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Attitudes towards Marine Energy: Understanding the Values

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Attitudes towards Marine Energy: Understanding the Values

By

Jiska Reinarda de Groot

A thesis submitted to the University of Plymouth in partial fulfilment for the
degree of

DOCTOR OF PHILOSOPHY

March 2015

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Attitudes towards Marine Energy: Understanding the Values

Jiska Reinarda de Groot

ABSTRACT Marine Renewable Energy (MRE) in the form of wave, tidal and offshore wind has emerged as a potentially major component of strategies to reduce carbon dioxide emissions and combat climate change. One factor influencing the implementation of MRE technologies is acceptance by people living near developments. This study investigated (i) attitudes towards MRE in small island communities as likely host communities for MRE developments; (ii) the underlying factors and values shaping these attitudes; (iii) how communities viewed MRE with regard to their place attachments; (iv) the inclusion of communities attitudes into MRE decision-making; and (v) contributions to policy and practice of MRE development.

Data were collected using a mixed-methods approach, employing questionnaire surveys and interviews in three case study communities: 1) the Orkney Islands in Scotland which have considerable experience with MRE; 2) the Shetland Islands, also a Scottish community but with somewhat less experience; and 3) the Isles of Scilly, an English community with limited MRE experience. These study sites provided an opportunity to examine attitudes towards MRE in areas with different levels of MRE experience and differing government administrations and consenting procedures, thus offering novel insights into how local contexts shape attitudes towards MRE.

The theoretical position adopted was place attachment, and the study made steps towards understanding how place attachment processes operate when people evaluate MRE development locally. Processes of place attachment were found to be based on a continuous flow of interactions between people and places based on an evaluation of what happens in specific local contexts and how these are valued against sets of local priorities and preferences. The study found generally positive attitudes towards MRE, and identified local context, place-based values and the perceived effects of MRE as dominant in shaping support. The study thus found two important contributors that shaped attitudes: (i) local references and influences through which people observed issues, including socio-historical references, relational factors, and pragmatic factors, and (ii) local values, through which MRE was evaluated, which were established by residents based on evaluations of local characteristics, and how they related to strategies to maintain the long-term community continuity, and whether they were considered to be a threat, and therefore, a priority for continuity or for change. Based on these factors, a heuristic model was developed to visualise how attitudes towards MRE developed based on local contexts. Although complex interplays of local factors were observed, support for MRE development was largely based on its perceived local socio-economic benefits and perceptions of minimal environmental disruption.

To incorporate local attitudes into decision-making, a place-based approach instead of a technology-based approach was advocated in which community priorities becomes the first focal point of siting processes. This approach is based both on the identified importance of local context for engaging the community and on ensuring appropriate siting based on engagement processes in which communities are appropriately represented and processes are tailored to local circumstances. An added important benefit from such an approach is that it allows for the inclusion of local knowledge and expertise in MRE siting.

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Chapter One: Introduction - Attitudes towards marine renewable energy in island communities

1.1 Marine renewable energy siting in the UK

In the last few decades, growing concern about the depletion of fossil fuels and impacts on the environment has led governments around the world to introduce measures to reduce the emissions of greenhouse gasses and mitigate the impacts of climate change. In response to these threats, commitments were made in the EU to achieve by 2020 a 20% reduction in EU greenhouse gas emissions from 1990 levels; a 20% improvement in the EU's energy efficiency; and raise the share of energy consumption produced from renewable sources to 20%, as set out in the Renewable Energy Directive (European Commission, 2014). In its Climate Change Act 2008, the UK Government has set targets to cut CO₂ emissions by 80% by 2050, while ensuring reliable energy supplies, competitive energy markets, and affordable energy as part of a transition to a low carbon energy society (DTI, 2007).

Further commitments were made in the UK to ensure that an overall 15% of energy demand is met from renewable sources by 2020, with individual, more ambitious targets being set by the devolved administrations. Northern Ireland has set a 40% target and Scotland a 100% target for renewable energy (RE) by 2020 (DECC, 2011a). To achieve these targets, the UK must increase RE deployment.

Marine Renewable Energy (MRE) technologies in the form of wave, tidal and offshore wind, are expected to make substantial contributions to achieving future RE targets, particularly beyond 2020. Wave and tidal energy, for example, have been assessed to have the capacity to provide at least 20% of total UK electricity demand (DECC, 2013a), and the total offshore wind generating capacity in UK waters is estimated at around 8 terawatt-hours (TWh) of electricity annually, enough to fulfill the electricity demand of around two million homes (Renewable UK, 2015).

However, it has long been established that increasing the deployment of RE technologies is not an unproblematic process. At a global level, the advantages of RE are largely undisputed, and, on the whole, attitudes towards RE (including wind energy) are positive, with approximately 80% of people in the UK supporting RE in general (Bell *et al.*, 2005; Demski, 2011; Devine-Wright, 2005). Policy-makers and technology developers thus often present RE as a solution to fossil-fuel related problems such as environmental degradation and climate change. As a result of these potentially beneficial qualities, some local environmental disruption is often considered acceptable because the impacts of RE developments must be set against the wider benefits to society (Elliot, 2000). However, public opposition to local siting of RE developments on the grounds of visual, noise and wildlife impacts - and support for such objections in local planning systems - have long been recognised as major barriers to onshore RE projects (Cass & Walker, 2009; Haggett, 2011a; Haggett & Vigar, 2004; Upreti, 2004; Van der Horst, 2007; Wolsink, 2007b). At the local level, the shift towards RE thus seems to be less benign (Jaccard *et al.*, 2011), and, as Wolsink (2007a) argues, '*the key question is not whether national environmental policies directed at renewables are accepted, but rather whether individual renewable energy schemes themselves are accepted* (p. 1191)'. As a result, peoples' attitudes must be examined at the level where these decisions are taken: the local level.

Because the local level for MRE deployment is offshore, in areas used by fewer people, there often is an implicit assumption that these technologies are 'out of sight and out of mind' and therefore a panacea for siting-related issues. However, research suggests that placing developments offshore is not necessarily problem-free, and that similar problems may arise as those experienced with onshore technologies (Bailey *et al.*, 2011; Haggett, 2008). MRE in this study refers to wave, tidal, and offshore wind technologies. This broad conceptualisation of MRE allows for elicitation of the many factors that may shape attitudes. Because no dominant design for wave and tidal devices has yet emerged, their impact may vary widely. For example, they

technologies can be visible or less visible and have different physical characteristics that help them blend into, or cause them to conflict with their surroundings. Offshore wind was included because there are dominant turbine designs, and their potential impacts are much more documented. This wide definition complements the exploratory nature of this research and the rapidly-evolving nature of the industry.

The UK's ambitious aspirations for the deployment of MRE creates a strong imperative to investigate attitudes towards MRE developments and understand the possible effects of MRE on places where MRE developments are likely to be situated to avoid further opposition. Furthermore, understanding reasons for opposition and support to MRE developments can contribute to maintaining support when scaling up this new industry (McLachlan, 2009).

The often sparsely populated island groups around the UK have some of the country's richest MRE resources, as these locations are characterised by strong winds, tidal forces and wave resources (BERR, 2008). As a result of the shifting geographies of energy production and supply, from the centre to the periphery, island communities may well be a key arena for future offshore RE generation. Furthermore, islands are often on the edge of nations and their economic, political and social infrastructures and somewhat out of sight, so out of mind, making them potential sites of innovation or stagnation (Baldacchino, 2006). This makes island communities an interesting and suitable setting for investigating attitudes towards MRE.

The special relationship of island communities with the sea has been recognised. For example, Baldacchino (2006) and Hayward (2012) claim that the marine spaces surrounding islands become part of the cultural habitats of islands. Hayward (2012) further coined the term 'aquapelagos' and argues that the marine spaces between and around island groups are 'utilised and navigated in a manner that is fundamentally interconnected with and essential to social groups' habitation of land (p.5)'.
Furthermore, island communities are often strongly dependent on activities in the

marine environment, and a variety of local stakeholders use the marine environment intensively.

Island communities historically have strong connections to the sea, and 'due to their unique geographical nature, islands form unique cultural habitats' (Jennings, 2010, p.1).

The above suggests a land-sea continuum in which marine spaces between and around islands become fundamental parts of the local area. Connections are created by human interactions with these spaces through fishing and aquaculture, but also through more emotional human interactions such as appreciation of land, seascape and recreation. Crucial to investigating MRE attitudes is the idea that island communities face different threats and challenges to other areas due to their geographical, social, economic and political distances from more centrally-located areas. For example, island communities are often situated at the end of national energy distribution networks and face greater threats to energy security. The unique position of peripheral areas is underlined by the Renewables Directive (Directive 2009/28/EC), which indicates that peripheral regions, such as island regions or areas with low population density, should benefit from reasonable connection costs to ensure they are not unfairly disadvantaged in comparison with energy producers in more central areas. (European Commission, 2009a). Furthermore, MRE has been identified as having potential economic, social and environmental benefits to these places (MERiFIC, 2013), as it may create jobs and business opportunities and improve energy provision.

Based on the above, it is thus likely that island communities will become a key arena for achieving RE targets. As a result, it is necessary to have a knowledge base about how MRE technologies are perceived in these communities, and what shapes responses, to prevent the siting issues experienced with onshore technologies.

1.2 Research to date

1.2.1 Understanding attitudes towards MRE

Despite the expected increase in the deployment of MRE, apart from a general public attitudes tracker conducted in the UK which found generally positive attitudes towards MRE (DECC, 2014a), little research has been conducted about attitudes towards MRE locally (Demski, 2011). Exceptions to this are Bailey *et al.* (2011), who conducted a quantitative study of public opinions on a test site for wave energy in the UK. The study found that spatial separation does not make wave-energy technologies entirely 'out of mind' and because wave energy is unlikely to be well understood for several years. Therefore, public attitudes may shift as more information on the negative and positive effects of wave energy becomes available. Alexander *et al.* (2013) examined fishers' attitudes towards MRE and found that awareness of a nearby offshore wind development was the dominant factor for influencing MRE attitudes. Despite concerns regarding perceived impacts and mitigation of fishing impacts, these studies found predominantly positive attitudes for local developments.

Often, studies investigating attitudes towards different MRE technologies approach the issue through social or psychological theory approaches. West *et al.* (2010), for example, examined MRE from a cultural theory approach and investigated how public environmental perceptions are informed by cultural and ideological identities. The study found that public opposition is most vocal at the local and regional levels, but that the rigidity of cultural theory is not sufficiently sensitive to local values and attitudes. McLachlan (2009) found that stakeholder responses towards MRE are in part related to the symbolic interpretation of technologies and the environments they are placed in, which are multiple and diverse, giving rise to symbolic logics of opposition and support. Devine-Wright (2011a; 2011c) examined MRE from a place attachment perspective and concluded for a tidal energy case in Northern Ireland that the public were

predominantly positive and supportive of the project, and that the project enhanced place attachment instead of disrupting it.

Exceptions to the research based on strong theoretical approaches are Kempton *et al.* (2005), who analysed values, beliefs and logics of supporters and opponents of offshore wind, and identified important value differences; and Haggett (2011a), who draws together from the wind energy literature several common factors that influenced responses: the role of visual impact, place attachments, lack of tangible benefits, developer/outsider and community relationships, and the role of planning and decision-making systems. The studies generally agree that, despite positive signs towards acceptance, public concerns about the effects of MRE technologies should not be overlooked when developing strategies to expand the sector, because, as suggested by Bailey *et al.* (2010), negative perceptions may act as a catalyst for opposition to RE siting by local communities, in particular when they relate to locally-significant employment sectors.

From analysing the literature, it seems that there has been more focus on identifying attitudes and explaining opposition, or employing strong theoretical standpoints to investigate particular aspects of MRE, rather than investigating in-depth what influences attitudes towards MRE locally. In addition to limited evidence on attitudes towards MRE locally, little is known about what informs people's evaluation of MRE developments and the value systems that people employ to evaluate the diverse, uncertain and sometimes intangible local characteristics and livelihoods that MRE developments affect (Bailey *et al.*, 2011). This research is particularly focused on values, which are preferences about physical and social surroundings based on what individuals find personally important. Values influence attitudes to almost everything individuals encounter, including how RE developments are evaluated (Chan *et al.*, 2012), because we express them in relation to those things that are important to us.

However, to date, no in-depth investigation has taken place on interactions between values and attitudes towards MRE developments.

This thesis addresses this gap by providing an in-depth investigation into the ways MRE is perceived in island communities in the UK and identifying values that inform attitudes. This will provide a clearer picture of the values that need to be considered in MRE siting. Only when more is known about these specific attitudes will it become possible to investigate how these opinions should be represented in decision-making (Cass & Walker, 2009). In the RE literature, locality has been identified as important for understanding support and opposition to RE developments (Devine-Wright, 2011b; Wolsink, 2007b). The relative isolation of islands, their distinctive cultural history and identity and desire for autonomy, allows for this strong focus on locality (Appadurai, 1996). This makes the focus of this study on island communities not only important for understanding attitudes locally but also wider debates on MRE siting.

To address this research gap, this study is broadly guided by a place-based perspective, to allow for attitudes towards MRE at an abstract level to interact with concrete local factors such as the place-based values and beliefs that developments may affect. Place-based approaches have received considerable attention in the RE siting literature, varying from the highly criticised concept of Not In my Back Yard (NIMBY), which refers to the paradox that occurs when people support certain technologies in general but oppose their development locally (Johnson & Scicchitano, 2012), to 'place-protective action', which arises when new developments disrupt pre-existing emotional attachments and place-related identity processes (Devine-Wright, 2009b). An important concept within place-based approaches is place attachment, which refers to the (usually positive) emotional bonds between people and places (Hummon, 1992; Low & Altman, 1992) based on physical setting, activities and meanings (Relph, 1976).

The inclusion of physical setting and activities as well as meanings in place attachment allows for investigating local attitudes in ways that include local contextual factors as well as broader values. Place attachment has been widely applied to RE siting, for example by Devine-Wright and Howes (2010); Devine-Wright (2009a); and McLachlan (2009), who agree that local RE developments can impact people's emotional bonds with places and therefore negatively affect their place attachment, causing opposition. Although a place attachment perspective holds promise for understanding attitudes towards MRE based on why people respond to particular changes in specific places, the literature remains relatively vague about how different components of place operate in practice. This research will contribute to increased understanding of this process by exploring how different components of place attachment interact when forming attitudes towards MRE developments.

1.2.2 Public engagement in MRE decision-making

Merely understanding local attitudes towards MRE will not address the siting issues that often occur when RE projects are proposed. To address these issues, attitudes must also be incorporated into decision-making processes. To achieve RE targets, the importance of decision-making processes has been identified, and engagement of those potentially affected by a development is widely regarded as critical for increasing the deployment of RE in the UK (Devine-Wright, 2011b; Haggett, 2011b; Whitmarsh *et al.*, 2011). Thus, it has long been recognised that decision-makers need to satisfy the public that they are taking account of their concerns, and with these their underlying values, beliefs and feelings (Vining & Tyler, 1999).

The public's right to participate in environmental decision-making is set out in the Aarhus Convention and reflected in UK policies and regulations. For example, the UK's Planning White Paper states that 'there must be full and fair opportunities for public consultation and community engagement' (HM Government, 2007, p.20). Because public engagement in decision-making is a key requirements for RE deployment, a

suite of policies exist in the UK aimed at safeguarding the right of citizens to be involved in decision-making processes for MRE developments, for example when assessing the environmental impacts of projects and during the consenting process.

Although changes have been made to improve UK decision-making processes, for example through the Localism Act, which aims to increase the citizen responsibility and participation, RE consenting systems still attract considerable criticism. Devine-Wright (2011d), for example, questioned some of the changes in the UK planning system and indicated that they do not further public engagement. The research identified that in an attempt to speed up consent in order to achieve RE targets, public enquiries were removed from the consenting process for RE projects of national importance, closing down 'institutional spaces for challenging the status quo' (Cowell and Owens 2006, p.405). Devine-Wright (2011d) further argues that the creation of a spatially distant political arena for decision-making away from affected areas restricts the ability of local residents to question the merit of projects and privileges the national interests lying behind government policies. The presumption in favour of granting consent for RE projects promoted by the UK government is testament to this (DCLG, 2011).

Importantly, in a MRE context, this happens against a background where there are few coherent regulatory frameworks specifically designed for MRE deployment, in part reflecting the immature stage of the industry and a situation in which there is often insufficient evidence about the potential impacts of MRE developments. Furthermore, early engagement with communities is seen as especially important in facilitating planning for RE facilities, where community objections at the planning stage can form a significant impediment to proposals based on experiences with onshore RE (DTI, 2007).

Despite the importance of stakeholder engagement and policies and the regulations in place to safeguard people's rights to participate, public engagement with (large-scale) energy projects has remained problematic in the UK. The main reason for this is that RE siting decisions often follow a top-down decide-announce-defend model, which does not facilitate constructive public contributions to the planning process (Bell *et al.*,

2005; Haggett, 2011b; Wolsink, 2000). Wolsink (2000) argues that in this approach, the role of the public is to provide criticism instead of constructive critique or dialogue.

Several alternative approaches have been suggested and Halliday (1993) advocated a consult-consider-modify-proceed model wherein developers involve interested parties in the siting process from the beginning to ensure ownership of decisions and reduce opposition. Bell *et al.* (2005) speculated that collaborative processes also encourage supporters into engagement processes, resulting in a more balanced consultation process. As a consequence, Bell *et al* argue that policy makers and developers need to consider more carefully how developers can successfully engage with local communities.

This has prompted extensive research into public participation in the planning system regarding both onshore and offshore RE (Devine-Wright, 2011d; Haggett, 2008; Haggett, 2011b; Van der Horst, 2007; Wolsink, 2011). A Good Practice Review on community engagement with wind energy identified several common factors across seven European countries, including the importance of: wide-ranging and innovative methods of engagement; methods that facilitate dialogue; uptake of community opinions; maintained engagement through all stages of development; the use of a wide ranging definition of affected public; and the identification of tangible benefits (Aitken *et al.* 2014). O’Keeffe and Haggett (2012) demonstrate that in addition to delays in technology advancement and grid connection, stakeholder opposition may significantly hold up deployment and the achievement of UK targets. Haggett (2008; 2011b) discusses the politics, planning and public perceptions associated with offshore wind farms and argues that issues such as: the auspices under which stakeholders are consulted; inadequate consultation mechanisms; and involvement of local people must be addressed in the offshore environment if the expansion of offshore renewables is to succeed (Haggett, 2008).

Public engagement with RE was also found to be an important factor for improving decision-making (Haggett, 2011b; Devine-Wright, 2011d). Several advantages of

including the public in decision-making have been identified, including: to achieve better siting decisions (Sorensen *et al.*, 2002); more acceptable outcomes for communities (Haggett, 2011b; Kempton *et al.*, 2005); and the application of local knowledge (de Groot *et al.*, 2014; Royal Commission on Environmental Pollution, 1998) alongside upholding principles of justice (Gross, 2007). Acknowledging that public engagement is not an easy solution to RE siting issues, Walker and Cass (2007) and Warren and McFadyen (2010) nevertheless found that projects where communities are actively engaged tend to be more successful, as they resulted in less opposition and increased local benefits.

Engaging with potential host communities could result in better siting decisions and mitigate siting-related conflicts that could damage an emerging MRE industry. Because of the early stage of development of the MRE industry and the evolving regulatory frameworks for MRE consenting, an investigation into incorporating local attitudes in decision-making in areas where MRE are likely to be deployed is not only timely, but also necessary to ensure that local attitudes are adequately represented once more concrete developments are proposed.

1.3 Research aim, objectives and research question

As discussed above, investigating attitudes towards MRE in small island communities, exploring the factors underlying support, and incorporating attitudes into decision-making processes is important for the following reasons: appropriate MRE siting; avoiding large negative consequences for host communities; and avoiding conflicts that could damage the development of the MRE sector. Such issues nevertheless raise many questions: What attitudes exist in small island communities towards becoming a host community to an MRE development, and what values are shaping these attitudes? What are the perceptions of the likely social, economic and environmental impacts of

developments on the islands? How can these attitudes be incorporated into existing stakeholder engagement processes? What are the issues with engagement processes? What are the preferred ways of engaging host communities with MRE? Does this improve public participation? What can the concepts of values and place attachment add to our understanding of attitudes towards marine RE siting, and how can these contribute to better applied public participation with MRE?

Accordingly, the overall aim of this thesis is to investigate possible host communities' attitudes towards MRE development, the factors and values that drive attitudes, and how these can be represented in marine energy decision-making. Five corresponding objectives will be addressed:

1. examine attitudes towards MRE in small island communities
2. investigate the factors and values shaping these attitudes
3. ascertain how communities view MRE with regard to their place attachments
4. investigate the inclusion of community attitudes into MRE decision-making
5. assess the possible contributions to practice that incorporating community views could bring to policy and planning procedures for MRE in the UK.

In so doing, this research extends previous work on attitudes towards MRE technologies in the UK and internationally, the literature on place attachment, and MRE policy and practice in the UK.

1. Thus far there has been little research on attitudes towards MRE in small island communities, the likely host communities of MRE developments in the UK based on resource assessments. Furthermore, little is known about how MRE attitudes can be incorporated into decision-making processes. This research extends the existing knowledge base on MRE siting.

2. This study contributes to the literature on how attitudes to MRE develop and the factors underlying these attitudes, thus providing insights into why some projects may be supported and others opposed.
3. A further contribution will be made to the place attachment literature, as this study increases insight into the *processes* that shape place attachment in an RE context, which have thus far remained unclear despite significant research into place attachment.
4. The final contribution lies in the field of stakeholder engagement and how the inclusion of community attitudes can contribute to MRE decision-making processes. The research is delivered at an appropriate time to benefit a developing MRE industry, leading to a further possible practical contribution to policy and planning procedures for MRE. The research provides valuable lessons for an emerging MRE industry in terms of stakeholder engagement, to ensure planning procedures that are most appropriate for this type of community.

1.4 Overview of the research methodology

This research uses a mixed-methods approach. The study takes a case study approach because MRE development is in its infancy in the UK; therefore, relatively few communities have experience with MRE deployment in their local area. Island communities were singled out for this research because of their relative isolation (the potential to be studied in relative isolation), and their close connection with the marine environment. Three communities were selected based on three main criteria: (i) the availability of resources in the area; (ii) experience with MRE development; (iii) their location in the UK and the government authorities under which consenting processes take place.

The Orkney Islands were selected because they have the most experience with MRE because of the European Marine Energy Centre (EMEC), and the deployment of

various devices during the past decade. The Shetland Islands were selected because of a proposed wave development¹, but also community tidal and onshore wind projects. The Isles of Scilly were selected as the final study area because, although it did not have a planned MRE development or much experience with MRE, the area has high MRE resources and falls under the English consenting regime, whereas the Orkneys and Shetland fall under Scottish jurisdictions.

These case studies thus provide an opportunity to investigate MRE in locations with different levels of experience with MRE located in different UK government administrations. It also allows for an understanding of attitudes towards MRE and the incorporation of attitudes in different local and policy contexts.

To collect data, a questionnaire survey was distributed in the communities between September and November 2012. The survey included questions on: place characteristics and attachments; attitudes towards different types of RE in general and specifically for local MRE developments; opinions on stakeholder engagement strategies, and willingness to participate in activities. The survey data was entered into SPSS and statistical analyses, including Chi Square and Spearman's Rank correlation coefficient tests, were applied to establish trends. In addition, 44 one-on-one or small group interviews were conducted, including 20 with community members to gain further insight into the survey data and ask additional questions about stakeholder engagement in their communities, and 24 with MRE stakeholders including developers, authorities, and the community sector. Interview topics included stakeholder engagement experiences and techniques, and how local attitudes could be incorporated in decision-making. The interviews were transcribed and coded (first inductively and then deductively) and imported into N-Vivo, a qualitative data analysis package, and thematic analysis was applied based on comparison and contrast, as suggested by Strauss and Corbin (1998). The methodology was tailored to suit each

¹ The developer of the wave project is currently facing financial difficulties and is under administration.

study site, for example, using tailored recruiting methods and interview approaches. This is further discussed in Chapter 3, which describes the research methodology.

1.5 Structure of the thesis

The thesis is structured as follows. Chapter Two investigates the key themes discussed above and reviews the relevant academic literatures and theories. This provides an overview of current knowledge about attitudes towards MRE and the values underlying attitudes, place attachment, and the inclusion of stakeholder opinions into decision-making. Furthermore, the chapter identifies several gaps in the literature, which provides further context for the study, and establishes the theoretical approach taken.

Chapter Three describes and justifies the methodology adopted for the research, including the case study approach, survey and interview techniques, sampling, data analysis, and the positionality of the researcher.

Chapter Four provides an in-depth description of the case study sites: Orkney, Shetland and the Isles of Scilly. The chapter also reviews the political context of MRE deployment in Scotland and England, and gives an overview of historical development, local population, and the current socio-economic conditions in each area, as well as of RE development in the area.

