beaches and seabeds. Retrieved from http://royalcentral.co.uk/thequeen/the-queen-gives-jersey-ownership-of-its-beaches-and-seabeds-49277.

Rydin, Y., Lee, M. & Lock, S.J. (2015). Public engagement in decision-making on major wind energy projects. *Journal of Environmental Law*, 27, 139-150.

SDC (2007). Tidal Power in the UK Engagement report—public and stakeholder engagement programme. SDC (Sustainable Development Commission). Retrieved from http://www.sd-commission.org.uk/publications.php?id=612.

Setiawan, A. D., & Cuppen, E. (2013). Stakeholder perspectives on carbon capture and storage in Indonesia. *Energy Policy*, 61, 1188-1199.

Seyfang, G. & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, 16(4), 584-603.

Seyfang, G., Park, J. J., & Smith, A. (2013). A thousand flowers blooming? An examination of community energy in the UK. *Energy Policy*, 61, 977-989.

Sheppard, S.R.J. (2005). Landscape visualisation and climate change: The potential for influencing perceptions and behaviour. *Environmental Science & Policy*, 8, 637-654.

Sherren, K., Fischer, J., & Price, R. (2010). Using photography to elicit grazier values and management practices relating to tree survival and recruitment. *Land Use Policy*, 27(4), 1056-1067.

Shove, E. (2010). Beyond the ABC: climate change policy and theories of social change. *Environment and Planning A*, 42(6), 1273-1285.

Siegrist, M. & Cvetkovich, G. (2000). Perception of hazards: the role of social trust and knowledge. *Risk Analysis*, 20(5), 713–720.

Simao, A., Densham, P. J., & Haklay, M. M. (2009). Web-based GIS for collaborative planning and public participation: An application to the strategic planning of wind farm sites. *Journal of Environmental Management*, 90(6), 2027-2040.

Simas, T., Muñoz-Arjona, E., Huertas-Olivares, C., De Groot, J., Stokes, C., Bailey, I., Magagna, D., Conley, D., Greaves, D., Marina, D., Torre-Enciso, Y., Sundberg, J., O'Hagan, A.M. & Holmes, B. (2012). Understanding the role of stakeholders in the wave energy consenting process: engagement and sensitivities. *4th International Conference on Ocean Energy*, October 17, 2012, Dublin.

Smith, N., & Joffe, H. (2013). How the public engages with global warming: A social representations approach. *Public Understanding of Science*, 22(1), 16-32.

Soma, K. & Haggett, C. (2015). Enhancing social acceptance in marine governance in Europe. *Ocean & Coastal Management*, 117, 61-69.

Sørensen, H.C., Hansen, L.K. & Larsen, J.H.M. (2002). Middelgrunden 40 MW offshore wind farm Denmark – Lessons learned. Realities of Offshore Wind Technologies, Case: Middelgrunden, Orkney, October 2002

States of Guernsey (2011). Energy Resource Plan. Retrieved from http://www.gov.gg/CHttpHandler.ashx?id=5575&p=0.

States of Guernsey (2014). Guernsey Electricity Supply – Future Strategy. Retrieved from http://www.gov.gg/CHttpHandler.ashx?id=86677&p=0.

States of Guernsey (2015a). Guernsey Quarterly Population Bulletin September 2014. Retrieved from http://www.gov.gg/population.

States of Guernsey (2015b). Guernsey and the Bailiwick. Retrieved from http://www.gov.gg/article/1891/Guernsey-and-the-Bailiwick.

States of Guernsey (2015c). History of Guernsey. Retrieved from http://www.gov.gg/history.

States of Guernsey (2015d). Am I a qualified resident? Retrieved from http://www.gov.gg/amiqualified.

States of Guernsey (2015e). Financial services. Retrieved from http://www.gov.gg/article/2521/Financial-services.

States of Guernsey (2015f). Taxation. Retrieved from http://www.gov.gg/tax.

States of Guernsey (2015g). Guernsey Annual Earnings Bulletin 2014. Retrieved from http://www.gov.gg/earnings.

States of Guernsey (2015h). Guernsey Residential Property Prices Bulletin March 2015. Retrieved from http://www.gov.gg/property.

States of Guernsey (2015i). What is Islander Status? Retrieved from http://www.gov.gg/article/2822/What-is-Islander-status.

Stedman, R. (2002). Toward a social psychology of place: Predicting behaviour from place-based cognitions, attitude, and identity*. Environment and Behavior*, 34(5), 561–581.