In Chapter Five the first half of the results are presented. The chapter identifies attitudes towards MRE in the case study sites, and identifies the factors underlying the attitudes. It also describes how various factors within the communities researched contributed to support or opposition for MRE developments. In particular, the chapter focuses on people's relationships with places and how these interact with MRE attitudes.

Chapter Six moves away from attitudes towards MRE towards stakeholder engagement and presents the second half of the data. The chapter explores the dynamics of community engagement in MRE decision-making in the case study sites and identifies key local considerations when engaging in island communities.

Chapter Seven brings together the findings of the research and discusses them in relation to the existing literature, theory and practice. The findings of the study highlight the importance of local context for understanding attitudes towards MRE but also for incorporating them into decision-making. The discussion is extended into place attachment, and contributes to academic debates on how the place, person and process components of place attachment interact in the formation of attitudes towards MRE.

In Chapter Eight, the findings from the study are summarized. In addition, the insights from the preceding chapters are brought together to answer the main research questions and to highlight how this research can help inform policy and practice of MRE development. The thesis finishes by outlining the study's relative strengths and weaknesses and discussing future research directions.

Chapter Two: What determines attitudes towards RE siting and how can these attitudes be incorporated in decision-making? A review of the literature

2.1 Introduction

As a first step towards exploring attitudes towards MRE, the values underlying these attitudes, and their representation in decision-making, this chapter reviews the main relevant literature and theories for investigating these topics. Section 2.2 starts by exploring the concepts of values and attitudes and explains how the two are related to RE development, in particular what makes people oppose RE developments. In Section 2.3, the shift from NIMBY explanations to place-based theories is discussed. Section 2.4 then explores theories of people's relationship with places and introduces place attachment. Section 2.5 discusses place attachment and attitudes in the RE siting literature. In Section 2.6 the second part of the review examines how these attitudes can be incorporated into decision-making processes. Section 2.7 discusses why it is important to engage the public in decisions concerning RE siting, and is followed by discussion of the methods available for engagement. Section 2.8 distils the main points of the chapter and identifies gaps in the existing literature.

2.2 What determines attitudes towards RE siting? Values and Attitudes

2.2.1 Values

The concept of values is closely related to attitudes and norms (Brown, 1984, p.55), both of which are concepts regularly used when researching RE issues. For a comprehensive understanding of RE attitudes, it is important that the underlying values supporting those attitudes are understood. Yet, how are values defined? The Oxford

Dictionary Online (2012a) defines values as: (i) 'the regard that something is held to deserve; the importance, worth or usefulness of something' or (ii) 'principles or standards of behaviour; one's judgement of what is important in life'. From the above definition, two different aspects of values can be distinguished, one related to worth, price and utility, and the other to the 'preferences, principles and virtues that we (up)hold as individuals or groups (Chan *et al.*, 2012, p.10). Values are the thus layers of beliefs and influences that support attitudes to almost everything: they are a set of propositions about who we are, what we seek to achieve, and how we relate to the world. As the definition below demonstrates, values can relate to both worth and standards of behaviour. These, however, are very broad descriptions and it is often unclear what is precisely meant by the term values.

In economic terms, value is related to willingness to pay for a certain good or service under scarcity. Brown (1984) therefore describes value as the 'relative importance or worth of an object to an individual or group in a given context' (p.233). This is a commodity-oriented view, and market prices are a good example of the expression of economic value. The commodity-oriented view of values is increasingly applied to how natural resources are assessed, and has resulted in an increase in research on the commodification of our surroundings. One increasingly popular approach is Ecosystem Services Valuation (ESV), which aims to assess the contribution of ecosystem services to meeting particular goals by eliciting benefits that ecosystems bring to society and assigning values to each component (Costanza *et al.*, 1997; Millennium Ecosystem Assessment, 2003)². With a primary focus on human welfare, the Ecosystem Services approach is a response to the failure of society to incorporate the values of ecosystem services and biodiversity into economic decision-making, which has resulted in the degradation of natural environments. Proponents of Ecosystem Services consider that

² Ecosystem services are the benefits that ecosystems bring to society, and include provisioning of food, water, regulating services, supporting services, but also cultural services, such as recreational, cultural and other nonmaterial benefits.

demonstrating the full range of ecosystem service values will increase awareness and commitments to the sustainable management of natural resources (TEEB, 2010).

In the UK, the approach has been adopted by the Department of Environment, Food and Rural Affairs (DEFRA), because it considers that accounting for the costs and benefits to the natural environment will 'provide outputs or outcomes that directly and indirectly affect human wellbeing, and these considerations can link well into taking an economic approach' (DEFRA, 2007, p.3). This approach is suggested to help protect the natural systems that support economic, social and personal well-being.

However, the ecosystem services approach has received considerable critique for failing to achieve this (More *et al.*, 1996), and further commodification of the environment is feared. Although an economic approach clearly serves a purpose, viewing ecosystems and their conservation through the market only captures part of the total value of ecosystems (Gee & Burkhard, 2010; Rees, 1998; Vejre *et al.*, 2010). The environment, whether framed as an ecosystem, nature, landscape or place, is where values come together, including natural, economic, recreational, cultural and social values. Gee (2013) explains the two main shortcomings of Ecosystem Services in relation to offshore wind. Firstly, when asked to value the environment, different rankings can occur. This causes problems when values are weighed against each other (e.g. monetary and non-monetary values)³. Secondly, some values are not specific in their distinction between assigned value and the object of value (Gee, 2013). The absence of clear operational units when assessing certain services hinders a comprehensive assigning of functions and benefits to services, because there is no clear relationship between intangible values that might be assigned to an ecosystem and other, more tangible, services (Gee & Burkhard, 2010; Vejre *et al.*, 2010). This

³ Monetary valuation assigns value in monetary units, whereas non-monetary valuation examines values through qualitative and quantitative measures other than money (Millennium Ecosystem Assessment, 2003).

leads to questions such as: what is being valued, and what value categories are applied (Gee & Burkhard, 2010; Haines-young & Potschin, 2007; More *et al.*, 1996)? An example from the RE siting literature clarifies this point: When people appreciate a view, do they appreciate the physical landscape that makes up the view, their knowledge of that landscape or the simple fact that it exists (Farber *et al.*, 2002; Gee & Burkhard, 2010)? The inability to answer these questions poses a fundamental problem for using ESV when exploring attitudes towards hosting RE developments and underlying values.

Here, factors related to the person that enjoys the view, such as social and cultural experience, norms and beliefs systems, and style of living also become important. These factors are indirectly related to the ecosystem, but must be considered as much as the relationship between the person enjoying the view and the ecosystem. This includes the personal and social forces that influence demand for a nice view (Gee & Burkhard, 2010). The seemingly objective base of scientific evidence or commodity-based views of nature as the basis for decisions holds an obvious attraction to decision-makers (Gee, 2013). However, in situations where values cannot be expressed by other means, emotion becomes an issue. Gee (2013) indicates that more often than not, the currency is emotional attachment to intangible values such as the aesthetic or spiritual qualities of a place or landscape. This point is illustrated by the often emotional, heated arguments around RE siting, where different interest groups compete over one or multiple resources. 'Although they can be difficult to identify and even more difficult to understand in terms of their relative merit, these other currencies cannot be neglected' (Gee, 2013, p.66).

Because people and the environment are linked together through beliefs and convictions which occur in specific contexts (Gee & Burkhard, 2010), meaning emerges in the abstract layers, such as people's attachment to places that do not relate directly to the natural environment. For an ESV approach to function, the various values given to biophysical ecosystem components must add up to overall value. Disregarding the

abstract layers and their value would strongly reduce the comprehensiveness of an ESV approach. However ESV fails adequately to acknowledge the importance of abstract layers and context. It also does not take into account the implications for the natural environment of changes in human well-being, for example the socio-economic impacts of RE deployment or the knock-on effects from ecosystem service trade-offs where it is not possible to make a direct link between ecological structures and benefits.

These abstract values are important when examining acceptability of RE technologies. Therefore, the ESV approach was considered incapable of eliciting and understanding the values that drive attitudes towards MRE for this study. This requires understanding at multiple levels, including the individual, community and societal levels. Human behaviour is driven by a hierarchy of biological, social and psychological goals that range from short-term goals to more long-term aspirations (More *et al.*, 1996). Here, values refer to the standards of behaviour that have evolved to help humans ensure their survival and secure welfare and survival for wider groups (Schwarz, 1992; Schwarz & Bilsky, 1987), the second part of the Oxford Dictionary definition (2012a) provided earlier. Values are durable, relatively resistant to change, influence attitudes and behaviour at a general level, and are independent of the specific nature of a situation (More *et al.*, 1996). These values then act as standards for decision-making, particularly when higher goals such as the preservation of society are concerned.

Many researchers have investigated values and linked them to human behaviour, resulting in many definitions of values in different research fields. Schwarz and Bilsky (1987, p.551) provided a comprehensive definition identifying values as ‘concepts or beliefs about desirable end states or behaviour that transcend specific situations, guide selection or evaluation of behaviour and events and are ordered by relative importance’ (551). Taking into account the different definitions and descriptions of values set out above, this research defines values as those things about physical and social surroundings that individuals find personally important. Operating largely at a subconscious level, they are tied in with people’s emotions rather than rational

capabilities. The more deeply-rooted the issue, the more likely individuals are to care about it, defend it, protect it, and consider decisions affecting it (Gee, 2013). As a result, values can be associated with strong emotions, and understanding underlying values often enables improved understanding of their attitudes to RE developments. However, some authors argue that attitudes, beliefs and behaviours cannot be understood in isolation and suggest that they must be understood in the context of more general worldviews. They indicate that only within this context can researchers gain a deeper insight into people's beliefs about the environment and related issues (Meader *et al.*, 2006).

One approach based on these assumptions is cultural theory, a framework for understanding how and why different societal groups form judgements about issues. Rooted in Mary Douglas' anthropological study of ritual defilement, cultural theory produces 'a crude typology intended to account for the distribution of values within a population' (Douglas, 2007, p.2). In doing so, it aims to take into account the context of action and grounding meanings in policy and economy (Tansey & O'Riordan, 1999). The approach advocates that understanding people's specific attitudes must be done in the context of their broader worldviews, which operate as a lens through which individuals see the world. Four social groups are defined as driving attitudes and actions; individualism, hierarchism, fatalism and egalitarianism (Meader *et al.*, 2006)⁴, which represent values and beliefs related to the cultural (Douglas, 1997),

⁴ People with an individualist worldview conceptualise the world and environment in competitive and enterprising terms, in which nature is predictable and mastered by humankind. Hierarchists have a social life that is highly stratified, and are of the conviction that divisions of power and authority should be based on one's position in the hierarchy. They believe that the environment is essentially stable, but that it becomes vulnerable if people exploit it too much, which can lead to catastrophe. Fatalists assume minimal control over their lives and believe the social system is unpredictable and unfair. They view the natural environment in the same way, and assume they have no control over environmental catastrophes. Therefore, any benefits of the world's resources that come their way should be taken advantage of. Finally, egalitarians believe that social environments should be based on equality instead of hierarchy. This belief also applies to the natural environment, which should be treated with respect. Otherwise, disasters will happen (Meader *et al.*, 2006).

MEADER, N., UZZELL, D. & GATERSLEBEN, B. 2006. Cultural theory and quality of life. *Revue européenne de psychologie appliquée*, 56, 61-69.

environmental (Thompson *et al.*, 1990), as well as economic (Dake & Thompson, 1993) domains. West *et al.* (2010) investigating public perceptions of RE explored how cultural and ideological identities inform environmental perceptions. The authors found that public opposition is most vocal at the local and regional levels, and that the social segmentation proposed by cultural theory should not be seen as a substitute for engagement with affected communities to understand and accommodate their concerns. Despite cultural theory's potential for identifying and exploring the views of likely opponents or supporters, the rigidity of cultural theory does not take into account changes in social life and individuals swapping ideal types over time. It also fails to recognise the use of multiple discourses in one discussion and the difficulties of grouping society into stereotyped categories (Boholm, 1996; Sjöberg, 1998; Thompson *et al.*, 1990; West *et al.*, 2010). Although cultural theory could provide broader social classifications that may be useful for structuring the ways in which issues are perceived and for exploring parameters of debates, it is insensitive to the local issues that may affect values and attitudes.

A similar approach is social representation theory, a socio-psychological approach which instead of individual classification based on a pre-defined worldview, focuses on the social construction of objects. Developed by Moscovici (1963), it represents a set of values, ideas, beliefs, and practices that are shared among groups. Social representations are then the collective explanations that people give about social objects for the purpose of behaving and communicating (Moscovici, 1963). It facilitates understanding of how (in this case) RE technologies are socially constituted. Its basic assumption is that knowledge transfers from 'science' to 'common sense' through communication processes, and that opponents and supporters use different language to create arguments about RE developments (Devine-Wright & Devine-Wright, 2006). Although this approach is beneficial for investigating general attitudes, it still does not help the understanding of people's attitudes towards MRE in a specific location, which is what eventually could determine whether developments face opposition or support.

2.2.2 Attitudes

To return to the discussion on linking values to attitudes, if values influence attitudes, what defines attitudes? Attitudes are feelings concerning objects that are expressed by evaluating a particular entity with some degree of favour or disfavour (Eagly & Chaiken, 1993). Attitudes are positive or negative feelings concerning objects, people or events, and are less stable than values. They are an evaluation of something specific. For example, if saving the planet from harm is a value, then opposition towards oil extraction in a protected area is an attitude.

Attitudes are thus viewpoints, or mind-sets and in addition to being based on collections of feelings and beliefs. Attitudes are also based on experiences. Therefore, attitudes can change to fit circumstances in addition to influencing behaviour (Figure 2.1).

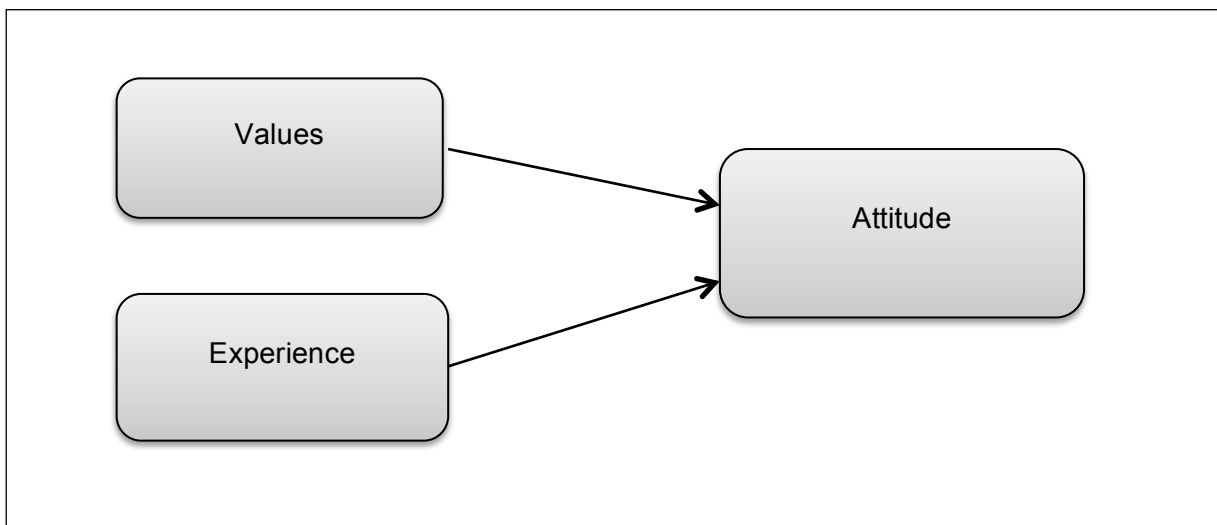


Figure 2.1 The relationship between values, experience and attitude

Social psychology has conceptualised the attitude construct to develop understandings of why individuals think, feel and act the way that they do. The most dominant framework is the three-component model of Rosenberg and Hovland (1960), who identify three components:

- A cognitive component (what people believe)
- An affective component (what people feel)
- A behavioural component (what people do) (Figure 2.2).

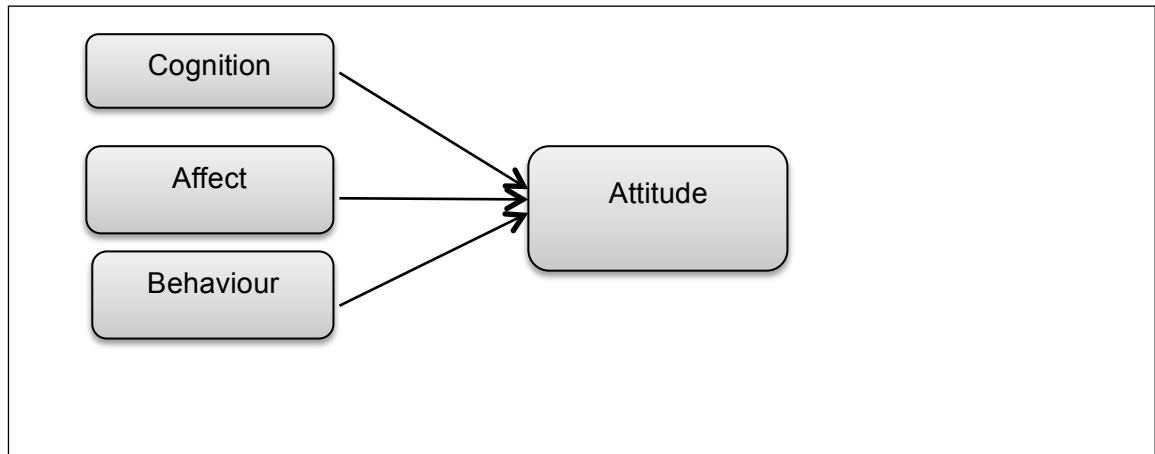


Figure 2.2 The three component model of attitude (adapted from Rosenberg and Hovland 1960)

The framework assumes that attitudes are unobservable, and can only be observed when manifested in beliefs, feelings and behaviour (Eagly & Chaiken, 1993; Fazio & Olson, 2003). For example, a positive attitude towards a holiday destination may be observable in favourable beliefs (I am looking forward to visiting this place again), feelings (visiting this place makes me feel happy) and behaviour (I am currently on holiday in this destination). Originally, it was argued that for evaluations to be made, all three components must be present, but several decades of research agreed that evaluations do not necessarily require manifestation of all components. Zanna and Rempel (1988), for example, simply regard attitudes as categorisations along an evaluative dimension. Based on the above, this research identifies an attitude as someone's position on a particular issue, comprised of ways of thinking, feelings, and behaviour.

Attitude changes occur when two or more values or beliefs contradict or when people are confronted with new information that does not match existing values or ideas. This

is called cognitive dissonance. Festinger (1957) developed a theory to explain people's preference for internal consistency, based on two hypotheses:

- Dissonance motivates people to reduce the dissonance and achieve consonance;
- In addition to aiming to reduce dissonance, people avoid situations and information which is likely to increase the dissonance.

A common cause of dissonance in a RE context is a person liking RE for its environmental benefits, but then learning about potentially harmful environmental impacts of a development. The person will seek consistency between their expectations that RE is good for the environment and its potential environmental impacts. Festinger (1957) indicates that the more factors that are personally valued, the greater the dissonance. Identification of factors that could cause dissonance when people evaluate MRE projects is therefore important, as people seek consistency between their expectations, values and their reality. If, for some reason, these do not match, it is likely that individuals will develop negative attitudes: possibly resulting in opposition.

2.2.3 What makes people oppose RE developments? Dissonant values

Dissonance also occurs between the values of individuals or groups and other groups. Many problems that arise in RE siting are caused by a clash of values in which values related to RE technology developments, and their benefits for society, clash with the values of those who have to live with the technologies.

One such clash relates to the spatial scale of developments and the extent of their impacts. The issues addressed by wind farms, such as climate change and energy supply crises, are removed from the contingencies of everyday life (Haggett, 2008). At a national and international level, discussions routinely centre on macro-economics,

energy, and climate change politics, whilst local-level discussions generally focus on risks, benefits and impacts for the local area. The perceived disparity between the global benefits of RE and its local effects would explain why only a quarter of contracted wind power capacity is actually commissioned in the UK, despite 80% public support for RE in general (Bell *et al.*, 2005; Glaeser, 2004; Haggett, 2008).

Furthermore, people who believe in the overall environmental benefits of RE are often concerned about the local environmental damage to landscape and wildlife (Haggett, 2010) and believe that limits should be placed on its development (Bell *et al.*, 2005; Wolsink, 2000). Most attitude-related research to date has focused on wind farms. Supporters of wind energy often do not do this without restrictions on their support, including impacts on visual amenity, the environment, wildlife, house prices and people (Haggett, 2010; Pasqualetti, 2001), or simply because they do not want to have a development in their 'back yard'. Kempton *et al.* (2005) analysed the values, beliefs and logic of supporters and opponents for attitudes to an offshore wind farm in Cape Cod and found important value differences, including: beliefs about viability of wind power; its appropriateness; and its environmental effects. Common motivations for opposing developments include: people's determination to protect aspects of landscape and wildlife or to protect places of personal significance (Haggett, 2010).

Another cause of dissonance is different values between developers and recipient communities. The 'siting' perspective is the predominant expert view on RE developments⁵ and is characterised by anthropocentric value systems and beliefs that humans can interfere with nature to meet wider social needs. Site developers, when proposing a development, focus on the objective features of potential locations, more associated with the worth and usefulness of the site, while playing down more subjective features such as symbolic or emotional associations. Other stakeholders may not necessarily share this value system, and may have more bio-centric, social and economic values (Devine-Wright, 2011b). Regardless, they are often local values.

⁵ Experts here being developers, national and local authorities, device developers, and industry.

Actors operating from different value systems can lead to clashes between stakeholders in RE siting. One case in point is the Gwynt y Mor offshore wind farm in North Wales, where local residents regarded the development as a threat to their community and pre-existing local values ascribed to the bay. The wind farm was perceived as ‘fencing of the bay’ and industrialising the beautiful scenery (Devine-Wright, 2009a).

Kempton *et al.* (2005) investigated the other side of the ‘clash’ and found that several basic value questions and trade-offs underlie the current debate on attitudes. For example the value of: protecting the ocean and keeping it free from human intrusion; cleaner air and less human infirmity and mortality; traditions like sailing and fishing; rights to local seascapes that residents assumed would be there forever. Trade-offs identified included: proceeding now with an imperfect process to start a clean industry versus first establishing proper procedures and more globally; and whether Cape Cod and the nearby islands are willing to absorb the negative impacts of the wind development now to set an example for mitigating climate change, a potentially far larger threat but one they cannot solve alone (Kempton *et al.* 2005).

The authors suggest that the debate would have a better chance of developing true engagement, perhaps even resolution, if these values and missing issues were debated more explicitly. The above are examples of how overarching value systems can cause value clashes in RE siting. The following section now focuses specifically on the literature on local attitudes and values.

2.3 Place related studies for explaining attitudes towards RE developments

Public opposition to developments has existed for a long time, and research into the topic spans hazardous waste siting (Sjöberg & Drottz-Sjöberg, 2001) nuclear siting

(Poortinga *et al.*, 2006), wind energy (Haggett & Futak-Campbell, 2011; Kempton *et al.*, 2005; Wolsink, 2012) and other types of RE. This resulted in burgeoning research into understanding public attitudes most often focused on opposition to developments. The studies suggest a distinction between approving RE at a more abstract level and how these RE values interact with local, more place based values and beliefs.

2.3.1 NIMBY explanations

A highly influential theory for explaining public opposition towards RE facilities (and other developments) has been the concept of 'Not in My Back Yard' (NIMBY). Broadly speaking, NIMBY relates to the paradox that occurs when people call for more public facilities, but then oppose their construction when they are located close to their homes (Johnson & Scicchitano, 2012), and includes including everything from prisons (Martin & Myers, 2005) to nuclear facilities and wind farms (Burningham *et al.*, 2006; Wynne, 1992). The term was first used by Emilie Travel Livezey in 1980 in an article on 'Hazardous Waste', and was popularised in Britain by Nicholas Ridley, Secretary of State for the Environment (Wood, 2011).

In an early review of the NIMBY literature Freudenberg and Pastor (1992) concluded that all studies share an attempt to explain the rationale for local opposition, and categorised NIMBY responses into three typologies:

- NIMBYism is born out of ignorance and irrationality (the public does not understand the real risks of a development);
- NIMBYism is selfish (tensions between wider social and environmental concerns versus local or personal impacts);
- NIMBYs oppose a development because they have well-grounded concerns about its impacts.

Over a decade later, Devine-Wright (2009b) investigated NIMBY explanations of RE siting. In addition to Freudenberg and Pastor's typologies he found that:

- NIMBY is a pejorative label for opponents of RE developments;
- NIMBY is a spatial explanation for opposition (assuming that proximity increases opposition).