Stedman, R., Amsden, B.L., Beckley, T.M. & Tidball, K.G. (2014). Photo-Based Methods for Understanding Place Meanings as Foundations of Attachment. In: Manzo, L. & Devine-Wright, P. (2014). Place Attachment: Advances in Theory, Methods and Applications. London: Routledge.

Stedman, R., Beckley, T., Wallace, S. & Ambard, M. (2004). A picture and 1000 words: Using resident-employed photography to understand attachment to high amenity places. *Journal of Leisure Research*, 36(4), 580-606.

Steele, J., Bourke, L., Luloff, A. E., Liao, P. S., Theodori, G. L., & Krannich, R. S. (2001). The drop-off/pick-up method for household survey research. *Journal of the Community Development Society*, 32(2), 238-250.

Stefanovich, M. (2009). Wave energy and public opinion in the state of Oregon, USA. *OCEANS 2009, MTS/IEEE Biloxi-Marine Technology for Our Future: Global and Local Challenges*. IEEE, 2009.

Stirling, A. (2008). “Opening up” and “closing down” power, participation, and pluralism in the social appraisal of technology. *Science, Technology & Human Values*, 33(2), 262-294.

Stokes, C., Beaumont, E., Russell, P. & Greaves, D. (2014). Anticipated coastal impacts: What water-users think of marine renewables and why. *Ocean & Coastal Management,* 99, 63-71.

Sturgis, P. & Allum, N. (2004). Science in society: re-evaluating the deficit model of public attitudes. *Public Understanding of Science,* 13(1), 55-74.

Swofford, J. & Slattery, M. (2010). Public attitudes of wind energy in Texas: Local communities in close proximity to wind farms and their effect on decision-making. *Energy Policy,* 38, 2508–2519.

Terwel, B.W., Harinck, F., Ellemers, N. & Daamen, D.D.L. (2009). Competence-based and integrity-based trust as predictors of acceptance of carbon dioxide capture and storage (CCS). *Risk Analysis*, 29(8), 1129–40.

Toke, D. (2002). Wind power in UK and Denmark: can rational choice help explain different outcomes? *Environmental Politics*, 11(4), 83-100.

Toke, D., Breukers, S. & Wolsink, M. (2008). Wind power deployment outcomes: How can we account for the differences? *Renewable and Sustainable Energy Reviews,* 12(4), 1129-1147.

Tomaney, J. (2012). Parochialism – A defence. *Progress in Human Geography,* 37(5), 658-672.

Tuan, Y. (1977). *Space and Place: the perspective of experience*. Minneapolis: University of Minnesota Press.

Twigger-Ross, C. L., & Uzzell, D. (1996). Place and identity processes. *Journal of Environmental Psychology,* 16(3), 205–220.

Upham, P., Oltra, C. & Boso, À. (2015). Towards a cross-paradigmatic framework of the social acceptance of energy systems. *Energy Research & Social Science,* 8, 100–112.

UK Parliament (2008). Climate Change Act 2008. London: UK Parliament.

Van Auken, P. M., Frisvoll, S. J., & Stewart, S. I. (2010). Visualising community: using participant-driven photo-elicitation for research and application. *Local Environment*, 15(4), 373-388.

Van der Horst, D. (2007). NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. *Energy Policy*, 35(5), 2705-2714.

Van Voorhis, C. R. W., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in Quantitative Methods for Psychology*, 3(2), 43-50.

Varró, K., & Lagendijk, A. (2013). Conceptualizing the region–in what sense relational? *Regional Studies*, 47(1), 18-28.

Veidemane, K. & Nikodemus, O. (2015). Coherence between marine and land use planning: public attitudes to landscapes in the context of siting a wind park along the Latvian coast of the Baltic Sea. *Journal of Environmental Planning and Management,* 58(6), 949-975.

Voelklein, C., & Howarth, C. (2005). A review of controversies about social representations theory: A British debate. *Culture & Psychology*, 11(4), 431-454.

Vorkinn, M., & Riese, H. (2001). Environmental concern in a local context: The significance of place attachment. *Environment and Behaviour*, 33, 249–263.

Wagner, W., Duveen, G., Farr, R., Jovchelovitch, S., Lorenzi-Cioldi, F., Markova, I., & Rose, D. (1999). Theory and method of social representations. *Asian Journal of Social Psychology*, 2(1), 95-125.

Wagner, W., & Hayes, N. (2005). *Everyday discourse and common sense: The theory of social representations*. London: Palgrave Macmillan.

Waldo, Å. (2012). Offshore wind power in Sweden—a qualitative analysis of attitudes with particular focus on opponents. *Energy Policy,* 41, 692–702.