Despite its initial prominence in explaining attitudes towards RE developments, the NIMBY approach is increasingly contested. The main critique is that it is often used to dismiss opposition as 'self-interested or irrational citizens who misuse the democratic process' (McAvoy, 1999, p.1). An investigation by Burningham (2000) into NIMBYism and the discourse used to describe opposition identifies a shift from a focus on understanding individual motives for opposition towards analysis of the social causes and implications of local opposition. The study concludes that use of NIMBY for local protesters would not be correct considering the diversity of concerns that are raised, factors that constrain local responses, and that attempts to protect one's local area are not only inevitable, but perhaps even environmentally positive (Burningham, 2000).

Others argue that NIMBY characterizations are 'highly subjective and politically charged' (Mcclymont & O'Hare, 2008, p.332), are deployed politically to undermine the legitimacy of opponents (Devine-Wright, 2007), and are used to dismiss often well-founded local objections or discredit the activities of those who mobilise (Burningham, 2000; Devine-Wright, 2011d; Mcclymont & O'Hare, 2008). This has resulted in NIMBYism being described as a 'depreciative interpretation and characterization of opposition to a facility: an attitude of objection to the siting of a facility in the proximity ("backyard"), while by implication raising no such objections to similar developments elsewhere' (Wolsink, 2012, p.12219).

Wolsink (2007a) argues that 'A good policy theory should acknowledge the complexity of a planning situation rather than simplify it on the basis of questionable assumptions (p. 1200).' Opposing a development because 'some locations – no matter how near or

distant – are simply inappropriate for wind farm development’; is quite different from opposing something just because it is ‘in your backyard’ (Haggett, 2010, p.3). Stronger evidence is thus needed to show that motivations to oppose are selfish (Wolsink, 2012). Criticism has also been expressed about the imprecise and simplistic way the term is often used by scholars and policy makers that has resulted in a tendency to call all opposition NIMBY (Wolsink, 2007a). Consequently, the concept has lost a large amount of its explanatory value (Burningham *et al.*, 2006; Sjöberg & Drottz-Sjöberg, 2001; Wolsink, 2007a).

The announcement of a project creates interest and starts a process of thinking (Wolsink, 2007a). Instead of assuming that opposition is selfish, people naturally pay more attention to events that are self-relevant and induce stronger emotional responses (Devine-Wright & Clayton, 2010). This reconsidering of opinions can only partly be linked to distance (Ek, 2005; Wolsink, 2000; Wolsink, 2007a). Furthermore, as indicated previously, people seek to behave in ways that are consistent with their main values (Devine-Wright & Clayton, 2010; Festinger, 1957), so if a project created dissonances between different values, people might change their mind in the light of new information.

2.3.2 From backyard to places: understanding the concept of place

To understand community responses to RE and engage in constructive discussion, most scholars argue that one must move away from NIMBYist labels. Public opposition to local siting of RE developments on the grounds of visual, noise and wildlife impacts - and support for such objections in local planning systems - are based instead on a complex range of factors related to values, worldviews and place attachment, and the ways in which technologies are understood (Devine-Wright, 2011d; Haggett, 2008; Haggett, 2011b; Van der Horst, 2007; Wolsink, 2011). An important start in this process has been a move towards the notion of developments being put in ‘places’.

Although a focus on place distinguishes geography from many other disciplines, the concept has received enormous interest across many disciplines, including geography, environmental psychology, sociology, anthropology and planning. Tuan (1974), Relph (1976), and Buttimer (1980) were among the first geographers to explore the differences between space and place, and describe how spaces become places as they are infused with meanings and value through lived experience. Tuan (1974) claims that undifferentiated 'spaces' become places as, over time, they accumulate deep meaning through the build-up of sentiment, emotion and experience. Ryden (1993) adds that a place 'takes in the meanings which people assign to that landscape through the process of living in it' (p. 38). The authors agree that what signifies a place is not intrinsic to the physical setting itself, but exists in human interpretations of the setting, which are constructed through experience. In human geography, sense of place is used to describe one's awareness of locatedness and the otherness of different places (Devine-Wright, 2011b; Tuan, 1974).

The notion that humans ascribe meaning to places based on their experiences is called the social construction of place. A place is thus a socially constructed space with networks of social interactions at various spatial scales (Massey, 1995). 'Place' therefore only exists because people (or groups of people) create it. Furthermore, Massey (1995) argues that places are created by their connections to other places, and that they are changeable, making place a process instead of something static. Uniting the disciplines investigating place, therefore, is an interest in the subjective and emotional aspects of a place, its spatially dispersed nature, as well as how this relates to a 'sense of control' over what happens in that place (Easthorpe, 2004).

2.4 Understanding place attachment

Place attachment is one of many closely related concepts used to explain people's relationships with places, and research into the topic spans discussions on place attachment, see for example (Manzo & Perkins, 2006), sense of community (Brehm *et al.*, 2006), place identity (Carrus *et al.*, 2005) and sense of place (Tuan, 1980). Some of these concepts will be discussed below.

2.4.1 Conceptual (un)clarity?

Traditionally, place attachment refers to an (often positive) emotional bond between people and places (Hummon, 1992; Low & Altman, 1992). Place attachment can reflect a range of distinct aspects of the place, which moves beyond the 'landscape aspect, and includes physical and social aspects (Hidalgo & Hernandez, 2001); or natural and civic aspects (Scannell & Gifford, 2010b). Place attachment thus includes a variety of actors, social interrelations and scales that influences individual, group, and whole community behaviour (Altman & Low, 1992; Manzo & Perkins, 2006).

However, where Low and Altman (1992) use these factors to describe place attachment, others describe these ties as aspects of identity (Cuba & Hummon, 1993). Place identity focuses on the connections between people and particular environments (Carrus *et al.*, 2005), and how places enable individuals to express and affirm their identity. This is a complex process which consists of images that people generate, but also those that are imposed by others (Devine-Wright & Clayton, 2010). Devine Wright and Clayton (2010) have investigated place identity and found that it is shaped by both social and non-social experiences, by people and places encountered, and is both effect and cause of these experiences.

Other researchers mainly conceptualise place attachment as a combination of two components: place identity and place dependence (Kyle *et al.*, 2004). Stokols and Shumaker (1981) indicated that a place can be considered important to an individual because of its functional value, so adding a goal oriented component to place attachment. They identify two components of place dependence: the quality of the resources (social and physical) to satisfy goals and needs, and how it compares to other places. These studies employ a combination between what Proshansky (1978) defined as 'those dimensions of self that define the individual's personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideals, beliefs, preferences, feelings, values, goals, and behavioural tendencies and skills relevant to this environment' (p. 155), and how a setting serves goal achievement given an existing range of alternatives (Jorgensen & Stedman, 2001).

In the early days, place attachment was often implied to be equivalent to rootedness (Hay, 1998). As a result of social interactions, place attachment is often combined with sense of community (Pretty *et al.*, 2003), which concerns the social ties that are rooted in place and that support social interaction. Some community attachment researchers (e.g. Woldoff, 2002) work on the assumption that place attachment means attachment to the people who live in that place and the social ties that the place provides (Lalli, 1992). This group of researchers is closely aligned with place identity (Twigger-Ross & Uzzell, 1996). The strong connection (and confusion) between place attachment, place identities, and feelings and emotions in the literature illustrates the strong ties between places and emotions.

As the above section shows, there are a variety of concepts that try to explain the relationships people have with places, which can cause confusion about what exactly attaches people to places. A multi-disciplinary review by Lewicka (2011a) indicates that the different theoretical traditions underlying the way places are viewed, often lead to different and incompatible definitions. Furthermore, studies on people-place relationships often fail to move beyond answering definitional questions or attempts to

fit together various place-related concepts, such as place attachment, place identity, rootedness, sense of place, or place dependence (Lewicka, 2011a). What all these studies have in common, however, is that place attachment concerns a location, the people in it, and the processes or experience that take place inside that location.

2.4.2 Components of place attachment and typologies

Much research on place attachment focuses on prediction of place attachment, and initially assumed that length of residence was a main predictor of place attachment (Hay, 1998). More recently researchers have challenged this idea. Stedman (2006), for example, compared visitors with residents and found that visitors (including temporary residents) exhibit higher levels of attachment. Reasons for the attachment, however, varied: whereas resident attachment was rooted in social networks and community meanings, visitor attachment was fostered by environmental quality and escape from everyday lives (Savage *et al.*, 2005). An investigation into the place attachment of residents and visitors found that they often share important values, and that demographic variables, such as residential status, are often unsatisfactory surrogates for 'insiderness', compared with active commitment to place (Kaltenborn & Williams, 2002). These authors call for research on the diverse ways in which people are tied to place, instead of reducing it to a simplistic assignment based on residential time (Kaltenborn & Williams, 2002; Savage *et al.*, 2005; Scannell & Gifford, 2010b; Stedman, 2006). An extensive review of the literature found that the main predictors of place attachment are socio-demographic (including residence length, age and home ownership), social (community ties) and physical-environmental (natural, urban, architectural) (Lewicka, 2010; Lewicka, 2011a).

Whereas predictors may help identify possible mechanisms of attachment, investigating the components that determine place attachment (person, place and process) could clarify relevant behaviour. This makes the dimensions of place

attachment a potentially important aspect of explaining attitudes towards RE siting. In an attempt to overcome/bridge the conceptual unclarity and bring a variety of approaches together, Scannell and Gifford (2010a) developed a broad-based framework for explaining place attachment, which structures the various definitions in the literature (Figure 2.3). The framework encompasses their overarching components, and is relatively free from disciplinary jargon or embeddedness in a particular literature. The next section, therefore, unpacks the components of the framework as well as its critiques and shortcomings, and uses additional literatures to explain its components before moving on to discuss place attachment in relation to RE siting.

In the framework, the person component involves the personal connections that one has to a place. These connections can be at an individual or community level, for example, through personal memories or events of historical significance for a community.

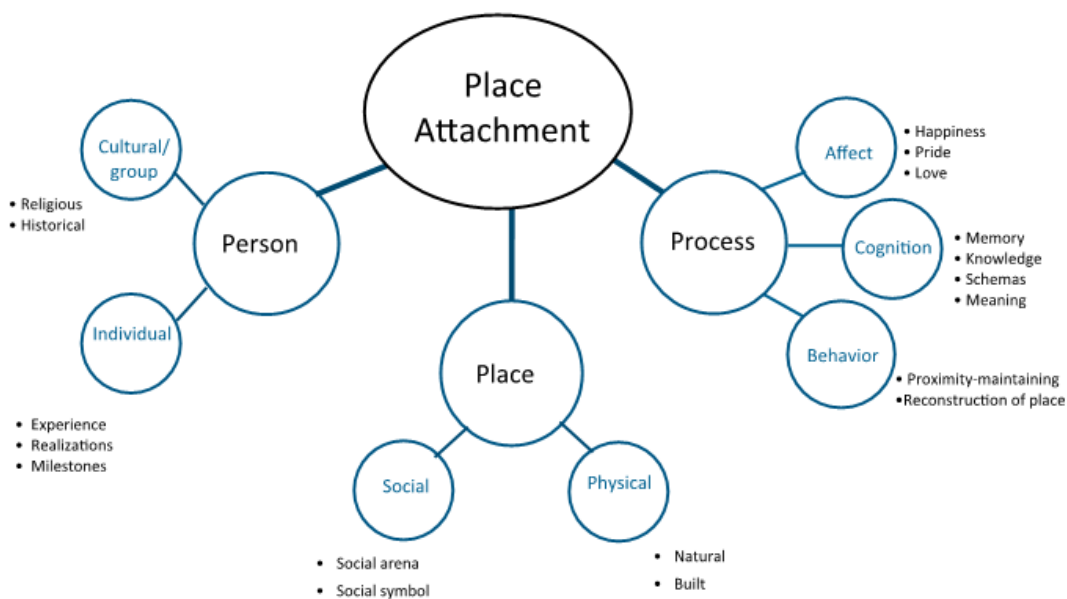


Figure 2.3 The tripartite model of place attachment (Scannell & Gifford, 2010a, p.2)

The place component consists of social and physical attachment to a place. Physical attachment refers to rootedness, length of stay and plans to stay in a specific area. Social attachment consists of social ties, the ways in which people belong to a

community, and familiarity with fellow community members (Riger & Lavrakas, 1981). The majority of research into place attachment has focused on its social aspects, yet Droseltis and Vignoles (2010) consider that the person dimension in the Scannell and Gifford model is overemphasised, and suggest a stronger focus on the place dimension, based on evaluative factors such as self-esteem, continuity, distinctiveness, aesthetics, control, social-symbolic links, economic, and genealogical linkages.

The process component refers to the interactions that occur within places (Aronson *et al.*, 2005). This is arguably the most important aspect of the model because it refers to the psychological interactions that occur within places. Their operational definitions, those of affect, cognition, and behaviour are identical to the characteristics of attitudes. Thus, attitudes (see Figure 2.2) consist of components that are identical to place attachment. Put simply, place attachment is one's attitude towards a place. As described previously, attitudes are based on a balance between cognition and affect, resulting in behaviour, and changes in this balance may lead to changes in attitudes (Jorgensen & Stedman, 2001), such as a favourable or disfavourable attitude to RE developments. The place attachment literature describes the affective component as the emotional bond people have with a place (Cuba & Hummon, 1993; Hidalgo & Hernandez, 2001), in which feelings of belonging, feelings of pride as well as a general sense of well-being (Brown *et al.*, 2003), but also fear, hatred, and ambivalence coexist (Manzo, 2005). Cognitive elements of place attachment are the memories, beliefs, meaning and knowledge that people associate with a place that makes them personally important to them (Scannell & Gifford, 2010a). Fullilove (1996) argues that 'to be attached is to know and organise the details of the environment'. The behaviour component is the component expressed through actions, for example, through pilgrimages to important places (Mazumdar & Mazumdar, 2004), length of residence (Hay, 1998), or the reconstruction of places. Francaviglia (1978) investigated the rebuilding of a destroyed town in which residents used their power to override plans to improve the town in order to keep the town in a familiar state. Place meaning, nostalgia

and the desire to restore meaningful areas were thus found to be important factors. Scannel and Gifford (2010b) synthesize this study, indicating that 'familiarity and use took precedence over planners' wishes; residents manifested their attachments by recreating the city to which they were bonded, even if it was flawed'. Thus, 'objective' reasons such as improved planning of a location or increased facilities do not always take precedence, and more emotive processes can be valued more highly.

Other studies that identified components of place attachment include Relph (1976), who stressed the importance of physical setting, activities and meanings. Gustavson (2001), meanwhile, describes how place attachment consists of: distinction (in which place is an identifiable unit); valuation (a normative component of assessing places); continuity (a temporal dimension); and change (as new attachments to places develop over time). Droseltis and Vignoles' (2010) investigation of the dimensions and predictors of place identification stressed: the attachment or self-extension a place can provide; environmental fit; and place-self congruity (how appropriate the place is for a person).

A variety of efforts have also been made to categorise place attachment. The main categorisations include: Relph's seven stages of being 'inside' places; Hummon (1992)'s typology which identifies types of rootedness and sentiments; Twigger-Ross and Uzzel's (1996) typology based on adaptation of identity theory; Gustavson's (2001, p.55) identification of the underlying dimensions of place meanings; Droseltis and Vignoles (2010), who identify several dimensions and predictors of place identifications; and Lewicka who identified five different attitudes to place (Lewicka, 2011b). Table 2.1 explains these categorisations.

As the table shows, there are many ways in which people can be divided into types of place attachment. Although older than most of the typologies, Giuliani and Feldman (1993) grouped the differences in definitions and types of place attachment according to: the content of the bond: affective, cognitive, and/or symbolic; whether the

bond is positive or negative; and the specificity of the bond. Inalhan and Finch (2004) found that some researchers consider attachment as a broad concept, a super-ordinate category whereby effects are designated as part of an entire system such as sets of feelings. Others seem to consider attachment as a specific affect that is distinctive from other kinds of affects that make up the same system.

Table 2.1 Main categorisations of place attachment in the literature

Author/tradition	Typology
<i>Relph (1976)/ place identity</i>	<p>Identification of two types of place attachment:</p> <ol style="list-style-type: none"> 1. Insiderness (the degree of attachment, involvement, and concern that a person or group has for a particular place) 2. Outsiderness (when a person is separate or alienated from place) <p>Seven modes of being in or outside a place:</p> <ul style="list-style-type: none"> - Authentic - Inauthentic - Un self-conscious - Deliberately - Kitsch (uncritical mass-value acceptance) - Technique (overriding concern with efficiency as an end itself) - Placelessness
<i>Hummon (1992)/sense of place</i>	<p>Identification of two types of rootedness identified:</p> <ul style="list-style-type: none"> - Everyday rootedness - Ideological rootedness - <p>Three types of sentiments identified for peoples' relationship with places</p> <ul style="list-style-type: none"> - Alienation - Relativity - Placelessness
<i>Droseltis and Vignoles (2010)/predictors of place attachment</i>	<p>Identification of predictors</p> <ul style="list-style-type: none"> - A combination of needs and motives (self-esteem; continuity; self-efficacy; meaning; distinctiveness; belongingness; control; security; aesthetic satisfaction) - Social/symbolic links to places (genealogical links; economic links; sense of loss/dislocation; narrative links; spiritual significance; links to special events)
<i>Lewicka (2011b)/place attachment</i>	<p>Principles of identity are strongly related to local attachment. Identification of five types of place attachment:</p> <ul style="list-style-type: none"> - Traditional attachment (age/education) - Active attachment (high attachment/identity) - Alienation - Placelessness - Place relativity

2.4.3 Functions of place attachment

Congruence between the operational elements described by Scannell and Gifford (affect, cognition, and behaviour) and the characteristics of attitudes (Aronson *et al.*, 2005) is important to keep in mind, because the same components that form an aspect of attaching oneself to a place are also at work when forming an attitude towards something like a RE development. But what are the functions of place attachment? Based on Scannell and Gifford's (2010a) work several purposes of place attachment can be identified, shown in Table 2.2.

Table 2.2 Purposes of place attachment (adapted from Scannel and Gifford 2010a, p. 5-6)

Purpose	Description of the purpose
<i>Survival advantages</i>	Places provide food, water, and other resources. Scannel and Gifford (2010a) identify that all security perspectives relate this bond to ideas of reduced risk, and proximity maintaining behaviours. Fried (2000) investigated this topic further and found that a threat to the continued integrity of communities may lead to protest or attempts to avoid separation from the community or place. The authors state that: 'people remain addicted to encompassing forms of continuity in community attachments' (Fried, 2000, p.193).
<i>Goal pursuit</i>	The expectations of achieving goals based on past experiences. Therefore, behaviours are based on repeated place use. This focus on place can be both social and physical, depending on the goals one wants to achieve (Kyle <i>et al.</i> , 2004). Goal pursuit leads to place dependence, a type of attachment where people value a place for its supporting or facilitating qualities (Jorgensen & Stedman, 2001).
<i>Achieving goals through self-regulation</i>	Achieving goals through self-regulation (Korpela, 1989). Self-regulation, according to Scannell and Gifford, is the process whereby one compares current behaviour to one's aspirations and standards in order to evaluate progress towards the goal (Carver & Scheier, 2001). Positive place attachment provides self-regulation, because these places have restorative qualities where things like security and comfort are conducive to self-reflection and problem solving.
<i>Providing continuity</i>	Place attachment can also provide continuity to individuals, providing a stable or continuous sense of self. People feel more often attached to environments that they feel match their personal values and seem to represent them (Twigger-Ross & Uzzell, 1996). It also provides continuity over time, by giving symbolic meaning through memories and connections to the past. Continuity as a purpose of place attachment can be seen through places as physical representations of important events that allow people to compare their present and past selves, but also provide continuity where important cultural events have become meaningful for a group. Behaviours at this level include pilgrimages, or designations of historic sites. Lewicka (2011a) found that place attachment was consistently related to interest taken in family history and the history of the residential place, and was also positively related to sense of coherence, measured with Antonovsky's Sense of Coherence scale. Sani (2008) identified self-continuity as a major dimension of identity and the role place plays in reinforcing individual and group continuity. Similar findings are reported by place-identity researchers (Droseltis & Vignoles, 2010; Twigger-Ross & Uzzell, 1996).
<i>Sense of belonging</i>	The interpersonal attachment literature finds that place attachment creates a sense of belonging (Scannell & Gifford, 2010a).
<i>Enhance identity and self-esteem</i>	Finally, place attachment can enhance identity and self-esteem and ability as a result of distinct social or physical qualities (Twigger-Ross & Uzzell, 1996).

Any siting of RE developments may interact with one, some or all of the functions described in Table 2.2. If it does affect one or more of these objectives of place

attachment, it may, therefore, significantly affect lives. This, however, may not necessarily be directly observable or measured. The importance of place attachment is thus context dependent, both in terms of direction of the attitude as well as the size of effect (Vorkinn & Riese, 2001). Furthermore, the interplay of continuity and change shows that place meanings are not static and instead, 'meaningful places appear as a process, in which individual (and collective) projects converge and/or compete with other projects, external events, and with the course of time' (Gustavson, 2001, p.13). Furthermore, various long-established meanings of place often impose restrictions on these projects, but the projects may, if successful, gradually alter or modify these established meanings (Gustavson, 2001, p.13). Insight into how places are constructed, the values people ascribe to places, how people are attached to a place, and what the purpose of their attachment is can thus help to provide deeper insights into the reasons for the social acceptability of changes (Manzo & Perkins, 2006). Furthermore, it is possible that the way in which people are attached to places can predict attitudes towards specific proposed environmental changes such as RE developments in certain locations.

2.4.4 The consequences of place attachment: action?

In contrast to the attention paid to identifying the functions and predictors of place attachment, less research has focused on the consequences of place attachment. To date, this has primarily been researched in relation to place-based activities, such as civic activity. The general assumption is that place-attached people are more willing to engage in activities on behalf of their place of residence, often termed place-related action. Examples are action in natural high-amenity areas to preserve natural resources (Lewicka, 2011a), where Scannell and Gifford (2010b) found that those attached to a place because of its natural aspects were more willing to engage in protective behaviour. Other examples include resistance to change such as the siting of a development (Devine-Wright, 2009b), attempts to improve places, or protection of the status-quo.

A study by Brehm *et al.* (2006) identified a distinction between attachment to the social aspects of a place and its natural aspects. They found that in cases where social attachment is a predictor of attitudes towards local environment issues, the issues are representative of community culture, identity or health. In cases where the natural environment is the predictor of local concerns, the topics reflect resource protection. Both relate differently to environmental concern. Therefore, community-focused factors may be more useful for understanding attitudes towards environmental issues than socio-demographic ones.

Similar results were found with reference to resource management, where Wood and Giles-Corti (2008) found that social capital may influence place attachment and that the interchange between social capital and people's physical environment influences the potential for social interaction and the formation of support networks. This is supported by Scannell and Gifford's (2010a) model of place attachment. This link supports efforts to include social capital in infrastructure and policy interventions, for example, in advocating developments or the maintenance of community infrastructure.

Lewicka (2005) found that neighbourhood ties were an important mediator between place attachment and civic activity, with neighbourhood ties, rather than place attachment, predicting civic involvement. She indicates that place action only takes place if there is a locally-based social network to help convert emotion into action. Similar research investigated place-related action, formation of bonds with places, and how these bonds influence people's views on management of the area. The study found that place attachments affect attitudes towards management priorities, and that the people's identity served as a filter through which environmental threats were assessed (Kaltenborn & Williams, 2002). This suggests that responses to perceived or real environmental threats may partly be based on actual characteristics of the event as well as feared possibilities (Devine-Wright & Clayton, 2010).

As the above shows, the literature on this topic is divided, with some researchers finding positive relationships between place-attachment and behaviour (Scannell & Gifford, 2010b; Vaske & Kobrin, 2001) and others finding negative or no associations (Lewicka, 2005; Lewicka, 2011a; Payton *et al.*, 2007). Because the meanings people give to a place are socially constructed, there is no universal place attachment. Instead, multiple place meanings and opinions on different uses of places can co-exist (Flora & Flora, 1996). The plurality of place attachment is important in examining public attitudes towards hosting MRE developments because multiple place meanings and opinions can exist in one deployment site. Place attachment is also related to RE siting problems, because it is 'most profound when human relationships are embedded in current or past group affiliations and identity', and it 'becomes more intense when the identified groups are in clear juxtaposition to an outside group which functions as a threat' (Fried, 2000, p.195).

The social construction of development sites causes a site to become more than simply a location in which a RE development will be placed, instead it becomes a place in which physical and social processes converge and compete. This social construction helps to connect issues such as community cohesion, development and organized participation, which might otherwise focus narrowly on economic, political or social dynamics within communities, or between communities and public agencies (Manzo & Perkins, 2006). Therefore, place theory becomes a potentially important framework for exploring perceptions of RE technologies in a location, and can function as a driver for engagement. However, Lewicka argues that caution is necessary when assuming relationships between civic engagement and place attachment, and that: 'Because of these conceptual and empirical similarities it is important to avoid their overlap on the operational level. For instance one should not include measures of civic involvement into measures of social capital or make social ties and local involvement the dimensions of place attachment. This is unfortunately often done, which leads to

conceptual overlaps that are not easy to disentangle' (Lewicka, 2005, p.392). This is discussed later in the chapter.

2.5 Place and attitudes in the RE siting literature

Theories of place, and place attachment are also addressed in the literature as a means of exploring people's responses to RE siting. Among the first to research this were Vorkinn and Riese (2001), who investigated a proposed hydrogen project in Norway and concluded that place attachment explained more of the differences in attitudes than all the socio-demographic variables combined. Other examples include research on explaining public opposition in contexts where pre-existing place attachments become disrupted by energy developments (Devine-Wright, 2012; Haggett, 2011a; McLachlan, 2009). These studies argue that the development of RE in an area can impact the meanings that people have ascribed to places, negatively affecting place attachment, and resulting in opposition to developments. One main recent contributor to this literature is Devine-Wright (2011c), who argues that if we want to have a full understanding of people's responses, we must take account of the potential for developments to disrupt pre-existing emotional bonds with sites. Devine-Wright (2012) borrows Lewicka's (2011b) multiple varieties of place attachment (active versus traditional attachment; place alienation; a relative view of a place; and placelessness) to study objections to developments. The study indicates that variables related to the project were most important in explaining public objections as opposed to individual place-related variables, and recommends that *varieties* of place attachment must be taken into account in future studies. This is supported by Wolsink (2000)'s findings from a survey which distinguishes between four types of opposition, classified as being 'classical'; anti-wind; anti-project; and anti-process (See Table 2.3).

Table 2.3 Types of opposition identified by Wolsink (2000)

Type of opposition	Explanation
<i>'Classical'</i>	A positive attitude towards wind power, combined with opposition to its construction anywhere in one's own neighbourhood
<i>Anti-wind</i>	Opposition to a wind farm because one opposes wind turbine technology in general
<i>Anti-project</i>	Resistance to a particular project without necessarily resisting wind power in general. Opposition is based on concerns about the consequences of the wind power project in a particular site.
<i>Anti-process</i>	A positive attitude towards wind power in general, which develops into a negative attitude during the decision-making process of a specific wind farm proposal.

Van Der Horst (2007) also used place to investigate public attitudes to proposed projects based on proximity and found that the nature, strength, and scale of the effects may be dependent on the local context and the value attributed to the place in which the project will be constructed. The author also found that 'residents of stigmatised places are more likely to welcome facilities that are relatively 'green', while people who derive a more positive sense of identity from particular rural landscapes are likely to resist such potential developments, especially if they also live there' (p. 2705). This relates back to the value clashes earlier discussed and emphasises that places are distinct from sites, because they are subjective and emotional (Devine-Wright, 2011b). Devine-Wright (2009b) builds upon processes of place attachment and place identity to develop a framework for rethinking NIMBY responses. Instead of defining opposition as NIMBYism, local opposition is identified as a form of place-protective action, which arises when new developments disrupt pre-existing emotional attachments and threaten place-related identity processes (Devine-Wright, 2009b). If RE developments are located in places that relate to people's identity and sense of belonging, this can influence people's attitudes and perceptions of the development. If developments pose a threat to the meanings that places have to individuals or groups, it may lead to place-protective action (Devine-Wright, 2009b).

Placing RE developments offshore appeared a problem-free alternative to onshore technologies, circumventing places that people might be attached to, because less people are affected. However, although the physical separation of marine renewables from centres of population removes many tensions, many studies argue that off-shore sites are not unproblematic alternatives (Bailey *et al.*, 2011). Some stakeholders use the marine environment intensively, including island communities, and have strong connections to the sea. Such special relationships are recognised by several scholars, and research into islands has gone as far as claiming that the marine spaces around islands are fundamentally interconnected with the islands. Hayward (2012) coined the term ‘aquapelagos’, and argues that the cultural habitats of islands extend into the marine spaces between and around island groups as they are ‘utilised and navigated in a manner that is fundamentally interconnected with and essential to social groups’ habitation of land’ (p.1). This emphasises a land-sea continuum wherein connections are created by human interactions with marine spaces through fisheries, aquaculture, recreational boating, appreciation of land and seascape, as well as other human interactions. Importantly, the land-sea continuum also implies that discussions on values, attitudes, and place attachment should also extend into marine spaces when examining MRE development. However, despite an expected increase in the deployment of MRE, little research has been conducted to date about attitudes towards this category of renewables (Demski, 2011).

The research conducted to date has primarily been focused on offshore wind farms. Hagggett (2008; 2011a) on multiple occasions discusses public responses to offshore wind power and argues that offshore wind energy faces similar problems to onshore technologies, and that environmental and spatial considerations are just as relevant. Kempton *et al.* (2005) conducted an analysis of values, beliefs and the logic of supporters and opponents for public support for an offshore wind farm in Cape Cod, and found belief and value differences, including those about the viability of wind power; the appropriateness of the project; and its environmental effects.

Among the limited work available on wave and tidal technologies is Bailey *et al.*'s (2011) study of public opinions on the Wave Hub test site for wave energy developments in the UK. They found largely positive opinions of the technologies, based on: its perceived contributions to addressing climate change and energy security issues; potential local economic benefits; lack of clearly visible negative impacts on the environment and existing economic activities. However, the authors acknowledge that wave energy is an emerging technology and that many impacts are unlikely to be well understood until several years after the construction of facilities.

Although the main findings from a study by West *et al.* (2010) indicate that public support for wave energy as an economically beneficial and relatively benign method of power generation was generally high among three Cornish communities, this was combined with concerns about the possible negative impacts on wildlife, seascape, wave quality and tourism. The authors argue that public concerns about these effects should not be overlooked within strategies to expand MRE, because negative perceptions may act as a catalyst for opposition to other RE developments due to a spill-over effect, in particular when they affect locally-significant employment sectors. McLachlan's (2009) findings support this. The study uses a wave energy case study to explore various symbolic logics of opposition and support that stakeholders have towards a development. The research found that the symbolic interpretations people have of places, for example, the interpretation of place as nature or as a resource, indicate that engagement with location is much broader than a purely visual notion of landscape. Similarly, technologies can be interpreted as being at one with nature, pioneering or as a commercial endeavour. Such symbolic interpretations influence how projects are perceived, and McLachlan concludes that 'it is clear that any sense that marine energy will be an opposition-free alternative to wind energy, welcomed by all stakeholders, is misplaced (p. 5349)'.

In contrast with Devine-Wright's (2011a, 2011c) onshore RE siting research, which found mainly place disruption as a result of RE, a tidal energy case studied from a

place attachment perspective found predominantly positive responses to the project. Place attachment was seen as a significant, positive predictor of project acceptance in a tidal energy case study, affirming its value in examining public responses (Devine-Wright, 2011c), and suggesting that a narrow focus on public objections overlooks ambivalent and supportive responses. The study found significant differences between each village, and the patterns of association between place attachment and emotional responses observed suggest that the project enhanced rather than disrupted place attachments only in only one of the two villages, depending on how the project was perceived to impact on the community (Devine-Wright, 2011c). These differing outcomes may thus reflect the different values people ascribe to places, and whether developments fit with these value systems.

Although research on attitudes towards marine energy technologies is increasing, it still does not provide sufficient detail on how people respond to developments in their marine 'backyards'; which values are affected; and how this relates to the various components of place attachment that have been identified in this literature review. Most marine energy research has been conducted with the researcher using a particular theoretical lens such as cultural theory, social representation, or symbolic interpretations, which attempted to rationalise reality to theory, rather than to build theory from reality. There is a danger that this overlooks aspects of the multiple and complex values that contribute to forming an attitude towards hosting MRE developments. This research project will contribute to fill this gap and focuses specifically on island communities that necessarily have a strong connection with the marine area; are often dependent on the sea; and are clear identifiable units of analysis.

Notwithstanding its potential to explain attitudes, place attachment is not a panacea for resolving RE siting problems, either onshore or offshore. Solely applying concepts of place attachment to explain opinions does not provide a clear way to address issues if attitudes are not taken up in decision-making processes through appropriate consultation procedures and rigorous engagement. In order to achieve RE targets and

promote acceptable outcomes for communities, the importance of decision-making processes and the philosophical and justice issues associated with RE development also requires research (Kempton *et al.*, 2005). The next section discusses these issues.

2.6 Public engagement and the uptake of attitudes in decision-making

The complexities of natural and social systems, and difficulties in identifying clear cause-and-effect relationships between human actions, and environmental, social and economic impacts, complicates decision-making (Stagl, 2006). Furthermore, people have different values, attitudes and preferences for the management of (local) environments. The remainder of this chapter examines the literature on public engagement in relation to the incorporation of public attitudes in decision-making. The next sections discuss reasons for engaging the public in RE siting, including pragmatic reasons, local knowledge and expertise, and rights to participation. This is followed by identification of appropriate procedures that could provide greater rigour to consultation processes, leading to more acceptable outcomes for communities.

Participatory approaches have been linked to a growing awareness of the complexity and inter-connectedness of many problems, and the need to share responsibility for resolving complex and social environmental issues (Funtowicz *et al.*, 1999). Engaging the public in RE siting processes is considered to contribute to better understanding of: the complexity of the resource with which RE developments will interact; human influences on the resource and its management; the compatibility and conflicts created by pursuing multiple use objectives; and identification, prediction and resolving areas of conflicts (Pomeroy & Douvere, 2008; Ramirez, 1999). Thus, public engagement is considered to contribute to better decision-making.

Engagement with RE development can refer to two things: (i) formal processes in which members of the public are included in decision-making, facilitating the collection or integration of their views; and (ii) the public perceptions and interpretations of RE technologies (Cass, 2006). The latter refers to attitudes and beliefs about these technologies and their placement, whereas the first part concerns the uptake of these attitudes in decision-making. A wide range of terms are used to describe the interaction between stakeholders, communities and decision makers, including engagement, public participation and involvement. Cass (2006) defines public engagement as 'any number of ways in which information, views or opinions flow backwards and forwards between the public and decision makers' (p.4). Manzo and Perkins (2006) conceptualise public participation similarly and refer to it as an interactive process that engages the public, establishes areas of agreement and disagreement, and enlists contributions to the decision process. An important difference between the two, however, is the contribution to the decision process. Manzo and Perkins' (2006) definition is more prescriptive through the inclusion of a required contribution to the decision-making process. This marks a critical difference between going through the motions of consultation and having the real power to affect outcomes (Arnstein, 1969, p.216). Because this research is concerned with the uptake of attitudes in decision-making, the definition provided by Manzo and Perkins (2006) is considered most appropriate.

Instead of citizens primarily having an input into governance processes only during electoral processes, research on public engagement has renewed the focus on on-going dialogue processes between government and citizens, and deliberation among stakeholders in deciding priorities and actions (Head, 2007). Giddens (1998) calls this the 'Third Way', a society-centred rethinking of social democracy that emerged in the late 1980s and which advocates equal opportunity, personal responsibility and the mobilisation of citizens and communities. Increasingly, citizens are considered to be active participants in a range of political or institutional settings (Dryzek, 2000). In the

past it was assumed that policy actors with professional expertise could deduce public values and preferences (Barde & Pearce, 1991). These expert-based approaches received criticism for their inherent biases, assumptions and scope for manipulation (Foster, 1997; Rydin & Pennington, 2000). It was also increasingly realised that professional expertise alone cannot replace public involvement to bridge the gap between values and policy (Rydin & Pennington, 2000), or make full use of the various forms of lay expertise in communities.

The growing awareness that, in an increasingly pluralist society, value systems complicate and enhance decision-making (Funtowicz *et al.*, 1999), and that the 'policy process is seen as a locus for the articulation of values and preferences on policy options, and public participation is a means of bringing the pattern of values and preferences represented within the policy process closer to that existing within society as a whole' (Rydin & Pennington, 2000, p.154). Consequently, it is now commonly accepted that stakeholders are increasingly involved in natural resource management decision-making (Lockwood *et al.*, 2010; Pomeroy & Douvere, 2008; Reed, 2008; Reed *et al.*, 2009). This marks a move away from governments 'rowing the boat' towards 'steering the boat' and allowing citizens increasing input in how societies are run.

The UK has taken major steps in recent years to move away from government decision-making towards more localised forms of decision-making. This is described in the UK Conservative Party's 2010 general election manifesto, the Big Society, which champions expanding the scope of public involvement to improve policy delivery. The programme's priorities include:

- Giving communities more power through localism and devolution
- Encouraging people to take an active role in communities
- Transferring power from central to local government
- Supporting the creation and expansion of co-operatives, charities and social enterprises

- Increasing the transparency of government (Cabinet Office, 2010).

The 'Big Society' thus arguably takes power away from politicians and gives it to the people. The reforms towards localism equally seek to enable new scales of management that place greater emphasis on empowering communities and neighbourhoods. Furthermore, they represent a reconceptualization of citizen engagement in which individuals, the private sector and third sector groups become increasingly responsible for the management of social issues affecting their area, and the provision of public services, and claim to open up new ways of public participation and democracy (Buser, 2013; Evans, 2011). Despite attempts to resist the Big Society Strategy in Scotland for its focus on public spending cuts and austerity (Buser, 2013; Painter & Pande, 2013; Woolvin & Hardill, 2013), a move towards 'Big Society' ideas suggests that its ideas should be reflected in RE decision-making, leading to increased citizen power in siting decisions.

2.7 Why engage the public with RE siting?

Although the use of public participation in environmental decision-making has been questioned because of cost-effectiveness issues and difficulties in measuring its contribution to public well-being and the final contribution to the environment (Irvin & Stansbury, 2004), there are many reasons for involving the public in RE decisions. Acknowledging that public engagement is not an easy solution to avoid or overcome RE siting issues, Walker and Cass (2007) and Warren and McFadyen (2010) found that projects where communities are actively engaged tend to be more successful in terms of their acceptance and local benefits.

Research on public engagement on the siting of RE developments, found that if people feel distanced or excluded from decisions affecting them, they may become suspicious and hostile (Gross, 2007; Haggett & Vigar, 2004; Jobert *et al.*, 2007). In accordance

with these findings, Wolsink (2007b, p.2694) found that 'if local interests are not given a voice in the decision-making process conditional supporters may turn into objectors'. His previous work found that a lack of communication between developers, decision makers and those that have to live with developments is a perfect catalyst for converting local scepticism and negative attitudes towards wind farms into actual actions specific projects (Wolsink, 1996). To avoid these issues, Agterbosch *et al.* (2009) recommend that developers should inform, consult and engage with the public and stakeholders. This applies to both onshore and offshore RE development (Haggett, 2008; Henderson, 2002).

Three key objectives behind the encouragement of public engagement in RE decision-making processes emerge from the literature:

- Pragmatism, in which public engagement increases the likelihood of a successful siting.
- Utilising local knowledge and expertise
- Rights to participation (Haggett, 2008; Yearley *et al.*, 2003).

Similar distinctions are made by Fiorino *et al.* (1989) who identify; substantive, instrumental and normative reasons for engagement, which are referred to as leading to better outcomes, engagement as a better way to achieve particular ends, and engagement because it is the right thing to do (Burningham *et al.*, 2007; Stirling, 2006). The main reasons for including the public in RE siting are discussed below.

2.7.1 The pragmatic approach

The pragmatic objective that public engagement can be used to increase the likelihood of a successful siting is strongly advocated by Haggett (2011b) , Sorensen *et al.* (2002), and Yearley *et al.*, (2003), who investigated the planning process for offshore wind farms and argue that involvement should be encouraged for pragmatic reasons

because the ultimate goal is to achieve planning consent. Democratic reasons appear secondary to this. This view is shared by Petersen and Neumann (2003), who, in a report on offshore wind farms, indicate that early public and stakeholder consultation during the siting process can speed up the procedure. Glasbergen (1995) identifies conflict resolution and mediation as methods for involving the public to avoid or resolve conflict. This approach could prevent conflict, delays or even fatal breakdowns in siting processes. Haggett (2011b) indicates that 'when people are consulted, they are less likely to oppose (and may even support) decisions, and at the very least there is perhaps the hope that engagement of the public may lead to 'better' or more competent decisions' (p. 16). This is consistent with findings from Kempton *et al.* (2005), who found that perceived unfairness and inadequacy in permitting processes fuelled opposition, and suggest that increased public control over wind power deployment can help to mitigate these problems.

Involving multiple parties and conflict mitigation is considered a test of the policy process' overall legitimacy (Rydin & Pennington, 2000). From a policy delivery perspective, it is argued that involving parties in the early stages of policy development will avoid disagreement later on. Rydin and Pennington (2000) suggest that 'involvement of the public, whether generally through consultation and surveys, etc. or more partially through representative groups, provides information to the policy process. This information may relate to the public's preferences but may also be more specific, relating to local knowledge, the generation of such locally specific information, unavailable to professional agencies, may help avoid the inappropriate developments often associated with centralised planning schemes (p. 155)'.

2.7.2 Knowledge and expertise of the local area

As noted above, detailed knowledge of local environments and their use by local communities is often given as a reason for more participation (Rydin & Pennington,

2000). The importance of local knowledge was also recognised by the Royal Commission on Environmental Pollution (RCEP) in the UK, which called for taking into account people's values, lay knowledge and understanding alongside technical and scientific considerations (Royal Commission on Environmental Pollution, 1998).

Haggett (2011b), further, emphasises the importance of the value of local expertise and tacit knowledges that local actors can provide, and calls for recognition of the important contribution that different groups can bring to RE decision-making processes. Consequently, engaging them in decision-making can mean that contextualised knowledge of local areas, local dynamics, for example on the complex interactions within a community (Gross, 2007), and other culturally rooted and subjective issues such as landscape identity (Wolsink, 2011), can be used in the decision-making process to complement outside expertise (Haggett, 2011b; Wynne, 1996). Accordingly, discussions should be framed in ways that are meaningful to local people and take account of local contingencies and people's conceptions of place and the importance of their surroundings instead of in terms of theoretical ideals.

Developers, authorities and hired experts have limited knowledge about these issues, and knowledge embedded within specific communities, over which centralised organisations have no control or understanding, is often afforded a secondary role in decision-making (Andrew & Robottom, 2005, p.61). Despite the urges in the research, instead of moving forward on this issue, the centralised view is still quite prominent in the RE industry (Barnett *et al.*, 2010), and the inclusion of community values in decision-making is mostly not supported by existing planning procedures, where generalisable aspects often appear to take precedence over context-dependent ones (Andrew & Robottom, 2005).

If contextual knowledge is key to resolving local environmental issues, then there are strong arguments that decision-making organisations should invest in localised solutions that are directed by and for those who are affected by environmental change

(Keen *et al.*, 2005). Haggett (2011a) indicates that local impacts must be acknowledged and the local context must be understood, and indicates, that if this happens, it may become possible to find ways forward to develop RE developments with people, rather than in spite of them. This, however, requires facilitating processes and several difficulties of such an approach have been identified, such as having a conceptual framework within which engagement processes are adapted to the practical difficulties of gathering diverse interests together, encouraging people to express their views and genuinely incorporating their concerns and interests into policy (Haggett, 2011b).

The growing diversity of RE technologies further underlines the importance of contextualised knowledge. Walker and Cass (2011) explored this issue and identified three different aspects that must be taken into consideration by decision-makers:

- The diversity of technologies and their impacts make it increasingly difficult to communicate RE in a coherent technical way;
- The geography of RE generation is becoming increasingly stretched and complex, with marine environments increasingly acting as RE generating sites, making generalisation about the interaction of technologies with places and their relational qualities more difficult;
- Issues around proximity and familiarity are becoming highly differentiated. While the technologies become increasingly familiar, the places where they are deployed become increasingly remote and hidden away in offshore spaces and peripheral areas. These competing movements question the integrity of RE as a category, stretching the social positioning and everyday meaning of relevant technical artefacts to an extreme degree (Walker & Cass, 2011).

Based on the above, a localised approach, employing a place based perspective seems appropriate. The diverse MRE technologies and their acceptance will be dependent on how they are perceived to affect the local context. The complexity of the

environment in which RE is generated complicates generalisation and again requires a localised approach of investigation. Finally, the geographical move of developments towards tucking away developments in peripheral areas creates an imperative for understanding these places. This is underlined by Jolivet and Heiskanen (2010), who stress that although we know that the participation process plays a prominent role in acceptance of siting processes, it is still unclear why projects fail or succeed. The authors consider this question of the utmost importance, as it not only concerns wind power technology acceptance, but also other energy technologies such as MRE technologies.

2.7.3 People have a right to participate

There are also ethical and normative reasons for including the public in decision-making in order to improve its overall legitimacy. Decisions in which a wider range of parties have been involved are assumed to have a greater level of consent. They are therefore considered, by definition, to be more desirable (Rydin & Pennington, 2000). In this review, two types of rights to participation are distinguished: a moral right and a statutory right.

2.7.3.1 A moral right: fairness and justice perspectives

Including the public in decision-making is generally considered the morally right thing to do. Syme and Nancarrow (2005) found that justice and fairness are important components in decision-making processes that can lead to greater acceptance of outcomes. The term justice broadly refers to 'maintaining or restoring a balance or proportion' (Hart, 1961, p.155). The academic literature surrounding justice is strongly influenced by Rawls' Theory of Justice, which proposes that a common understanding of justice provides people with a common perspective from which their claims may be settled, and which establishes bonds of civic friendship (Rawls, 1971, p.5). Taking

Rawls' understanding, justice could then be defined as the appropriate division of social advantages.

These first conceptions treated justice as something universal and homogeneous. Walzer (1983) was the first to move away from these conceptions and described justice as a context-based phenomenon. According to this approach, principles of justice are pluralistic, and various social goods ought to be distributed for different reasons, through different procedures, and by different actors. The reasoning behind this is that different historical and cultural contexts have led to different understandings of the social good itself (Schlosberg, 2003; Walzer, 1983): People thus value different things for various reasons and the very criteria that people prefer for distribution will differ depending on how they are valued, and may change depending on location or time (Schlosberg, 2003). The issues are based on the distribution of justice. Schlosberg (2003) nevertheless argues that this fails to incorporate the social, cultural and institutional conditions involved in the causes of poor distributions to Rawls' work. Based on these ideas, Clayton and Opatow (2003) suggest that justice must be contextualised because justice and identity are closely linked. Consequently, Young (1990) describes injustice as based on a lack of recognition of identity and difference.

Fairness is closely related to justice, and refers to something that is just or appropriate in the circumstances (Oxford Dictionary, 2012b). According to the Accessible Identity Model (Skitka, 2003; Skitka & Bravo, 2005), whether something is seen to be fair or unfair depends on which layer of one's identity is the most important at the time. The model, which can be applied at both individual and group level, proposes that people have three primary layers of identity: the material (family, possessions, and wealth), social (one's social status in a group or community) and personal or moral (moral values and beliefs). If any of these areas are threatened, a thinking process concerning fairness and justice starts. Depending on which layers of identity are threatened, therefore, people can have multiple and different motives for adopting a justice viewpoint (Skitka, 2003, p.288), which can manifest at an individual and/or

group level (Skitka & Bravo, 2005). Along these lines, Gross (2007) observed that divisions in local communities frequently happen when there are conflicting perspectives of values and rights, and conflicting interests about land use and natural resource management.

A review of decision-making literatures since the 1970s found that people not only cared about the outcomes of a decision-making process, but also about how decisions were made (Gross, 2008). This includes the processes by which decisions are made in pursuit of societal goals, including other types of justice, right of participation, access to information, as well as the absence of bias in decision-making processes (Manaster, 1995). Maguire and Lind (2003) found that procedures must be genuinely fair and issues raised during the process must be dealt with fairly. This has led to the introduction of the term procedural justice (Lind & Tyler, 1988).

Smith and McDonough (2001) explored perceptions of fairness in public participation processes, and found that people judged fairness on justice principles that included representation, having a voice, consideration of views, logic and desired outcomes. However, the authors concluded that managers should focus more on achieving fair decision-making processes than on public participation techniques. This appears to be a contradiction, considering that any ability of fair decision-making will be dependent on the techniques for public participation that are used in decision-making processes. Renn (2008) for example, investigated the use of analytic-deliberative methods of public engagement, including techniques such as citizen's panels, at an early or upstream stage of policy or technology development, and found that these techniques can enable the integration of public values into policy formation and decision-making, leading to enhanced legitimacy and trust. Based on these observations, it is more likely that fair processes go hand in hand with using appropriate techniques.

2.7.3.2 Justice and RE

The various literatures investigating justice have led to the recognition of various forms of justice that apply in a RE siting context. These are shown in Table 2.4.