Walker, B.J.A, Wiersma, B. & Bailey, E. (2014). Community benefits, framing and the social acceptance of offshore wind farms: An experimental study in England. *Energy Research & Social Science,* 3, 46–54.

Walker, G. (2011). The role for 'community' in carbon governance. *Wiley Interdisciplinary Reviews: Climate Change,* 2, 777-782.

Walker, G., Cass, N., Burningham, K. & Barnett, J. (2010). Renewable energy and sociotechnical change: Imagined subjectivities of `the public' and their implications. *Environment and Planning A*, 42, 931-947.

Walker, G., Devine-Wright, P., Barnett, J., Burningham, K., Cass, N., Devine-Wright, H., Speller, G., Barton, J., Evans, B., Heath, Y., Infield, D., Parks, J. & Theobald, K. (2011). Symmetries, expectations, dynamics and contexts: a framework for understanding public engagement with renewable energy projects. In: Devine-Wright P, ed. *Renewable Energy and the Public: From NIMBY to Participation*. London: Earthscan.

Walliman, N. (2006). *Social Research Methods*. London: SAGE Publications.

Warren, C. R., Lumsden, C., O'Dowd, S., & Birnie, R. V. (2005). 'Green on green': public perceptions of wind power in Scotland and Ireland. *Journal of Environmental Planning and Management*, 48(6), 853-875.

Warren, C.R. & McFadyen, M. (2010). Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland. *Land Use Policy,* 27(2), 204–213.

Wester-Herber,M. (2004). Underlying concerns in land-use conflicts: The role of place identity in risk perception. *Environmental Science and Policy,* 7(2), 109–116.

Westerberg, V., Jacobsen, J.B. & Lifran, R. (2013). The case for offshore wind farms, artificial reefs and sustainable tourism in the French Mediterranean. *Tourism Management,* 34, 172–183.

Whitton, J., Parry, I. M., Akiyoshi, M. & Lawless, W. (2015). Conceptualizing a social sustainability framework for energy infrastructure decisions. *Energy Research & Social Science, 8,* 127-138.

Wiersma, B. & Devine-Wright, P. (2014). Public engagement with offshore renewable energy: a critical review. *WIREs Climate Change,* 5(4), 493–507.

Wilsdon, J., & Willis, R. (2004). *See-through science: Why public engagement needs to move upstream*. London: Demos.

Wiseman, M., & Bogner, F. X. (2003). A higher-order model of ecological values and its relationship to personality. *Personality and Individual Differences*, 34(5), 783-794.

Whatmore, S. J., & Landström, C. (2011). Flood apprentices: an exercise in making things public. *Economy and Society*, 40(4), 582-610.

Woods, M. (2003). Conflicting environmental visions of the rural: windfarm development in mid Wales. *Sociologia Ruralis,* 43(3), 271–288.

Woolley, O. (2010). Trouble on the horizon? Addressing place-based values in planning for offshore wind energy. *Journal of Environmental Law*, *22*(2), 223-250.

Wolsink, M. (2000). Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support. *Renewable Energy 12*, 49–64.

Wolsink, M. (2006). Invalid theory impedes our understanding: a critique on the persistence of the language of NIMBY. *Transactions of the Institute of British Geographers*, 31(1), p.85–91.

Wolsink, M. (2007). Planning of renewables schemes: deliberative and fair decision-making on landscape issues instead of reproachful accusations of non-cooperation. *Energy Policy* 35, 2692–2704.

Wolsink, M. (2010).Near-shore wind power—protected seascapes, environmentalists' attitudes, and the technocratic planning perspective. *Land Use Policy,* 27(2), 195–203.

Wolsink, M., & Breukers, S. (2010). Contrasting the core beliefs regarding the effective implementation of wind power. An international study of stakeholder perspectives. *Journal of Environmental Planning and Management*, 53(5), 535-558.

Wüstenhagen, R., Wolsink, M. & Bürer, M.J. (2007). Social acceptance of renewable energy innovation: an introduction to the concept. *Energy Policy,* 35(5), 2683–2691.

Wylie, J.W. (2006). Poststructuralist theories, critical methods and experimentation. In: Aitken, S. & Valentine, G. (Ed.), Approaches to human geography. London: Sage.

Wynne, B. (1996). May the sheep safely graze? A reflexive view of the expert-lay knowledge divide. In: Lash, S., Szerszynski, B. & Wynne, B. (Ed.), Risk, Environment and modernity: Towards a new ecology. London: Sage.