Table 2.4 The types of justice that apply to RE siting

Type of justice	Explanation
Social justice	The overall well-functioning of society (Kuehn, 2000)
Environmental justice	The combination of environmentalism with social justice, concerned with the (in)equitable distribution of environmental impacts
Distributive justice	The equitable distribution of outcomes (either public goods or burdens) (Kuehn, 2000)
Procedural justice	The processes by which decisions are made (Manaster, 1995)

Whereas social justice refers to the overall well-functioning of society, environmental justice combines social justice with environmentalism. Environmental justice, which has its origins in the American civil rights movement of the 1980s, has become important in environmental decision-making, and increasingly in RE decision-making, because it concerns the distribution of environmental impacts (Gross, 2007; Newton, 1996; Syme & Nancarrow, 2005). More recently, procedural justice has also gained increased attention in relation to RE siting.

Gross (2007) found that decisions concerning the siting of infrastructure developments can potentially damage a community's social well-being if the outcomes are perceived to be unfair. Because justice is accepted as central to the functioning of society, fairness has become an expectation in day-to-day interactions. Research on offshore wind farms suggests that there is a lack of faith in decision-making and decision-makers, as well as a lack of meaningful engagement and involvement, which is reflected in lack of support for projects (Gross, 2007; Haggett, 2011a; Kempton *et al.*, 2005). Gross (2007) unpacked this concept further and explored the associated issues of trust and fairness in participation, and again distinguishes between perceptions of fairness of outcomes and fairness of process. Whilst both are vital for encouraging engagement and acceptance, for some, a fair process is most important because it

allows 'discussion of the merits, planning, politics and public perception of offshore wind farms and impacts of the proposal, thereby helping determine what a good outcome is' (Gross, 2007, p.2734). People should therefore be allowed to participate so that they have the opportunity to speak and be heard and ensure that this process is considered fair (Gross, 2007; Huijts *et al.*, 2007; Jobert *et al.*, 2007). Outcomes of siting decisions that are perceived to be unfair can result in protest, divided communities, and damaged relationships between actors (Kempton *et al.*, 2005). These can be subdivided into:

- Outcome favourability: whether an outcome confers a positive rather than a negative result on an individual or group with an interest in the outcome;
- Outcome fairness: the degree to which an outcome is considered fair when compared to some societal standard (Skitka *et al.*, 2003).

The perceived fairness of an outcome is important because it maintains social well-being. In addition, procedures matter to citizens because fair procedures are considered to produce fair outcomes (MacCoun, 2005). When there is no clear standard as to exactly what a fair outcome is, a fair process becomes more important as it is more likely to lead to fair outcomes (Gross, 2007). Skitka *et al.* (2003) contradict this statement and indicate that if people have a strong belief that a particular outcome is right or wrong, moral or immoral, then process fairness is less important than the actual outcome due to the overriding strength of belief. This could account for people strongly opposing a wind farm when they suffer no personal loss and care more about the outcome than the process. Vice versa, people in favour of the wind farm may find little fault with the consultation process because of their overriding belief in the need for wind energy.

To bring together the various types of justice relevant to RE siting, Gross (2007) developed a community fairness framework. This framework can be applied in community consultation to increase the social acceptance of outcomes, accommodate

the full range of interests that can be found in communities and can help to identify the responses of various stakeholders in decision-making processes (Table 2.5).

Table 2.5 The community fairness framework (Gross, 2007 p. 2735)

Group affected	Fairness perception influenced by	Primary reason
Winners	Outcome favourability (distributive justice)	Personal benefit from positive outcome/decision
Losers		Personal loss from positive outcome/decision
Moral proponents	Outcome fairness (distributive justice)	Overriding belief in outcome
Moral objectors		Overriding belief in outcome
Neutrals, who have no strong belief either way	Outcome fairness (distributive justice)	Prefer outcome to be fair for everyone in the community to maintain social well-being
Silent majority, who may or may not have an opinion		
Whole community where fair outcome is desired for health of community	Process fairness (procedural justice)	A fair process is more likely to result in a fair outcome

The framework identifies the various ways in which community groups can be affected, but also what influences perceptions of fairness. Finally, the framework suggests primary reasons for each group's attitudes. As the framework shows, the acceptability of a project is a combination of whether the project is perceived to have a positive or negative impact for an individual or community, perceptions of how fair the decision is, and how fair the process is through which the decision is made. Perceptions of fairness in decision-making about siting such as wind farms are strongly connected with perceived environmental risk and strong core values about how society should take such decisions, not only among the public but also among stakeholders involved in such processes (Wolsink, 2004). Although the framework does not incorporate context explicitly, it is during the first aspect of the framework, the favourability of outcomes, that issues of values and place attachment influence the development of attitudes. These are essential for a positive or negative evaluation of projects (See Section 2.5).

Although favourable perceptions of developments by communities are based on a combination of all the types of justice discussed before, it is in the procedural realm that the relationship between justice as fairness and justice as the acknowledgement of different circumstances and identity is played out. The main reason for this is that, through engagement procedures and practices, communities and individuals have greater opportunities to voice their opinions on what is fair and just and to explain their perspectives. Furthermore, the procedural realm is also the space in which attitudes and values are articulated and, thus, potentially influence decisions. However, the participation of individuals and communities in decision-making processes can be hindered by barriers in these two areas (Schlosberg, 2003). Issues of identity and attachment thus not only influence the favourability of the outcome (distributive justice) but also the fairness of procedures. This emphasises the importance of values and place attachment for both the development of attitudes and the acceptance of siting processes. As a result, justice theory can be used, alongside place related values, in future research to improve community consultation in RE decisions (Gross, 2007).

Bringing together the main principles for operationalising justice in a RE context, those provided by Maguire and Lind (2003) could be followed. These include:

- full participation in the process;
- ability to express opinions freely and to be heard;
- being treated with respect, being given adequate information;
- impartiality of the decision maker;
- decisions that are responsive to information and are correctable in the face of new information (Maguire & Lind, 2003, p.134).

Haggett (2011a) identifies some further important lessons for RE siting. In particular, she stresses that the public are not a homogenous group and that different values, roles and experiences will come together when considering offshore wind projects. As

a result, it is important to engage with different people and groups of people, even if this is challenging.

2.7.3.3 A statutory right to have a say in decisions

To safeguard the notions of fairness and justice, the rights of people to participate in decision-making have been put into statute. The Aarhus Convention in particular crystallises the right to public involvement on environmental matters. Those countries that signed the convention pledged the provision of information, public participation in decision-making, and access to justice on matters regarding the environment (United Nations, 1998). As a consequence, the UK is obliged to implement the convention into all levels of decision-making, giving the public the right to voice their opinions at policy-making levels (e.g. Strategic Environmental Assessments; Environmental Impact Assessments; marine plans, and local developments).

The push for increased RE development has also been accompanied by an 'increasing range of explicit requirements for, and advice about, public engagement during the siting of RETs (Barnett *et al.*, 2010, p.5). However, by setting these requirements, engagement can become an end in itself (Haggett, 2011b), and does not necessarily imply that communities are engaged to achieve the best possible outcome for all involved or the best utilisation of local knowledge and expertise. The fact that a developer must demonstrate that it has engaged and consulted communities does not necessarily mean that the community has been engaged properly or that attempts have been made to address or mitigate their concerns. Engagement as an end in itself can, despite good intentions, lead to tick-box exercises.

To avoid this, Devine-Wright (2011d) argues that engagement must be practised in a way that connects national policy-making with the places where specific projects will be developed. Furthermore, as has been discussed in Section 2.5, the local context contributes greatly to shaping responses to developments, and influences the choice of engagement strategies. In light of the changing environment of RE deployment towards

the marine sphere, Haggett (2011b), indicates that while reasons for protest against renewables are not straightforward, what underlies many of them are the opportunities for meaningful engagement in the decision-making process.

2.8 Spectrum of public engagement

The previous sections have established and stressed the importance of engagement. But, how should developers engage communities in RE decision-making? The combination of realising the importance of public input in decision-making on natural resource management (Funtowicz *et al.*, 1999) and the range of statutory requirements for consultation (United Nations, 1998) have led to a broad spectrum of public engagement strategies and measures. Public engagement and communication can take place at many levels, and the degree of power or control participants can exercise in seeking to shape outcomes varies widely (Arnstein, 1969). Structured opportunities for public participation, whether through official channels or direct group action, may be weak or strong, narrow or broad, and one-off or continuing. Forms of participation range from information-sharing, and formal consultation on proposals to various types of partnership, delegated power, and, ultimately, citizen control (Bishop & Davis, 2002; Head, 2007; Ross *et al.*, 2002; Walters *et al.*, 2000).

The most widely used tool for assessing levels of engagement is Arnstein's Ladder (Figure 2.4), which categorises approaches used to encourage community involvement (Collins, 2004; Wild & Marshall, 1999). The scale distinguishes between different degrees of citizen power, degrees of tokenism, and non-participation. Although Arnstein's the ladder summarizes the various degrees of public participation, it is not a ranking system: higher levels of interaction within a community may not always be best for a given community (Sors, 2001).

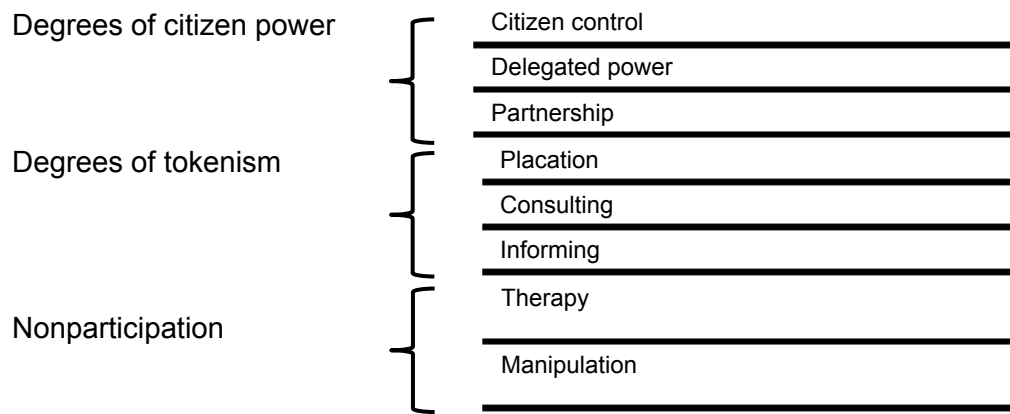


Figure 2.4 Arnstein's Ladder of citizen participation (Arnstein, 1969, p.217)

Similar to Arnstein's Ladder but targeted to a Marine Spatial Planning context, Pomeroy and Douvere (2008) identify a range of potential stakeholder participation approaches to Marine Spatial Planning. The types of participation range from communication, where stakeholders are provided with information instead of participating, to negotiation, where decision-making power is shared among the various stakeholders. A widely recognised spectrum of engagement is provided by the International Association of Public Participation (IAP2). This organisation aims to advance the practice of public participation (IAP2, 2014). Similar to Arnstein's Ladder, the spectrum entails a sliding scale from weaker to stronger forms of public participation (Figure 2.5). To minimise ambiguity about the purpose and nature of the participation, each type within the spectrum has a clear objective and promises or undertakings to the public (IAP2, 2014). These are presented in Table 2.6.

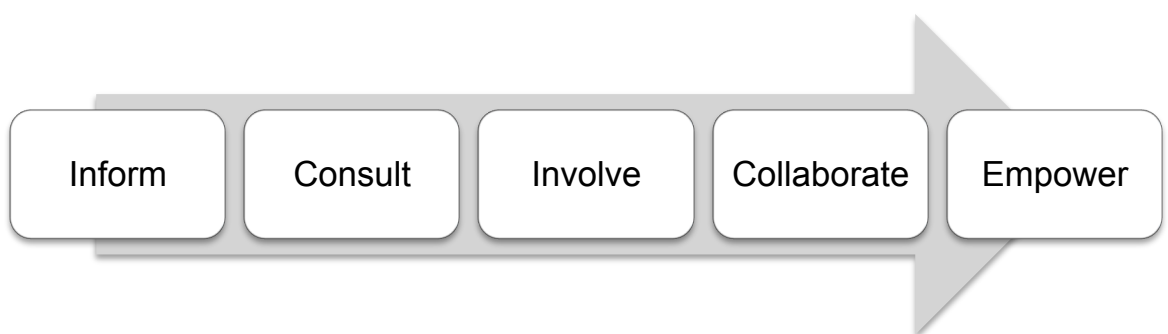


Figure 2.5 IAP2 Spectrum of public participation (IAP2, 2013)

Table 2.6: Features of the IAP2 scale for public engagement (Based on IAP2, 2013)

Engagement level	Description
Informing	Providing information to stakeholders about a particular development or the need for RE in general seems most focused on the pragmatic attempt to win support for applications, and therefore mitigate the problem of opposition (Cowell, 2007). Chilvers (2005) calls this the bottom-line approach, and it is the minimum level allowed by law. Haggett (2011b) emphasises that this way of engagement is not likely to be very successful or effective in encouraging public support for decisions or trust in decision-making processes. Arnstein (1969) called this non-participation and illusory participation. Information giving is often a first step in engagement processes but due to its focus on one-way flows of information, there is no opportunity for any uptake of public values or attitudes. However, Devine-Wright and Howes (2010) demonstrate that information provision has a clear purpose, because many local participants of their study thought that during the developer's engagement there was insufficient information provided to local people, leading to mistrust and scepticism about the motives of the developer (Devine-Wright, 2007; Devine-Wright & Howes, 2010). Methods include the distribution of leaflets, advertisements, exhibitions and displays. Information provision is widely recognised in the UK as important in decision-making. This is reflected in ample regulations that require provision of information to the public as an engagement strategy.
Consultation	A two-way flow of information between decision-makers, developers and the public. Responses are actively collected to provide developers with an opportunity to understand attitudes and identify problems (IAP2, 2013). Yet, the auspices under which consultation are carried out, and the degree to which it is possible to influence the final outcome determines the effectiveness of this strategy (Arnstein, 1969; Haggett, 2011b). Methods generally employed during consultation are: surveys, public meetings, public comment, and focus groups (IAP2, 2013), all often applied in decision-making in the UK, such as described in the Planning Act 2008; the Marine and Coastal Access Act (Section 4.2).
Involving	Decision makers and developers work directly with the public for the duration of the project to ensure public concerns and aspirations are consistently understood and considered during this dialogue (IAP2, 2013). Methods include: workshops and deliberative polling. Prell <i>et al.</i> (2007) conducted research on workshops, and found that by working intensively in a small group setting, participants had the opportunity to socialize, enhance relationships, and build trust. This approach, if dealt with appropriately, increases the likelihood that a process is seen as fair and legitimate by both developers and participants (Tippett <i>et al.</i> , 2007). However, these more deliberative methods have their drawbacks such as power imbalances (Abelson <i>et al.</i> , 2003; Reed, 2008). Although recommended by decision-makers, there are no statutory requirements for this aspect of the spectrum.
Collaborating	The developer and the public work in partnership in each aspect of the decision, including the development of alternatives and the identification of the preferred solution (IAP2, 2013). Methods include: citizen advisory committees, consensus building, and participatory appraisals. Although communities do not have full control, there is ample opportunity to influence the decision. Similar to involvement, there are no statutory requirements for collaborating with the public in RE decision-making.
Empowering	Final decision-making rests with the public. Methods include: Citizens' Juries ⁶ , ballots, and delegated decisions

⁶ Citizens' juries are a process during which stakeholders are presented with expert information and viewpoints, in situations that are highly technical, which prepare participants to make a decision (Crosby, 2003). Yet, its potential to express a collective recommendation to policy-makers has been questioned (Aldred and Jacobs 2000).

CROSBY, N. 2003. Healthy democracy - Bringing trustworthy information to the voters of America, Minneapolis, Minnesota, Beavers' Pond Press.

ALDRED, J. & JACOBS, M. 2000. Citizens and wetlands: evaluating the Ely citizens' jury. *Ecological Economics*, 34, 217-232.

The above section only addresses some of the possible techniques for engaging stakeholders, and the examples provided are not exhaustive. Although the public has the final say over projects, this is not the same as a community project, where the public leads developments and has ultimate control over it. Community RE developments are widely discussed in the literature and research has found that local attitudes towards RE developments can be more positive if developments are owned by local communities (Warren & McFadyen, 2010). The major advantages of community developments are: fewer planning refusals because communities drive developments, access to new sources of capital, and increased public support (Patterson, 2007; Scottish Renewables, 2007). However, there are also significant drawbacks, such as reduced economies of scale and large administrative burdens, which might discourage developers (Bolinger, 2001). Although this is an interesting avenue, an in-depth investigation of community developments is beyond the scope of this review and community-led MRE initiatives are very rare.

At present, there is no single best practice for engagement nor is any single method likely to be successful in all communities (Sors, 2001). Reason for this is that acceptance of different methods is context and culture dependent. Renn *et al.* (1997), for example, investigated responses from Germany, Switzerland and the US to participatory methods and found that US citizens were deeply suspicious of who planned them, whereas Swiss and German participants welcomed this approach. Different levels of engagement are thus likely to be appropriate in different contexts, depending on the objectives of the work and the capacity of those involved (Tippett *et al.*, 2007). Similarly, methods must be adapted to the decision-making context, reflecting demographic, socio-cultural, political and economic factors (Reed, 2008).

Based on the commonalities in the spectra presented, three broad categories of stakeholder engagement can be distilled: (i) information provision, which consists of a one-way flow of information consultation; (ii) a two way flow of communication, based

on consultation of communities; and (iii) dialogue between developers and communities which involves collaboration and empowerment (Figure 2.6).

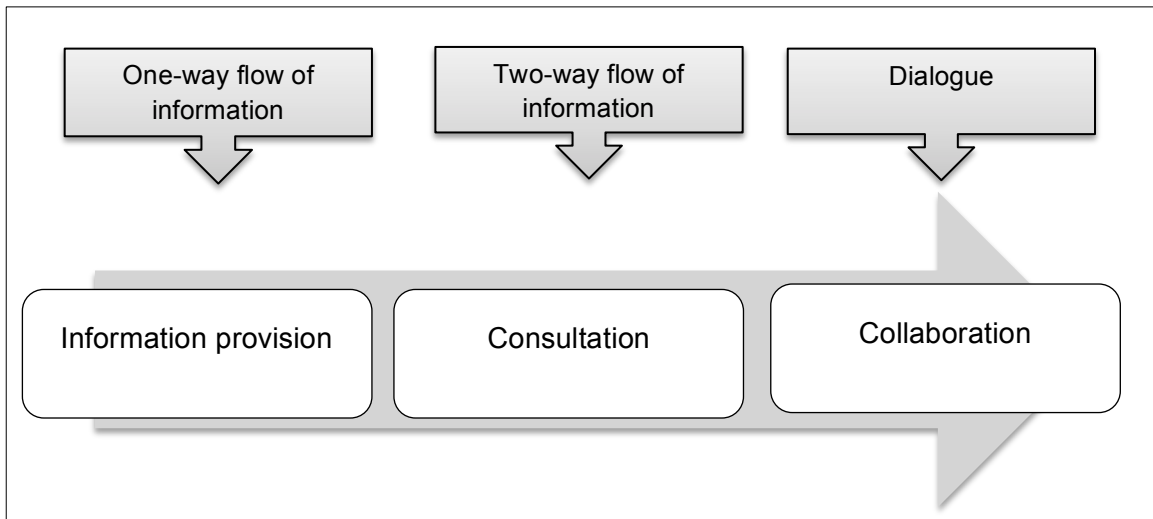


Figure 2.6 Primary categories for stakeholder engagement

Several researchers have focused on the difficulties involved in the interactions between developers and the public. Bell *et al.* (2005), for example, argue that ‘the structure of the planning system may encourage oppositional participation but planning policy and government support for RE may make successful opposition increasingly difficult’ (p. 463). To illustrate this, Barnett *et al.* (2010) found that developers preferred exhibitions over more in-depth forms of engagement, as it was considered to put people on the same level and diffuse antagonism, leading to more efficient, but not necessarily more effective engagement. Where public meetings in the opinion of Barnett *et al.*'s interviewees, were unhelpful, biased and often hi-jacked by organised ‘antis’, exhibitions were considered to facilitate the provision of information through the distribution of exhibition materials, leaflets and hand-outs. However, when people feel excluded from decisions, this may fuel opposition (Gross, 2007; Haggett & Vigar, 2004; Wolsink, 1996). Similar to Bell *et al.* (2005), Devine-Wright (2011d) found that, currently, active public engagement is often either promoted at the smaller scales, or as one-way engagement in larger-scale projects for fear of ‘them being against it’ from a lack of knowledge and excessively emotional stances (Devine-Wright, 2011d). This seems to

be tick-box/tokenistic engagement that can result from engagement being seen as an end in itself rather than servicing a purpose (Haggett, 2011b).

While Arnstein's scale identifies information provision and consultation as forms of token engagement, she also emphasised that 'higher' forms of participation are not necessarily better (Arnstein, 1969). The appropriate level of engagement may depend on the particular project and again be context based. This is supported by Lewicka (2005), who shows that place attachment correlates with public engagement, and is influenced by factors such as local social and cultural capital, whilst Korpela *et al.* (2009) found that place attachment arises from emotional processes and self-regulation. Although many engagement processes have been explored in the literature (Lynam *et al.*, 2007; Reed, 2008), there has been no clear best approach identified for engaging communities with MRE or RE generally. Within the participation literature, concerns have been raised about the emphasis placed on process, and it has been suggested that the focus on interaction directs attention away from the justice and sustainability of the material outcomes of planning interventions (Healey, 2003). Additionally, issues such as who participates and who does not participate are important to ensure that attention is paid to who might dominate engagement processes (Kaza, 2006). Reed (2008), tried to clarify these issues and brought together the literatures on engagement to identify best practice:

- Stakeholder participation must be underpinned by a philosophy that emphasises empowerment, equity, trust and learning;
- Where relevant, stakeholder engagement should be considered as early as possible and for the duration of the process;
- Relevant stakeholders need to be analysed and engaged systematically;
- The objectives of the process need to be agreed among participants at the outset;
- Methods should be selected and tailored to the decision-making context, considering the objectives, type of participants and appropriate level of engagement;

- Highly skilled facilitation is essential;
- Local and scientific knowledges should be integrated;
- Participation needs to be institutionalised.

Furthermore, the utilisation of participatory processes will also depend on the individual and organisational capacity of citizens or the community sector involved. The community sector, as with the business sector, comprises a shifting range of unorganised individuals, partially organised groups and well-organised stakeholder organisations, whose capacity and interest in engagement will vary widely (Head, 2007). Additionally, Rydin and Pennington (2000) indicate that expanding the opportunities for public participation in environmental planning is not always the best option and argue that the best methods for engagement are dependent on cultural and historical factors.

2.9 Conclusions: Context, context, context

This chapter has established that the evaluations people make of potential RE developments emerge from a complex range of social, economic and environmental factors underpinned by local contextual considerations. The literature has charted a shift from tendencies to brand negative attitudes to RE developments as selfish and NIMBY, towards acknowledging that many factors influence how people evaluate RE developments, including multiple place related factors. In essence, people ascribe meanings to places which among other factors, such as more general worldviews and beliefs, determines whether they evaluate RE developments favourably or not.

The majority of place attachment research has focused on potential predictors, influencing variables, and whether place attachment can explain opposition or support for RE developments. The research, however, focuses less on the actual processes

through which people are attached to places and how these influence attitudes towards RE. A crucial connection between the two is that the factors that determine place attachment are similar to many of those that determine attitudes.

Although research on attitudes to MRE technologies is increasing, existing research also provides limited detail of how people respond to developments in their local marine areas; the values affected; and how these relate to the various dimensions of place attachment. Most marine energy research has been conducted with researchers using particular theoretical lenses to rationalise reality to theory, rather than to build theory from reality. The available studies often take a deductive approach, and investigate whether developments enhance or deteriorate place attachment, but do not focus sufficiently on how people's relationship to places influences their attitudes to it, a more inductive approach. This review of the current literature identifies the danger of overlooking aspects of the multiple and complex local values that contribute to forming attitudes towards hosting MRE developments. This research will contribute to closing this gap, and focuses specifically on island communities that necessarily have a strong connection with marine areas, are often dependent on the sea, and are an identifiable unit of analysis.

The fact that multiple meanings of place and opinions on the uses of places can co-exist has consequences for engagement. Although the consequences of place attachment has received relatively little attention in the literature, important links have been made between place attachment and willingness to engage in (civic) activities. The research identified many functions of place attachment, and identified that if developments affect any of those objectives, peoples' lives may be significantly impacted. However, knowing which functions of place attachment are affected requires understanding of the context in which the RE developments will operate. Engaging the public is considered to facilitate RE siting by emphasising rights, pragmatism and utilising local expertise. A key observation from this literature also concerns the importance of contextual knowledge held by local stakeholders in resolving

environmental issues. In order to avoid problems with RE siting, the local context must be understood in addition to examining the effects of individual technologies and developments within that context. However, clear conceptual approaches through which community engagement facilitates real incorporation of attitudes into decision-making are lacking.

The close link between justice, identity and values, makes a justice perspective very relevant for investigating the uptake of attitudes in decision-making processes.

Understanding and acknowledging place-based values, employing a fairness and justice perspective may thus contribute to successful sitings because what is perceived as just will also be dependent on the same context in which attitudes are formed.

The local context, including peoples place attachment, is thus not just a contributor to shaping attitudes towards developments but is also proposed as the crucial link between developing attitudes and incorporating them into decision-making. However, a clear gap exists in the existing literature on MRE siting in particular, on how context interacts with methods for incorporating attitudes into decision-making. Considering the plethora of engagement requirements and methods – and different ideas of what comprises just and fair decision-making on procedures, outcomes and distribution of MRE development - it is important to investigate in a local context which engagement methods are considered to be most appropriate for incorporating attitudes. This research will make the first steps in this approach, in the context of MRE in small island communities.

Chapter Three: Research methodology

3.1 Introduction

The purpose of this chapter is review and justify the methods used to examine attitudes towards MRE, underlying values, and their uptake in decision-making. The research employs case studies and mixed methods, including a questionnaire survey and interviews. As described in the literature review, place is an overarching concept used as a lens to explore attitudes and engagement. To provide an appropriate focus on place, three island communities in the UK were selected based on the generating potential of the local areas, their different stages of engagement with MRE, and differences in their government administrations and associated policies towards MRE.

This chapter is divided into five sections: (i) the philosophical foundations of the research and justification of the multi-method approach; (ii) the positionality of the researcher, (iii) the case study method, explaining why this approach was chosen for this research and why the sites were chosen, (iv) the use of questionnaire surveys and interviews as methods to gather data, including the reasoning behind the choice of methods and the selection of participants; and (v) approaches to data analysis for each approach, including coding and the development of themes.

3.2 Philosophical foundation, mixed methods and triangulation

This research is based in the discipline of human geography, which studies the interaction between people and places. Despite influences from other disciplines including social psychology, economic theory and sociology, the strong focus on locality to understand social processes roots this research broadly within a human geography approach.

Methodologically, the research has taken a pragmatic approach, which takes as its starting point for methodological development the questions that need to be answered or the problem that needs to be addressed, in this case what are the attitudes towards MRE in small island communities, reasons for opinions, and how these can be incorporated in decision-making. This approach is increasingly adopted in social science research as an alternative to research driven by a strong paradigmatic position (Punch, 2005).

To provide a comprehensive view of the attitudes of people within island communities towards MRE, their underlying values, and the incorporation of views on MRE in decision-making, both quantitative and qualitative data collection methods were applied. Quantitative and qualitative research approaches are often seen as epistemologically distinct, quantitative methods being primarily associated with positivism and qualitative methods with constructivism (Bryman, 1988). Positivism claims that science brings objective and verifiable truths, whereas constructivism assumes that physical experiences are interpreted through mental and social constructs of how the world works. The basic principles, advantages and disadvantages of both approaches are shown in Table 3.1.

Table 3.1 Positivism and constructivism – Basic principles, advantages and disadvantages (Creswell, 2003; Crotty, 1998)

	Positivism	Constructivism
Basic principles	Objective – Focused on explaining observable facts	Subjective- focus on understanding individual meanings and actions
	Generally employs quantitative approaches	Generally employs qualitative approaches
	Focus on universal principles, facts, and truths	Focus on individual interpretation, meaning and values of people
	Aims to be value-free	Aims to make culturally and historically situated interpretations
Advantages	Economical collection of large amounts of data	Enables understanding of how and why
	Clear focus for the research from the outset	Flexibility to changes in the research process
	Greater control over the research process	Good for understanding social processes
	Data is easily comparable	Focus on context
Disadvantages	Inflexibility of research direction	Data collection can be time consuming
	Poor for understanding social processes	Complex data analysis
	Often unable to uncover attached meaning	

The table shows that both approaches have characteristics that are valuable for addressing the research problem. The generally quantitative focus of positivism provides a broad understanding of public attitudes towards MRE, an overview of place characteristics and preferences for engagement, and an opportunity to investigate connections, for example via a questionnaire survey. The constructivist approach, generally accompanied by qualitative methods, allows expression of more detailed opinions and the reasoning behind these (Creswell, 2003; Crotty, 1998). The interpretative nature of the constructivist approach is crucial for this research, as it enables further investigation of the range of opinions and characteristics collected through qualitative methods, but could also be applied to aspects of questionnaire surveys. The pragmatic approach permits application of the best of both approaches.

Application of quantitative and qualitative research methods and analysis in the same research is called mixed-methods or multi-method research (Creswell & Plano Clark, 2007). A main advantage of a multi-method approach is that the overlap between questions and methods creates triangulation. Triangulation is the application of 'different data sources and collection procedures to examine the same research issue' (Hoggart *et al.*, 2002, p.70). Two different types of triangulation exist: methodological, in which multiple methods are used to address the same question; and respondent, in which different groups and locations are chosen to attempt to replicate or contrast results (Berg & Lune, 2012). This research applies both. Multi-method approaches can also highlight inconsistencies in the data, which can bring about deeper questioning and increase understanding, as multiple routes may eventually lead to the same result, solidifying its significance (Hoggart *et al.*, 2002). Multi-method approaches also provide an opportunity to use complementary methods that enable interpretation of meaning from multiple angles, allowing for a more in-depth view into the research problem (Creswell & Plano Clark, 2007). Because each research method has its strengths and weaknesses, multiple methods can provide greater cross-validation when interpreting data. For example, survey methods record regularities in responses and superficial indications of reasons but lack the depth for real explanation (Hoggart *et al.*, 2002). Interviews, instead, provide contextualised answers, which enable nuanced understanding of the issue. However, this depth is offset by critiques on the subjectivity, validity, and generalizability of interview data (Hoggart *et al.*, 2002; Patton, 2002; Teddlie & Tashakkori, 2009; Creswell & Plano Clark, 2007).

As a consequence of the above considerations, regarding research approach and questions, this approach was adopted for the research and serves various purposes including: integration to create new knowledge; validating different forms of knowledge; and generating insights from complementary approaches (Elwood, 2010). This research is primarily concerned with the latter two, and has both theoretical and practical implications. Theoretically, this implication is that the mixed-methods

application reduces the generalizability of the data due to the qualitative nature of one or more methods (Teddlie & Tashakkori, 2009; Creswell & Plano Clark, 2007). As a practical implication, a mixed-methods research design as part of a pragmatic approach enables the collection of the quantitative data suitable for investigating attitudes towards MRE, whilst remaining sensitive to constructivist perspectives that allow elicitation of the underlying values that affect these attitudes.

Multi-method research was chosen to gain completeness and diversity of views, as suggested by Bryman (2006), because different types of data and modes of analysis probe distinct processes and interactions. These can be drawn on together to enhance the explanatory power of the research (Elwood, 2010). In this research, a multi-method approach provided a general overview of existing attitudes in conjunction with an in-depth examination of their underlying reasons and representations in decision-making processes. The methods employed in this research are a questionnaire survey and interviews, which contribute to achieving specific research aims, and answering different research questions. The advantages and disadvantages of each research method are discussed in more detail in sections 3.5.1 and 3.5.2. The contribution of each research method to achieving the overall research objectives is shown in Table 3.2.

Table 3.2 The contribution of the research methods to achieving the research objectives

Research objectives	Questionnaire survey	Interviews
Examine attitudes towards MRE in small island communities	X	X
Investigate the factors and values shaping these attitudes	X	X
Ascertain how communities view MRE with regard to their place attachments	X	X
Investigate the inclusion of community attitudes into MRE decision-making	X	X
Assess the possible contribution to practice that incorporating community views could bring to policy and planning procedures for MRE in the UK		X

As the table shows, the investigation of different attitudes is best explored through quantitative surveys, whilst interviews provide deeper insight into underlying reasons for attitudes. Similarly, the exploratory nature and potential for comparability of survey results facilitates understanding of preferences for engaging in decision-making processes, whilst interviews enable their understanding based on social and historically situated interpretations (Bryman, 2001).

3.3 Positionality of the researcher

Discussing positionality in positivist research is unusual as it often assumes that research is value free and measurable. However, the constructivist aspect of the research requires an explanation of particular drivers for conducting this research. Understanding the positionality of the researcher provides important context of the researcher's role in co-producing and interpreting data (Cloke *et al.*, 2004) and thus, how the research should be interpreted by research users.

The concept of situated knowledge was developed in the 1980s by Donna Haraway, who advocated the approach of stating the researcher's positionality from the start, based on the assumption that all knowledge stems from a combination of research and place (Haraway, 1988; Jensen & Glasmeier, 2010). This is important, as everybody has preconceptions. Even though I attempt as much as possible to adopt a neutral position towards the research issue, this is never entirely possible. For example, my reasons for investigating MRE stem from personal concerns for the natural environment and a desire for sustainability. My social situatedness has resulted in a desire for applied research, and I realise that my decisions about research design are, to an extent, influenced by these viewpoints.

My interest in small (island) communities stems from my upbringing in a rural community in the Netherlands. This fostered an appreciation of what it is like to live in a

small community, and experience with social interactions in small communities. Having lived in island communities, this further enhanced understanding and appreciation of the particularities of island life. This was especially useful when interacting with communities during the data collection periods, because although based on different socio-cultural norms, this positioning facilitated communication in many instances during the recruitment of participants and when exploring the research area.

The literature describes the outsider-insider perspective, and identifies that researchers who study the group that they belong to have certain advantages in receiving information versus an outsider, who might not have the same level of trust (Mullings, 1999). When commencing the research, I tried to adopt an outsider perspective when collecting data. However, this was not always possible, and despite the fact that my social situatedness was based in different geographical locations, the insider effect sometimes occurred. This occurred in particular because communities were very welcoming, invited me to join them for meals in their homes and alerted me to community activities that I might be interested in joining. To my surprise, research participants saw nature of the Dutch as similar to that of Orcadians and Shetlanders. Historical comparisons were made in relation to joint sea-faring histories and openness to change. These comparisons were accompanied by comments such as 'but you know this; you guys do the same. That is who we are'. Further historic connections between the Dutch fishing fleets and the islands were drawn on to illustrate their associations. Personally, this minor connection eased conversations and promoted information sharing, and made me feel sufficiently accepted by communities to gain in-depth insight into their situations. However, I am aware that this might have affected my independence despite my intentions, and could cause some bias in my results, because there is a risk that my personal feelings towards the community may have affected the research process. At the same time, this 'bias' provided insights and understanding about the community that would have been lacking if I persisted with the outsider perspective. Mullings (1999) acknowledges this issue and argues that

outsiders are sometimes seen as having higher levels of objectivity. Upon reflection and taking into consideration the different geographical nature of the 'insiderness', I believe that any bias was kept to a minimum.

3.4 Case study research design

Investigating attitudes towards MRE and their uptake in decision-making requires an approach that enables in-depth exploration of how people perceive and evaluate MRE within particular social, environmental and economic circumstances. Biermann (2007) indicates that research methodologies should be integrative and are best based on approaches that are qualitative, case based, context dependent, and reflexive. A case study approach is well suited to provide these qualities. Case studies may, nevertheless, contribute to theoretical development by providing insights into location specific phenomena that can be tested elsewhere or for different issues, and have been defined by Robson (1993) as 'a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence (p. 146)'. The use of multiple sources of evidence gathered within one area provides a more complete understanding of the complex social networks and actions in any given location (Orum *et al.*, 1991).

Orum *et al.* (1991) identify, as additional benefits of case studies, that they allow for the grounding of observation about attitudes, actions and social structures in their natural settings, as well as the opportunity to obtain data from multiple sources within one area. A strong focus on context and grounding observation in particular localities makes the case study approach fitting for this research. This is consistent with the conclusions from Chapter 2, which emphasised the importance of context and place-related factors when investigating attitudes towards renewable energy. Yin (2009) focuses on a different dimension of case studies and recommends the approach 'when the

boundaries between phenomenon and context are not clearly evident' (p. 13). This makes case studies particularly useful for this research, since, without studying several sites, it cannot be established whether attitudes underlying reasons are shared between communities or unique to individual communities, and therefore, are entirely context dependent.

Both Yin (1994) and Robson (1993) indicate that conducting multiple case studies is appropriate, as they might build upon or complement each other for the sake of analytical generalisation. There are two main ways to select prospective case study sites: sites that are representative of a larger population (e.g. randomly selecting residents from the UK to example their attitudes towards MRE); and theoretical, non-random populations can be selected based on their specific qualities (Eisenhardt, 1989). Given the limited number of island communities in the UK suitable for MRE deployment and the objective of the study to explore the attitudes towards MRE in small island communities, this research applies the latter method. Pettigrew's (1988) recommendation to select polarised cases or cases in which the process of interest is clearly visible was followed when selecting study sites.

3.4.1 Case study selection

In view of the above, a multiple case study approach was chosen for this research based on: (i) the distinct environmental, social and political histories of the communities involved, which allows for the complexities of attitudes and their uptake in decision-making to be explored in context; and (ii) the level of MRE activity in the area. Three island communities in the UK were selected based on the MRE generating potential of the areas, as MRE can only be developed where the resource is available. The MRE resource atlas commissioned by the Department for Business, Enterprise and Regulatory Reform (BERR) MRE resource atlas was used to identify areas with a potential for generating wind, wave and tidal energy (See Figures 3.1, 3.2 and 3.3) (BERR, 2008). Several island communities in the UK are, based on their energy

resources, extremely suitable locations for MRE development. The sites were thus selected based on the availability of MRE resource and the amount of MRE activity present in the area.

Study sites were also chosen based on differences in government administration, RE targets, consenting procedures, and requirements for stakeholder engagement (See Table 3.3). Two study sites are located in Scotland, which has a 100% target for RE by 2020 and where Marine Scotland is the main consenting authority for MRE based on the Marine (Scotland) Act. In England, this target is 15% by 2020, and, depending on the size of a development, different consenting procedures apply. Smaller developments are consented by the Marine Management Organisation (MMO) and larger ones by the Planning Inspectorate (PI). The different ambitions for RE, which has created a particularly favourable environment for developing MRE in Scotland, and the different requirements and procedures that apply to stakeholder engagement in each administration may influence the incorporation of attitudes into decision-making. A detailed description of the consenting procedures for each administration follows in Chapter 4. Furthermore, the two areas have different environmental social and political histories. The referendum on independence held in September 2014 is evidence of this. The outcome of the referendum, for Scotland to stay part of the United Kingdom, demonstrates the importance of the two areas to be investigated in their own merit. Although the UK consists of more than two administrative regions, the English governance system is the overarching framework for most decisions, in particular large developments. Furthermore, inclusion of a third or fourth area was not possible due to time and resource constraints.

Table 3.3 Summary of criteria for selection of the case study sites

Selection criteria	Orkney	Shetland	Isles of Scilly
RE target for 2020	100%	100%	15%
Generating potential	High for all types of MRE	High for all types of MRE	High for wind and wave
Experience with the sector	High	Medium	Low
Government administration	Scotland	Scotland	England
Consenting authority	Marine Scotland	Marine Scotland	< 100MW - the MMO >100MW - the Planning Inspectorate
Main legislation for planning decisions	Marine (Scotland) Act 2010	Marine (Scotland) Act 2010	< 100MW - Marine and Coastal Access Act 2009 > 100MW - Planning Act 2008

The selected sites also have different development stages of the MRE sector, which was particularly valuable, as varying degrees of exposure to MRE may influence local attitudes towards MRE and its perceived effects on communities. Orkney, for example, can be considered a leader for MRE development in the UK, and some research participants may have been involved in early stages of decision-making processes, potentially influencing and providing valuable insights on engagement. MRE is gaining momentum in Shetland, and the Isles of Scilly have little experience with MRE. For detailed descriptions of experience with MRE in each study site, see Chapter 4.

Figure 3.1 has been removed due to
Copyright restrictions.

Figure 3.1 Estimated wave power in the UK (BERR, 2008, p.12)

Figure 3.2 has been removed due to
Copyright restrictions.

Figure 3.2 Estimated average tidal power in the UK (BERR, 2008, p.6)

Figure 3.3 has been removed due to
Copyright restrictions.

Figure 3.3 Estimated offshore wind power in the UK (BERR, 2008, p.16)

The considerations discussed above resulted in the selection of three study sites: the Orkney Islands, the Shetland Islands and the Isles of Scilly (see Figure 3.4), enabling understanding of attitudes towards MRE and their uptake in decision-making to be gained by examining similarities and differences between the cases. The Orkney Islands were selected as a study site because it is considered a leader in MRE development and hosts the European Marine Energy Centre. Orkney communities have thus had 10 years' experience with consultations on, and trials of, MRE. Shetland's experience is in between Orkney and the Isles of Scilly, with some interest shown for MRE deployment in the past 3 years, and some early experience with community engagement for the UK's first commercial 10MW wave farm and the consenting process of a community tidal project. The Isles of Scilly was chosen as the least advanced area on MRE, where there were no concrete plans for projects at the time⁷. Further important differences include the environmental context and the types of locally significant industries that may be affected. To ensure that the timing of the data collection had limited influence on comparisons between the study sites, the data collection took place in similar time periods. Because the data was collected by a single researcher, the data collection was not concurrent, but took place in consecutive periods in the same season. Two visits per case study site area also enabled data collection in different seasons, reflecting the high seasonality of the island economy. Chapter 4 provides more context to the case study sites, their socio-economic background and experiences with MRE.

⁷ This has changed since the fieldwork was conducted and there are plans for test development consisting of three wave devices.



Figure 3.4 Locations of the case study sites

3.5 Data collection

As described in Section 3.4, case studies are a research strategy rather than a method (Yin, 2009). To study the phenomenon in context, multiple methods of evidence or data collection were adopted. Figure 3.5 illustrates the sequence and design of the research process.

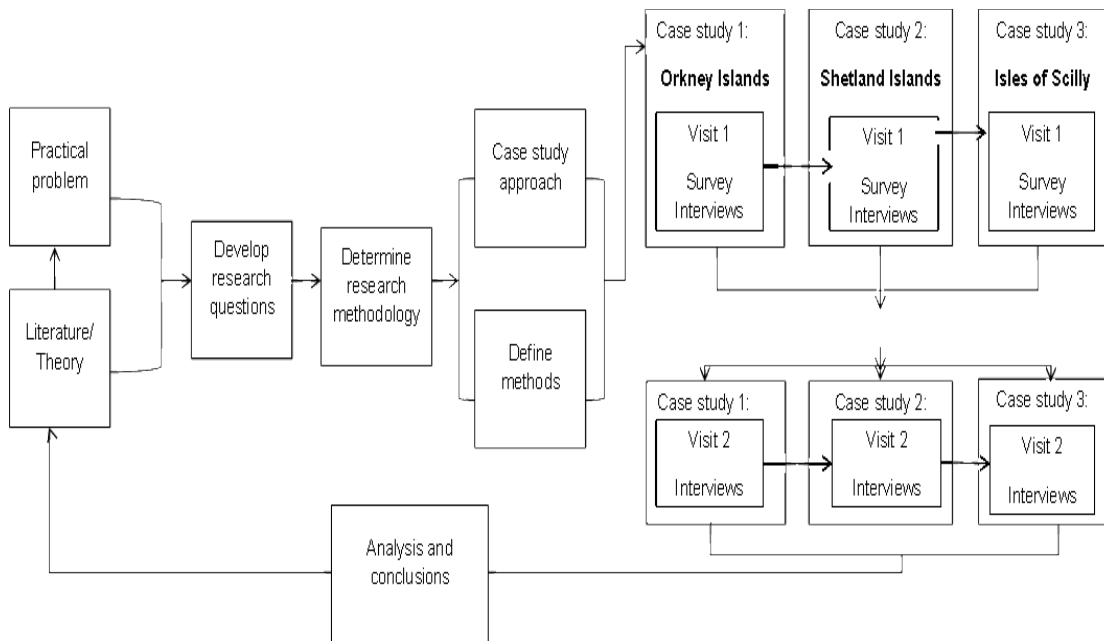


Figure 3.5 Design of the research process

Data was collected through the course of two visits to each set of islands (around two weeks in duration apiece). The first visit was primarily concerned with establishing contacts in the community, a first round of interviews and distribution of the questionnaire survey. The interviews were completed during the second visit.

3.5.1 Questionnaire survey

To gather opinions from potential host communities about their community, attitudes towards MRE and perceived impacts, a questionnaire survey was distributed in the case study areas. Surveys are a research method in which data are collected in order

to collect a body of quantifiable data in a systematic way in respect of a number of variables which are then examined to establish patterns of association (Robson, 1993).

Robson (1993) argues that surveys 'provide a relatively simple and straightforward approach to the study of attitudes, values, beliefs and motives (p. 233), which can be adapted to provide generalizable information. Through the surveys, trends in opinions and attitudes were established, which were then combined with deeper investigation through the qualitative interviews as part of the mixed methods approach (Section 3.2). This overcomes the potential superficial nature of applying a survey approach on its own, and the inflexibility of its design in the sense that, to maintain comparability of the results, the survey cannot be adapted once commenced. Further problems identified with surveys include:

- Interviewer bias, which is caused by the effect of the interviewer on the data by their presence or their behaviour when administering the survey.
- Volunteer bias, in which people willing to participate in the study may be more interested in the topic and therefore more likely to participate. Other characteristics such as education and age can inhibit or encourage participation, or some people may be too busy to participate.
- Leading questions (Czaja & Blair, 1996).

To avoid bias in this research, the interviewer generally did not administer the survey; instead it was mainly delivered and collected on completion by local volunteers.

Volunteer bias, which is very hard to overcome, was addressed through flexibility of the researcher. For example, some people who indicated that they were too busy to fill-in the survey agreed to complete the survey face-to-face whilst working in their garden or doing other activities. For those people that expressed concern they did not understand the questions or did not read or write well, the researcher again administered the survey. Regarding leading questions, the survey was designed in a way to ensure value-neutral questions, including avoiding leading questions.

A questionnaire survey was distributed in all study sites to: (i) gain a broad understanding of the specifics of each local context; (ii) investigate community attitudes towards MRE developments and their perceived impacts; (iii) and investigate attitudes towards different types of engagement strategies and respondents' inclination to participate in consultation activities.

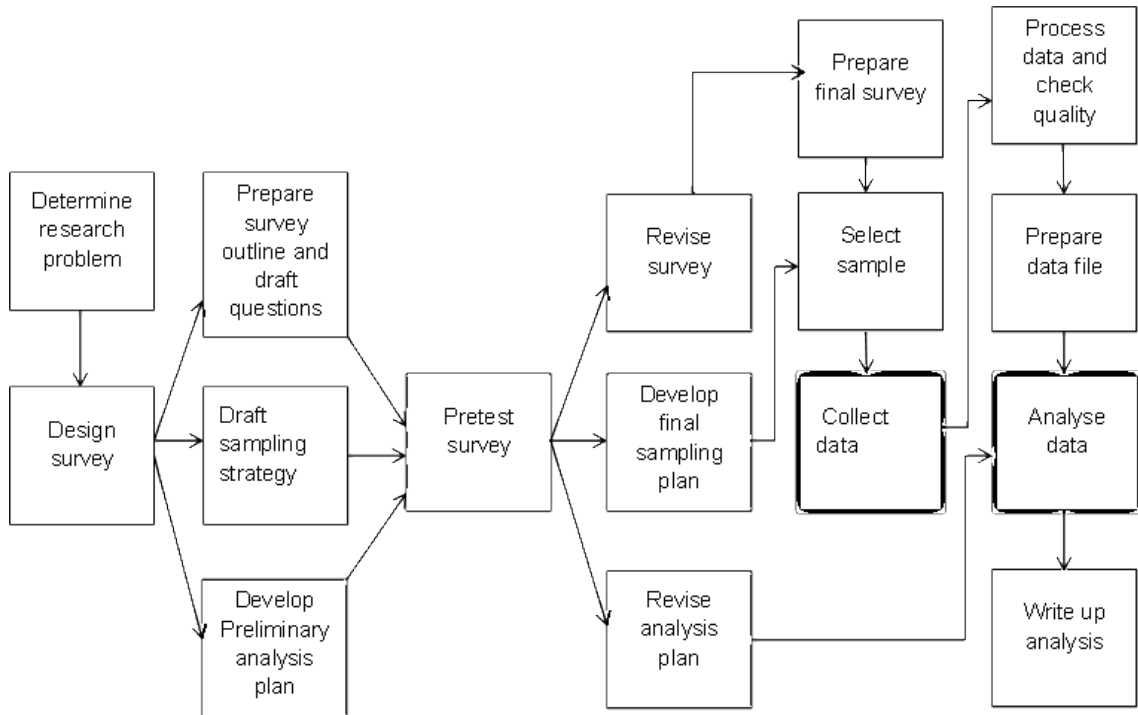


Figure 3.6 Design process of the questionnaire survey

Figure 3.6 shows the design of the questionnaire survey. First, a draft survey was developed informed by themes identified in the literature review. The questions were kept simple, which is important for a self-administered survey because 'It is important that mail surveys are totally self-explanatory, since instructions and questions must be uniformly understood by a variety of respondents' (Czaja & Blair, 1996, p.33). If the survey is difficult to understand or is time-consuming, it is unlikely that the survey will be completed, or respondents will make errors or interpret the same question in different ways. Although the drop and collect method was used instead of postal delivery, the importance of a self-explanatory survey is the same.

The questionnaire consisted of both closed and open questions to give respondents an opportunity to explain some answers. Sample questions of each type of question are shown in Table 3.4. Where possible structured, closed, questions were used to increase the comparability of the data, as suggested by Alreck and Settle (1995). However, this was not always the most appropriate type of questioning considering the exploratory nature of the survey. Open questions and explanatory questions were used to increase the breadth of answers possible, aimed at providing an inventory of answers. For example, to identify main characteristics of a location by participants required an open question because providing multiple choice answers to this question could easily result in leading questions. The explanatory questions were also left as open questions to avoid leading responses.

Table 3.4 Type of survey question, response category and example questions

Type of question	Response categories	Example question
Closed question	Rating/ Likert Scale	What is your attitude towards developing different types of marine renewables around the Shetland Islands?
	Multiple choice	Generally, do you support the idea of renewable energy
Explanatory question	Single text box	Why do you feel this way?
Open question	Single text box	If you could protect one aspect of the Shetland Islands, what would it be?
	Choice of positive/negative plus Single text box	What are the three main characteristics of the Shetland Islands?

The questions were directly based on the research questions (see Chapter 1) and the literature review (see Chapter 2). The survey was divided into six short sections, shown in Table 3.5.

Table 3.5 Layout of the questionnaire survey and literatures used to develop questions

Description of the section	Relevant literature
1. Opinions on the local area	Literature on place
2. Attitudes towards renewable energy in general	Literature on renewable energy and formation of attitudes
3. Attitudes towards MRE	Literature on renewable energy
4. Reasons for opinions	Literature on renewable energy siting and impacts
5. Community consultation on marine energy	Based on the strategy for stakeholder engagement developed by the IAP2 (2013).
6. Background	General literature on research methods

The same survey was distributed across all study sites. To ensure that respondents were aware of the geographical coverage of the survey, in each site, the survey asked specifically for answers related to Orkney, Shetland or the Isles of Scilly. An example of the survey and accompanying cover letter is provided in Appendix I. The cover letter included an email address for inquiries on the legitimacy of the survey, difficulties or general questions. The survey was then tested during a meeting of the Marine and Coastal Policy Research group, while further testing was conducted on relatives and a number of acquaintances to receive feedback from a variety of people who were not necessarily familiar with the topic. Their comments were incorporated in the revised survey. Based on the feedback from the pilot survey, several questions were reworded to make them easier to understand, and the formatting was altered to make the survey appear shorter. A question on income levels was removed because of concerns that the question was too intrusive. It was not possible to conduct pilots in the local area, however, because the number of visits to each study site was limited.

3.5.1.1 Sampling

Within each study site, a multi-stage sampling approach was adopted, to enable tailoring the scale of the project to available resources (Robson, 1993). With the available financial resources and often limited transportation on the islands, this was the most appropriate sampling strategy to reach a variety of islands, while keeping a

reasonably random sample. The following sampling techniques were applied consecutively:

- Cluster sampling. This sampling technique is most appropriate when the population is geographically separated or widely dispersed (Alreck & Settle, 1995). To create a balance between centrally located areas and outlying islands, a distinction was made between rural and more urban areas. This resulted in the selection of several areas and islands, shown in Table 3.6.
- Systematic sampling. This was applied in each of the selected sites. In the urban areas, streets were randomly selected, and every n th house was selected, as suggested by Robson (1993), depending on the number of houses in the street. A starting n was randomly assigned to avoid order bias (Alreck & Settle, 1995). Because of the limited number of streets and the length of the streets, this sampling strategy was chosen over phonebook or electoral register selection, which is not all-inclusive. In the rural communities, all households were approached, due to the small population size of the islands. Furthermore, the layout of settlements often made it impossible to sample at street level.
- A final stage of sampling was applied at household level, where, to avoid self-selection bias, in each household the person with the nearest birth date following the date of delivery of the survey was asked to fill in the survey. This technique has been applied often in telephone interviewing and was proposed by O'Rourke and Blair (1983).

Questionnaires were distributed to 1570 addresses, with 600 distributed in Orkney, 550 in Shetland and 420 in the Isles of Scilly. Differences in population size and sampled sites within the islands explain the different numbers delivered in each site. The Isles of Scilly, for example, has the smallest population, and had the least questionnaires delivered. Shetland had fewer questionnaires delivered despite a similar population to

Orkney because the sampled sites consisted of fewer households. The overall response rate was 35.5%.

Table 3.6 Summary of the multi-stage sampling approach

Sampling strategy	Orkney	Shetland	Isles of Scilly
<i>Cluster sampling</i>	Based on geography		
<u>Urban</u>	Stromness Kirkwall	Lerwick Scalloway	St Mary
<u>Rural</u>	Burray Hoy Eday Westray	Whalsay Unst Fetlar North Yell	St Martin Tresco St Agnes
<i>Systematic sampling</i>	Within island communities		
<u>Urban</u>	Randomly selected streets, every <i>n</i> th house	Randomly selected streets, every <i>n</i> th house	Randomly selected streets, every <i>n</i> th house
<u>Rural</u>	Entire community approached	Entire community approached	Entire community approached
Sampling on date of birth	Within household		
	The person in the household with the next birthday	The person in the household with the next birthday	The person in the household with the next birthday

A disadvantage of surveys that are not administered by the researcher is a possible response bias, which occurs if one subgroup is more or less likely to cooperate than another. Examples include people with low education, people who have difficulty reading and writing, or those who are visually impaired. Mail surveys often receive greater response bias because respondents can easily ignore them. In face-to-face surveys, where an interviewer asks and records the questions, this is less of a risk. Although their response rates are generally higher than that of mail surveys and response bias relatively low (Czaja & Blair, 1996), they are resource and time consuming. Furthermore, it is more difficult to achieve an even spread of respondents on the street. To overcome the issues associated with this approach, and to maximize the number of households reached with the available resources, the drop-and-collect method (with personal delivery) was the main method of distribution. This method made it possible to reach many households whilst saving on postage expenses.

Importantly, personal delivery of the survey by the researcher also increased interaction with respondents. This facilitated the flexible delivery of the survey discussed in the previous section. On several occasions this led to people completing the survey after an initial rejection. It also enabled participants to ask questions before participating, and in some cases respondents asked to be helped with the questionnaire, such as some older people and some with visual impairments or reading problems, reducing the response bias. The personal contact also enabled an initial assessment of the reception of the questionnaire, and general interest in the topic, which was mainly positive. The approach also provided an initial understanding of the community. It also provided further information over and above answers to the set questions. If nobody was home, the questionnaire was left in the mail box.

When selected sites could not be visited due to transport limitations, mail delivery was chosen. To maintain personalised delivery, committee members of community associations were contacted, all of whom agreed to distribute the questionnaires, sampling their entire community. The combination of delivery methods has been acknowledged as a viable approach depending on research aims and goals (Czaja & Blair, 1996). The survey yielded a total response of 558 questionnaires, a 35.5% response rate. Compared to available studies (e.g. Bailey *et al.* 2011, whose response rate was less than 20%) the response rate for this study is much higher, but does, as is always the case with surveys, leave unanswered questions about the silent majority.

3.5.2 Interviews

As part of the multi-method approach, interviews were conducted with community members and MRE stakeholders. In-depth interviews have been widely applied in the renewable energy literature as a way of data collection, and are considered an effective method for understanding attitudes towards energy developments and the reasoning behind opinions (Devine-Wright & Howes, 2010; Gross, 2007; Upreti, 2004). All except two interviews were conducted face-to-face. Participants were made familiar with the

research goals and objectives, and signed a consent form (See Appendix II). This section describes the development of the interviews, the recruitment of participants, and some of the difficulties experienced.

Unstructured interviews were conducted to move away from the rigidity of the survey approach and to enable gathering of information from a variety of stakeholders and community members. Furthermore, the approach assumes that it is not possible to know in advance what the necessary questions are. Although Berg and Lune (2012) argue that no questions need to be scripted, specific topics were planned for each interview. However, the flow of conversations was still largely determined by participants and their expertise.

Table 3.7 Example section of an unstructured interview guide with a regulator representative

Topic	Sub-topics
Engagement	Role of the organisation/individual Experiences with engagement <ul style="list-style-type: none"> - Good and bad - Where possible directly with MRE Barriers and ways to overcome barriers Preferences of the organisation
	<u>After discussing survey results</u> <u>Feasibility implementing community preferences</u> <ul style="list-style-type: none"> - On the ground - In regulatory environment

The exploratory nature of the study combined with the different expertise and knowledge of participants required a loosely defined set of issues for discussion. An example section of an unstructured interview guide with a regulator representative is shown in Table 3.7, and with a community representative in Table 3.8. Although this structure somewhat resembles semi-structured interviews, free wording of each question and a more conversation-like structure created greater interaction with participants. For example, exploration of the different positions of MRE stakeholders and the associated issues arising from these would have been hindered by the use of a rigid approach in which the entire set of questions was laid out. Instead, a more open approach was used to enable stakeholders to self-identify what they saw as the most

important issues. Two limitations of this approach are the comparability of interview results and more complicated analysis. However, importantly, it allowed for a more complete and respondent-led picture to be compiled, for example, on issues such as fisheries and aquaculture interactions with MRE and the wider community.

Table 3.8 Example section of an unstructured interview guide with a community representative

Topic	Sub-topics
Attitudes towards MRE	Investigated via the survey – Respondent left contact details for a follow-up interview
Experience with MRE	Do you feel that the development of MRE so far has affected you?
Experience with engagement	What are your experiences to date: <ul style="list-style-type: none"> - What are you aware of has taken place - What was the type of engagement - Have you participated in the engagement? Why (not)? - What are your views on it (what has worked well, what has not worked, what do they need to do more of, what would you like to see changed or done differently?)
Engagement in the future	Thoughts on community engagement in the future <ul style="list-style-type: none"> - How do you think community consultations should be organised so that local interests can be represented - If you were to advise on a community consultation event, what would be the key things you would include in this process, and why is it important?

3.5.2.1 Recruitment of interview participants

Two main types of interviewees were recruited for the in-depth interviews: (i) MRE stakeholders, including developers, authorities, consultancies, special interest groups, the community sector, and others with experience with MRE; and (ii) community members from various backgrounds. Several methods were used to recruit interview participants, depending on the type of interviewees. The above were chosen because MRE stakeholders have experience with developing the MRE sector in the local context, and community members have knowledge of the community and the local area, and are therefore well-placed to explain the context in which attitudes are formed.

Interviews with MRE stakeholders

Stakeholder interviews are used to investigate views of people who have specialised knowledge on an issue (Patton, 2002). Participants were selected for their experiences and knowledge of the MRE sector, consenting processes and procedures, or

knowledge of the community. Several device developers were selected and interviewed, but also people involved in community engagement. This enabled clarification of views or findings based on experience, which is often not possible for researchers to access (Goetz & LeCompte, 1984). The stakeholder interviews thus increased understanding of community engagement strategies and practicalities, MRE experiences, and evaluation of the viability of engagement preferences expressed by survey respondents or during community interviews.

Recruitment of interviewees was based on two sampling techniques; sampling on the basis of actor types, and snowball sampling. Actor-type sampling aims to include stakeholders that are representative in terms of their affiliation (e.g. the MRE sector, community actors and regulators). The main drawback of this approach is its presumption that the actor type chosen guarantees representativeness in terms of perspectives. Although there might be a high correspondence of views with that of their wider actor group, this is not necessarily true (Cuppen, 2009). Notwithstanding this, actor-type sampling was used in conjunction with a case study approach because of its suitability to investigate local issues and the identifiable stakeholder groups in the case study sites.

Interviewees were also recruited via the snowball method for their expertise in particular areas (Foster, 2006). Although this approach does not for full identification of the extent to which diversity is covered, combined with sampling on the basis of actor types, this approach enabled both diversity and expertise. Snowball sampling also encourages cooperation between stakeholders and therefore facilitates access (Foster, 2006). Two main reasons justified a snowball sampling approach for this research:

- The study sites are geographically restricted to three small island communities which, because of their small scale, only have a limited number of relevant actors available.

- The MRE industry in the UK and regulating bodies are limited by the immaturity of the industry and its governing practices⁸.

A starting point for participant recruitment was a conference held on the environmental interactions of MRE held in Orkney in May 2012, which brought together many academic and industry experts in the area. Many local (both Orkney and Shetland) stakeholders who attended a workshop at this conference were approached for an interview at a later point in the research. To recruit interview participants in the Isles of Scilly, the Internet was used together with recommendations from peers familiar with the islands.

Initially, a few key MRE and community actors were approached to identify potential interviewees, which resulted in a broadening sphere of actors. All interviewees (and those approached for interviews) were asked to name other potential interviewees. Due to the small and contained nature of the marine energy industry and the geographically confined nature of the case study areas, a fairly saturated list of possible interviewees was collated. To obtain a cross-section of respondents, with potentially different views about the issue, efforts were made to ensure a variety of respondents. For example, stakeholders from the MRE sector included a representative of a testing facility and different device developers (including wave and tidal). Where possible, stakeholders from all case study sites were interviewed. Full coverage was not possible, because the MRE sector in the Isles of Scilly was particularly undeveloped at the time. All interviewees that were approached agreed to be interviewed.

As suggested by Creswell and Plano Clark (2007), interviews were conducted until the data obtained reached saturation. At this point, patterns in the data remain relatively stable and little new information is gained from additional interviews (Glaser & Strauss, 1967). This was reached after 24 interviews. Table 3.9 shows a summary of the

⁸ Although the offshore wind sector is relatively well-developed, no large offshore wind farms are located near the case study sites, which limited the involvement of this sector at a local level.

affiliations of the interview participants. An outline of the interview schedule can be found in Appendix D.

Table 3.9 Summary of interview participant affiliations

Broad affiliation of interviewees		Number of interviews
MRE sector	Consultant specialised in MRE	1
	Research and Development	4
Regulator	Government representative	2
	Consenting authority	1
	Marine Spatial Planning	1
Community sector	Community Interest group	3
	Energy related group	4
Conservation	AONB officer	1
	Conservation partnership	1
Marine sector	Fisheries	3
	Aquaculture	2
Other	Duchy of Cornwall	1
Total		24

Interviews with community members

Community members were interviewed to increase depth of understanding of the survey data on, for example, the local context in which attitudes developed and engagement formed. Community members were recruited via two different routes. Firstly, survey respondents were invited to explain their opinions further in interviews, and were encouraged to leave their contact details. Several interviewees were recruited via this approach. The second approach was via posters and notice boards. A total of 20 interviews were conducted, of which three interviews had two participants, and one had three participants. The final selection of community participants covered a variety of people from different ages and layers of the community, including fishers, local businesses, aquaculture workers, tourism businesses, public sector workers, and retirees. Interviewees from these groups were selected because of their strong representations on the islands, to ensure that the main sectors of employment in each site were represented.

Originally, I had planned to use focus groups to observe interactions between different members of the community and to discuss engagement in decision-making with a variety of participants. However, this approach had to be modified primarily to one-on-one interviews and interviews with multiple participants. The main reason for this was the low turnout for the focus group. Although the focus group were advertised in the local community (via posters, notice boards, and community mailing lists), very few people attended the events. Each of the four focus groups initially planned yielded some participants, but not sufficient to follow the entire process of the focus group. It is possible that the community was not interested in the topic, people did not attend due to consultation fatigue, the timing of the consultation was not convenient, or the format was not appealing. As discussed below, in Shetland the main reason identified by the local community association was the timing of the events during a busy period for the communities. Interest among people to be interviewed later showed that there was an interest in the topic, but that the timing was inconvenient. Instead of focus groups, an interview based approach was adopted with these participants. Although some of the interactive benefits that focus groups provide were lost, such as the benefit of observing group dynamics to clarify key topics and to ease assessing the extent to which there is a consistent and shared view, due to the low number of participants this effect was unlikely occur. The decision to conduct interviews instead of focus groups allowed more questions to be asked and greater depth of discussion on individual issues than would have been possible in a focus group.

The use of local champions in the form of community associations, development trusts and similar organisations provided important insights into the recruitment process that are of importance to this research. In many cases, potential participants showed an interest in the focus groups when this was discussed or when they were invited by the local champion to attend the event. However, the timing of the focus groups, which were planned in the evenings in late spring and early summer, prevented participants attending, mainly because of work commitments in areas such as tourism and salmon

harvesting (in which some communities were involved). This is an important issue that emerged in the results, and will be discussed in more detail in Chapter 6. Nevertheless, the low turnout for the focus groups provided first-hand experience of the importance of locally sensitive timing of engagement activities.

Because the focus group attracted a particular crowd (those that did not have commitments in the evening), it was necessary also to approach people that showed an interest but that were not able to come to events. The unstructured interview strategy greatly benefited this approach. The contact details of interested community members were obtained (most often work or home locations), and they were approached to see whether they were interested in participating in a one-on-one interview. All agreed to this. To be sensitive to the commitments of these participants, several interviews were conducted whilst the interviewee was running their business (e.g. checking in B&B guests), working on boats, or even waiting for the ferry to arrive. A limitation of this approach was that some interviews varied greatly in length (from 15 minutes to almost 2 hours) and depth. An outline of the interview schedule is attached in Appendix D.

Although this research was designed to maximize the range of participants approached, and to provide a range of opportunities to become involved, the representativeness of the sample, the opinions expressed, and therefore the analysis were still affected by self-selection of research participants. Although this is difficult to avoid, it is important to be acknowledged by users of this research.

3.6 Data analysis

3.6.1 Questionnaire survey

After collection, surveys were processed, checked for quality and a data file was prepared (see Figure 3.6). Although a few surveys were returned blank, the remaining

surveys were largely completed and therefore processed. Based on the different questions, each variable was defined and coded, and three different data files were created to facilitate analysis:

- An Excel file containing responses to all questions, including open and closed questions
- An NVivo file containing only the responses to the open questions
- An SPSS file containing the codes for the closed questions

The survey contained both closed and open questions, which require different data analysis procedures, which are discussed in this section.

3.6.1.1 Analysis of the open questions

All open questions were imported into NVivo, a software programme for analysing qualitative data, to be coded and analysed. The following coding procedures were applied:

1. Answers to the open questions were read before coding to gain an impression of the data and conception of possible themes;
2. Based on the initial observations, a codebook was developed. The codes reflected the observed answers;
3. Each open question was coded separately, to avoid overlap in codes, and to enable separate analysis;
4. Restrictive coding of themes took place through multiple stages of coding;
5. The themes were validated by peers in the social science field, who were presented with some of the responses and codes, as well as the restricted codes. This served as verification of the integrity of the coding process and the interpretation of the researcher. The themes were also validated through comparison with published literature on the respective topics, for example, literature on attitudes to RE in general. This has been suggested by Aronson (1994);

6. Quantitative counts were used to examine the number of participants who responded in a similar way. This information could be visualised and analysed by NVivo regarding the percentage of responses that gave a similar answer and enabled visualisation. For example, it enabled a comparison between the case study sites and the number of respondents who indicated that their reason for supporting MRE was that they considered it a good use of natural resources. See Table 3.10 for a coding sample of this question based respondent's answers.

Table 3.10 Coding example of the answers to the open survey questions
Examples of responses receiving the code: Good use of natural resources

'We need to use all natural resources. I am not a tree hugger, but if we don't the planet will die! (Isles of Scilly 93)'

'We should be making use of natural resources (Orkney 55)'

'Makes sense to use nature to provide what we need (Shetland 3)'

The final codes and themes of the open questions are presented in Chapter 4, and discussed further in chapter 5.

3.6.1.2 Statistical analysis of the closed questions

Statistical analysis was undertaken on the SPSS file containing the numbered codes of the closed questions. The majority of the data were of nominal or ordinal nature, which limits the statistical tests available. Nominal data are always categorical data, in which the numbers are labels for discrete items and no ordering is implied. Ordinal data can often be treated as categorical, for example, values on a Likert scale. Two broad types of statistics to analyse survey data can be distinguished: (i) statistics that describe individual variables and distributions; (ii) and those that measure relationships between variables. Both types were used for analysis of the closed questions (Alreck & Settle, 1995), which enabled both description of the variables and analysis of associations between variables.

Frequency and percentage distribution was applied to describe the different categories of survey variables. The Likert scale data on whether respondent's agreed or disagreed with particular statements were treated as continuous data. The mean and standard deviation were calculated for each statement, to provide insight into the level of agreement with a particular statement. Bar charts were then generated for graphical distributions.

Where relationships between variables were explored, chi-square tests were applied as the main statistical test. This is the most common statistical tool to measure the relationship between two nominal or ordinal survey variables and the statistical significance of the relationship. The chi-square is based on the assumption that the frequencies or proportions found in the cells table are what would occur if there was no association, and that differences are occurring purely by chance. The p-value is the term for the observed level of significance that can be attached to the result of the test: the smaller the p-value, the more significant, in the statistical sense. In practice, the smaller the p-value of the finding, the smaller the likelihood is that this occurred by chance (Calder & Sapsford, 2006). Alreck and Settle (1995) explain that chi-square tests 'accept any data that can be put into a limited number of categories. It may lack the power and sensitivity of other measures of association between variables... but makes up for it by placing very few demands on the type of data it can legitimately analyse' (p. 286). This method is applied more than other techniques, in part because it is effective, easy to be understood and interpreted. Furthermore, it is considered flexible and robust (Alreck & Settle, 1995). Examples of relationships that were explored through the chi-square test include relationships between attitudes towards MRE and case study sites, perceived effects, and intention to participate in engagement activities. Also, Spearman's Rank correlation coefficient test was applied to the data to identify and test the strength of a relationship between two sets of ordinal data (Sapsford & Jupp, 2006). This non-parametric test was applied mainly to demographic data to establish whether variables are independent. The test was

applied, for example, to investigate whether respondents with higher levels of education were more likely to support or oppose MRE, or more likely to participate in engagement activities.

The type of data generated from the survey was such that the application of other tests was limited. Because the survey was not meant to be nationally representative, no comparison was made with the national Census data. Instead survey data were compared to available local Census data. This comparison can be found in Section 4.2.

3.6.2 Interviews

Analysis in social science is, according to Bernard (2006) 'the search for patterns in data and for ideas that help explain why those patterns are there in the first place' (p. 452). The software package NVivo was used to facilitate analysis of the qualitative data and to search through the data. Nevertheless, the identification of themes and analysis remains a human effort.

All interviews were transcribed and coded to categorise data through the systematic reduction of the text into separate units. Coding is a heuristic technique, without specific formulas to follow, and is the first step towards more rigorous analysis (Saldaña, 2009). Open coding was applied as an inductive approach to coding that is not based on or limited by pre-defined themes. The central purpose of open coding is to open inquiry widely (Berg & Lune, 2012). A sample of items receiving the same code can be found in Table 3.11. Once reduced and condensed, thematic analysis was applied to identify recurring issues in the data (Creswell, 2003; Joffe & Yardley, 2004). Each theme, with a related set of sub-themes, was determined based on the population of the codes. This allowed for the nuances of the themes to be explored in-depth. Inductive analysis was then used to explore patterns, themes and categories emerging out of the data, and through interaction of the researcher with the data (Patton, 2002).

Table 3.11 Coding example of the interviews for attitudes towards community engagement

Code	Selection of the transcript that was coded	Study site/ identification
Token engagement	I think a lot of people perceive it as tick the box exercise. People go there not knowing what the consultation is going to be, I think it is not made clear how their views will be used or if they will be used at all to be honest.	Orkney (7) MRE sector
	At the moment, engagement is more of a PR exercise. It is not going to be a showstopper with a proper development going ahead. So it is more tokenism	Orkney (9) MRE sector
	Truly engage and make sure that they engage for a reason, not to tick a box. Otherwise, just give information. Nevertheless, often it is just an exercise of tokenism. (39)	Shetland (39) MRE sector

After the initial inductive analysis, the final stage of analysis was deductive to develop theoretical propositions for discussion in the thesis and as the basis for future research (Patton, 2002). This final aspect of the analysis contributes to the development of theoretical propositions, which falls under the category of deductive analysis (the analysis of data according to a particular framework). Both inductive and deductive processes can be used to contribute to theory, and 'at the heart of theorizing lies the interplay of making inductions (deriving concepts, their properties, and dimensions from data) and deductions (hypothesizing about the relationships between concepts)' (Strauss & Corbin, 1998, p.22). This approach was chosen to maintain the exploratory line of practical enquiry, whilst enabling a contribution to the current literature and theoretical propositions based on current literature.

Overall, the coding and analysis was conducted as follows:

1. All transcripts and field notes were read before coding to gain an impression of the data and conception of possible themes;
2. In the first round of coding, each transcript was coded separately, to avoid overlap in codes, and enable separate analysis of distinct stakeholder groups;
3. Based on the first round of coding, a codebook was developed. The codes reflected the observed answers;

4. A second round of coding was applied, the different code books were compared, and more precise codes determined;
5. As suggested by Strauss and Corbin (1998), all data that were assigned the same code were compared and contrasted. The aim of this method is to clarify the meaning of the categories that emerged, and to identify sub—categories and relations among categories (Glaser & Strauss, 1967);
6. Restrictive coding of themes took place through multiple stages of coding;
7. The themes were validated by peers in the social science field, who were presented with some of the responses and codes, as well as the restricted codes. This served as verification of the integrity of the coding process and the interpretation of the researcher;
8. Deductive coding followed to validate the themes through comparison with published literature on the respective topics, for example, literature on attitudes to renewable energy in general, as suggested by Aronson (1994).

The key themes for the attitudes towards MRE and presented and explored in Chapter 5, and the key themes for the engagement and uptake of attitudes in decision-making data are presented in Chapter 6.

3.7 Summary

The methodology chosen for this research includes case studies and mixed methods in order to examine attitudes towards MRE, underlying values, and their uptake in stakeholder consultation procedures for MRE developments. Data were collected through questionnaire surveys and interviews. Three island communities in different areas in the UK were selected for this study based on the generating potential of the area, experience with MRE, and differences in government administration. This enabled a particular focus on place. A survey was conducted with the general public in

the three sites, and participants were selected through a multi-stage procedure, including cluster, systematic and, within household birthdate, sampling. Data analysis included statistical analysis of the survey results and thematic analysis of the open questions.

Interviews were conducted with community members and stakeholders involved with MRE. This provided an understanding of uptake of attitudes from community perspectives, but also from those with experience with the industry or involvement with community engagement activities. This enabled exploration not only of preferences but also the practicability of some of the preferences. Participants were selected through purposive and snowball sampling. Data analysis included inductive analysis and thematic analysis of the codes, followed by deductive analysis to assess the findings against the literature.

As described in this chapter, each of the methods used to collect data contributes to answering specific parts of research questions. Therefore, the study results are presented in two stages. Chapter 5 explores attitudes towards MRE and underlying values and Chapter 6 explores stakeholder consultation procedures for MRE developments in relation to the uptake of attitudes in decision-making, followed by a discussion chapter that builds on those chapters. Before this, however, Chapter 4 provides a background to the stakeholder consultation policies and regulations, as well as in-depth descriptions of the case study areas.

Chapter Four: Policy background and case study sites

4.1 Introduction

This chapter provides in-depth descriptions of the case study sites and includes the political context of MRE deployment in each area, an overview of their historical development, local population and current socio-economic conditions, and a description of RE developments in the three areas. This chapter provides background information to the study sites, which is crucial for understanding local attitudes because they provide the context in which attitudes are formed. This explains the largely descriptive nature of this chapter. Furthermore, they may influence the potential uptake of attitudes in decision-making, as each future development interacts with specific environmental, social, historical and economic contexts, as well as the policy context for MRE targets and consultation procedures. Based on this context, some developments may be perceived to be more desirable than others. As a consequence, the history of communities, the locally significant industries and economic situation are considered to provide an important context for understanding how local residents perceive developments and their associated risks (Kasperson *et al.*, 1988).

The chapter commences with a description of the overall policy background, with a particular focus on the requirements for engagement in the case study sites, and describes consultation procedures applying in the English and Scottish contexts. Next, in-depth case study descriptions are presented in the following order: (i) the Orkney Islands; (ii) the Shetland Islands and (iii) the Isles of Scilly.

4.2 Policy background: regulatory frameworks and stakeholder engagement in the regions

This section focuses largely on regulations in the devolved administrations focused on engaging stakeholders. To set the scene, a brief overview will be given of the main regulatory frameworks that influence MRE deployment, corresponding consenting regimes, which follow different procedures depending on their size, and stakeholder engagement in the consenting process.

Many different policies and regulations make up the consenting regime for MRE in the UK. The European Union's Renewables Directive 2009 establishes mandatory targets for each member state, with a combined focus on reducing energy use, increasing energy efficiency and increasing the use of energy from renewable sources. In the UK, the Climate Change Act sets legally binding targets for reducing emissions by 80% between 1990 and 2050 (HM Government, 2008a). Further commitments are made to ensure that an overall 15% of energy demand is met from renewable sources by 2020, with individual, more ambitious targets set by the devolved administrations, such as Northern Ireland, with a 40% target, and Scotland, which has set a 100% target for RE by 2020 (DECC 2011a). Within the UK, the study sites thus have different RE targets and different ways of achieving these goals. Additionally, administrative differences have also led to different consenting regimes.

A strong increase in offshore wind, wave and tidal technologies is expected, since wave and tidal energy have been assessed to have the capacity to provide at least 20% of total UK electricity demand (Sustainable Development Commission 2007). This has resulted in a clear presumption in favour of the development of renewables in UK policies and regulations (DCLG 2012). For example, the Department for Communities and Local Government's National Planning Policy Framework (DCLG, 2012) indicates that developments must be approved without delay unless the adverse impacts of allowing development would significantly and demonstrably outweigh the benefits when

assessed against the policy objectives in the National Planning Policy Framework (DCLG 2011a). However, despite the overall agreement that RE is a benign source of energy, many of the impacts of MRE on the environment are poorly understood. This becomes evident from the UK Marine Policy Statement, which indicated that MRE 'may pose potential risks to the environment if they are inappropriately sited, but that these risks are largely unknown because the technologies are at a relatively early stage of development (HM Government, 2011, p.34)'. The Statement calls for better understanding of the potential environmental impacts of MRE technologies, including pre and post deployment monitoring and mitigation strategies to reduce these risks (HM Government, 2011).

A key piece of legislation influencing MRE deployment across Europe is the Environmental Impact Assessment (EIA) Directive (85/337/EEC as amended). The EIA Directive sets out the procedural requirements for granting permission to projects that are likely to significantly affect the environment, and defines the mandatory procedures for assessing the environmental impacts of a development (European Commission, 2011). A summary of the EIA procedure is shown in Figure 4.1. The term EIA thus refers to the full process of assessing the environmental effects of development projects and applies to a range of public and private projects, as defined in Annexes I (major energy facilities for which EIA is mandatory) and II (smaller, discretionary projects) of the Directive. The EIA Directive was aligned with the provisions of the Aarhus Convention in 2004.

Summary of EIA procedure

1. Scoping stage, in which the developer may request the competent authority, for marine renewables the MMO, IPC or Local Government, to say what should be covered by the EIA information.
2. The EIA report, in which the developer must provide information regarding environmental impacts.
3. The Consultation phase, in which environmental authorities and the public must be informed and consulted.
4. Decision phase, in which the competent authorities decide, taken into consideration the results of consultations.
5. Post-decision phase, in which the public is informed of the decisions afterwards and can challenge the decision before court (European Commission, 2011).

Figure 4.1 Summary of an EIA procedure (European Commission, 2011)

The EIA Directive only sets out procedural requirements, and does not establish obligatory environmental standards. Furthermore, although authorities must take the results of an EIA as well as consultation into consideration, they are not obliged to draw specific conclusions from the findings of EIAs (European Commission, 2009b).

All plans and programmes (made by national, regional or local authorities) that can have environmental effects, including RE developments, fall under the Strategic Environmental Assessment (SEA) Directive (2001/42/EC), which aims to integrate environmental considerations into the preparation and adoption of plans and programmes with a view of promoting sustainable development (European Commission, 2012). A summary of the SEA procedure is shown in Figure 4.2.

Summary of a SEA procedure

1. An environmental report is prepared identifying the likely significant environmental effects and reasonable alternatives.
2. There is a possibility for consultation on the draft plan by the public and environmental authorities.
3. The results of the consultation must be taken into account before adoption of the SEA. Once the plan is adopted, relevant information will be made available to the consultees (environmental organisations and the public).
4. Furthermore, the relevant Member State must monitor the significant environmental effects of the implementation of the plan, to identify unforeseen adverse effects and undertake appropriate remedial action (European Commission, 2012).

Figure 4.2 Summary of a SEA procedure (European Commission, 2012)

The procedure of SEA described above demonstrates the emphasis on consultation. Consultation with both public and environmental authorities is thus an essential part of the SEA Directive as part of an assessment process. These actors must be consulted on screening whether an SEA is necessary, as well as on the outputs of the SEA. Appraisals of Sustainability are also conducted to fulfil the requirements of the Directive, which inform consultation on the draft plans of Member States, and provide an analysis of the environmental, social and economic impacts of the implementation of these plans. The relevance of SEA procedures to MRE deployment lies in the fact that assessment must be carried out on all plans and programmes that form the basis of the MRE consenting regime. This is an opportunity for stakeholders to influence the decision-making procedure regarding the general planning of MRE facilities.

At a national level, there is an increased focus on the rationalization of the use of the marine space. The UK Marine Policy Statement (HM Government, 2011) provides the legal basis for a system of marine planning in UK waters, a process in which the multiple uses of the marine space is coordinated and managed, similar to terrestrial planning systems. Furthermore, a suite of policies and strategies are being developed and implemented to facilitate expansion of RE technologies and their deployment in the

UK's marine area, such as the Planning Policy Statement 22 for RE (Office of the Deputy Prime Minister, 2004), National Renewable Energy Action Plan 2009 (HM Government, 2010), and the National Policy Statements for Energy (EN-1) (DECC, 2011c). The National Policy Statement for Renewable Energy Infrastructure (EN-3) covers RE infrastructure (DECC, 2011b). Although EN-3 covers offshore wind, it does not cover wave and tidal generation explicitly because these are not considered technically viable over 100MW offshore at present, which are expected to be subject of applications in the near future. Once the technologies are considered technically viable, it is indicated that the EN-3 will be revised or that a separate policy statement will be developed to provide the basis for decision-making for such schemes (DECC, 2011b). Few, if any of the requirements that are part of the consenting regimes were therefore developed and designed specifically for MRE. Rather, they have been adapted to it and, as a result, are not always neat fits or fit for purpose.

As part of MRE consenting regimes, stakeholder engagement requirements are again set out in policy and legislation, so must be adhered to when developing MRE. The main international agreement on people's right to participation is the Aarhus Convention. Because it was ratified by the UK government, national regulations must reflect the provisions set out in the Convention. Article 6 of the Convention has regard to public participation in decisions on specific activities and in subsection 2(2), it calls for early engagement of the public decision-making in an adequate, timely, and effective manner (See Figure 4.3). The Convention further calls for early public participation when all options are still open and effective public participation can take place.

Public engagement under Aarhus Convention Article 6 subsection 2 (2)

- a. The proposed activity and the application on which a decision will be taken
- b. The nature of possible decisions or the draft decision
- c. The public authority responsible for making the decision
- d. The envisaged procedure, including, as and when this information can be provided:
 - i. The commencement of the procedure;
 - ii. The opportunities for the public to participate;
 - iii. The time and venue of any envisaged public hearing;
 - iv. An indication of the public authority from which relevant information can be obtained and where the relevant information has been deposited for examination by the public;
 - v. An indication of the relevant public authority or any other official body to which comments or questions can be submitted and of the time schedule for transmittal of comments or questions; and
 - vi. An indication of what environmental information relevant to the proposed activity is available;
- e. The fact that the activity is subject to a national or trans boundary environmental impact assessment procedure.

Figure 4.3 Specifications of public engagement under the Aarhus Convention (United Nations, 1998)

A key player in MRE development is the Crown Estate, the statutory body for managing the UK's seabed out to the territorial limits of 12 nautical miles. The Crown Estate has a commercial responsibility as well as an obligation to carry out its duties taking into consideration the requirements of good management of the seabed. To fulfil these duties, the Crown Estate grants rights to companies by leasing out areas of seabed (The Crown Estate, 2014). Any party wanting to deploy MRE devices must thus obtain a licence from the Crown Estate, which is issued through tendering rounds. The leases from the first two rounds are now operational. For the most recent round, a zone based approach was adopted and development sites were identified together with the development partners (DECC, 2011b). This approach is considered to increase flexibility in site identification to minimise risk of significant environmental impacts, and again provides an opportunity for early consultation with stakeholders (DECC, 2011c).

During the planning process, several statutory consultees, organisations and other bodies must, by law, be consulted on relevant planning applications. Statutory consultees are equally under a duty to provide advice to planning authorities. In

England this list includes: the Environment Agency; English Heritage; local planning authorities; and Natural England. A full list of statutory consultees and the circumstances under which they must be consulted is provided in Schedule 1 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. In Scotland, this list includes: The Scottish Environment Protection Agency; Scottish Natural Heritage; and any delegate for the relevant marine region or regions, when such delegates have been established under Section 12(1) of the Marine (Scotland) Act 2010 (The Scottish Government, 2010).

Consultation is not restricted to this list, and other legislation may require consultation with additional bodies. If a statutory consultee objects to a proposal, local planning authorities must treat this as a material consideration when determining the planning application (HM Government, 2010). In addition to lodging objections, statutory consultees can recommend conditions to be attached to planning permissions for developments. Non-statutory consultees, meanwhile, are organisations and bodies that should be consulted on relevant planning applications but are not defined by statute. Local authorities decide which parties that have a special local interest should be included in consultations (DCLG, 2009). The guidelines and criteria for consulting these bodies are identified in the Statement of Community Involvement prepared by developers as part of the planning application process. The next sections describe consultation processes for the consenting of MRE developments in Scotland and England.

4.2.1 England

MRE is considered to make a significant contribution to achieving future RE targets. To streamline consenting processes, the English consenting processes is divided into two types of developments, dependent on size. Until a marine planning system is in place,

as stipulated by the MCAA2009, licencing decisions for developments under 100MW will be made on a case-by-case basis. Developments over 100MW are classified as Nationally Significant Infrastructure Projects (NSIPs), follow the Planning Act 2008 and generally need an EIA (HM Government, 2008b; National Infrastructure Planning, 2012).

The National Competent Authority for MRE developments in England is the Secretary of State for Energy and Climate Change, and the Marine Management Organisation (MMO) is the main consenting body for MRE developments under 100MW (HM Government, 2009; Marine Management Organisation, 2014). The MMO is a Non-Departmental Public Body established under the MCAA2009; it carries out a number of marine functions on behalf of the UK government and reports to the Secretary of State (HM Government, 2009). The MMO determines applications for England and Wales in accordance with the Marine Policy Statement, and DECC considers the environmental consequences of proposals following EIA procedures. The EIA directive for RE developments is transposed in the Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000.

The consenting process for MRE developments under the MMO's remit consists of four stages: (1) pre-application, which encourages and facilitates early engagement with stakeholders, (2) consultees and the MMO; pre-examination, where documents are open for viewing; (3) application, the phase in which the proposal is open to responses; and (4) decision, when all evidence is considered and a decision is made (Marine Management Organisation, 2011). The MMO also leads the consultation process for these developments. During the consenting process, the MMO does not have a specified list of organisations that must be consulted. This enables all potential consultees to be equal and ensures that all consulted organisations are relevant to the project (Marine Management Organisation, 2011). This is in contrast with developments over 100MW where this list is specified. Table 4.1 shows the consultation process for applications under 100MW.

Table 4.1: Consultation process for development applications under the MMO (Marine Management Organisation, 2011)

Application phase	Consultation requirements
Pre-application	<p>An optional pre-application service is offered by the MMO. Although consultation is not a legal requirement for notification of intent to submit an application to the MMO, applicants are expected to consult when applications need an Environmental Statement under the EIA Directive.</p> <p>EIA Screening and Scoping: The MMO is the responsible authority for deciding whether an EIA must be completed for MRE facilities (DEFRA, 2010). Consultation is needed under the EIA Directive and Environmental Statements if an EIA is required. The MMO seeks relevant consultees for this process and consults its primary advisors.</p>
Pre-examination	<p>Once an application for development has been submitted to the MMO, the applicant must publish this by placing notices in two different local newspapers or specialist national newspapers. In addition, the application and the supporting documents must be made available for viewing during normal office hours. Failure to meet these requirements can result in refused permission to proceed with the application or withdrawal of the application until the shortcomings have been corrected.</p>
Application	<p>After publication, the proposal is open to written responses. Relevant local authorities are notified of marine licence applications, as required under s.69 (1) of the MCAA2009. During this consultation phase, the MMO manages responses from primary advisors and consultees and ensures that concerns are adequately addressed by the applicant. The MMO also provides comments to responses received during the consultation process.</p> <p>Where applications need an EIA and a corresponding Environmental Statement, consultees have 42 days to lodge objections and representations, beginning from the date of publication of first notice. The MMO must acknowledge acceptance of the objection or representation and consider each objection or representation in full (Department for Environment, Food and Rural Affairs 2010). Valid objections must: (i) contain sufficient detail and presented in a way that facilitates proper consideration by the MMO; (ii) have been received within the statutory objection period of 42 days; and (iii) be supported by substantiating evidence submitted with the objection (Marine Management Organisation 2011). Based on the above, an EIA consent decision is made.</p> <p>All relevant objections and representations made during the consultations will be considered by the MMO when assessing the application. If objections are valid, the proposal must be changed in line with the objection to satisfy of the MMO, or the applicant must demonstrate that the objection is not relevant. It is also possible for either the application or the objection to be withdrawn. A final possibility is for the application still to be considered on the condition that an inquiry is held. The MMO may order an inquiry related to a marine licence application to hear from all parties, as outlined under s. 70 of the MCAA2009 (Marine Management Organisation, 2011) .</p>
Decision	<p>Final analysis of responses takes place and a decision is made. The developer is notified of the decision and it is inserted in the public register.</p>

MRE developments over 100MW follow different consenting procedures as they are classified as NSIPs. Under the Localism Act 2011, the Major Infrastructure Planning

Unit was established in 2012, which assesses NSIPs under the Planning Act 2008 to accelerate development consents for major new infrastructure projects (National Infrastructure Planning, 2012), and makes a recommendation to the Secretary of State for Energy and Climate Change. Most wind farms, due to their large size, are classified as NSIPs. To date no wave or tidal developments have entered the NSIP consenting process.

Although the PI is the main consenting body for developments over 100MW, the MMO remains part of the consultation procedure as provided by the Planning Act 2008 and MCAA2009. The MMO limits its advice to potential impacts of developments on the marine area and its users, and judges applications according to the provisions of the MCAA2009 (HM Government, 2009; Marine Management Organisation, 2011). The MMO also highlights concerns regarding the provision of marine licences related based on marine policy statements or national planning statements. The PI is the responsible authority for decisions on the completion of EIAs, and any consent granted by the PI includes a marine licence (DEFRA, 2010).

Public engagement on development applications for NSIPs takes place at several levels. Table 4.2 shows the consultation process for NSIPs.

Table 4.2 PI consultation process for NSIPs (Infrastructure Planning Commission, 2011)

Application stage	Description of the engagement activities and prescribed format
Pre-application	<p>Developers must consult the relevant local authority on the content of the developer's Statement of Community Consultation (SOCC), and must incorporate the local authority's response to the consultation in the SOCC.</p> <p>To notify the intention to submit an application, the SOCC must be published in a local newspaper. Suggestions from local actors on community consultations can be submitted directly to the developer or local authority.</p> <p>The developer must carry out consultation in accordance with the SOCC. The developer must identify the geographical characteristics of the local community and develop an understanding of the community and different interest groups within the community (Infrastructure Planning Commission, 2011). Because of their local knowledge of community involvement and consultations, local authorities are suggested as a starting point. They also often already have registers of local groups. A range of statutory consultees must be consulted. Applicants are advised to employ a variety of consulting methods including written consultations, local exhibitions, workshops, the internet (to publicize proposals and draw attention to specific features of proposals), citizen's panels and information sessions.</p> <p>The proposed application must be publicized in accordance with relevant regulations encompassing the requirements set out in the EIA process. Publication is considered an essential part of the community consultation process, and publication should roughly coincide with the start of the consultation. The applicant must have regard to relevant responses to publicity and consultation, and notify the PI of the proposed application; prepare and submit a consultation report to the PI</p>
Acceptance	<p>PI examines the application and decides whether public consultation is satisfactory</p>
Pre-examination	<p>Developer must notify relevant parties of the accepted application and publish the proposal widely</p> <p>During a minimum period of 28 days, as prescribed by the Planning Act 2008, the public can register to put their case on the application for written comments or file a request to speak at an open-floor hearing. This is open to all members of the public. Towards the end of this stage, those who registered, commissioners, 'by-right' interested parties (such as statutory and non-statutory consultees), and the developer, come together in a procedural meeting to discuss how the case will be examined, and issues will be identified that must be investigated in more detail.</p> <p>Developers must demonstrate extensive public consultation before application and feedback has been acted upon. Reasons must be given for not following up on significant relevant responses, including advice on impacts from a statutory consultee. It is recommended (but not required) that this report will be made available to consultees to ensure transparency and openness of the process. Written representations of the registered public will be published online.</p> <p>The examining authority considers the representations when considering the application for development consent. When satisfied with compliance to all the above requirements, the PI will accept the application for consideration.</p>

Application stage (continued)	Description of the engagement activities and prescribed format (continued)
Examination	<p>Once an application is lodged it is open to written comments. Written representations are considered when decision is made, and interested parties can request to speak at an open-floor hearing chaired by the Commissioner.</p> <p>If requested, public hearings are held and may include: issue-specific hearings, open-floor hearings, and compulsory-acquisition hearings. This consultation is only open to those individuals who registered during the pre-examination phase. Participants are invited to give a more detailed written comment than during the previous phase or can attend the hearing. This stage allows those registered the opportunity to comment on the local impact report prepared by the local authority during the pre-application phase.</p> <p>The PI recognises that consultees have different information needs, and applicants and consultees may disagree on the ways in which impacts are mitigated. The applicant must therefore ensure that it has 'acted reasonably' and the applicant is protected in the sense that it is not expected of the PI to conclude that the consultation itself was inadequate on the basis of non-mitigation of particular impacts (Infrastructure Planning Commission 2011).</p> <p>If a consultee feels that their views are not being taken into account at the pre-application stage, it can inform the developer and the local authority planning department. The local authority can then comment to the IPC on the adequacy of the consultation undertaken (Infrastructure Planning Commission 2011).</p>
Decision	Report of recommendations is made available online once a decision is reached.
Post-decision	Once development consent is granted, a period for legal challenge runs from the date of publication of the order

In England, the push for RE development and the presumption in favour of development approval has resulted in contradictions in the consenting system. On the one hand, there is considerable consultation for NSIP developments, with a focus on frontloading engagement, whilst it is still very likely for developments to be consented regardless of this consultation. Scope for influencing the project is, however, possible within certain parameters. On the other hand, for developments under 100MW consented by the MMO there appears to be more scope for influencing the process but consultation is less focused on frontloading and the public has fewer options to become engaged. For both procedures, however, consultation is fairly limited to providing comments within the parameters of the existing project rather than all options being open, as specified in the Aarhus Convention.

4.2.2 Scotland

The Scottish Government has set itself a challenging target of generating 100% of its energy from renewable sources by 2020. This creates a clear imperative for approving developments. Consenting powers for offshore planning and licencing in the UK have been devolved to the Scottish Government, spanning administrative, executive and legislative powers. The Scottish Ministry for Energy, Enterprise and Tourism is the National Competent Authority for MRE developments in Scottish waters, and covers developments offshore over 1MW in territorial waters, and over 50MW in the Scottish part of the RE zone. The main legislation for consent decisions in Scotland is the Marine (Scotland) Act, which came into force in 2010 and together with the MCAA2009 provides the framework for marine management in Scotland (The Scottish Government, 2010).

Marine Scotland, a directorate of the Scottish Executive government, is responsible for consenting MRE developments and provides marine licences as part of the Marine (Scotland) Act and Offshore Marine Regulations (The Scottish Government, 2010; The Scottish Government, 2012). Its key responsibilities are: marine planning, licencing, promoting economic growth from offshore renewables and other marine and maritime industries; and promoting sustainable, profitable and well-managed fisheries (The Scottish Government, 2012). Development applications are made under section 36 of the Electricity Act, and consents are made under the same legislative regime for generating projects onshore (DECC, 2014b). Offshore developments with a capacity of 1MW or under are exempt from the requirements of s36 of the Electricity Act. Although the Marine Licence grants the right to develop offshore, in Scotland this does not extend to onshore structures, for which additional planning permission must be obtained.

To streamline consenting processes, Marine Scotland has initiated a 'one-stop-shop' for developers to obtain consents and licences, which combines s36 of the Electricity

Act and marine licence applications. The process is led by Marine Scotland’s Licencing and Operations Team as the point of contact responsible for assessing applications against relevant regulations and for liaising with relevant parties to ensure appropriate consultation (The Scottish Government, 2012). Scotland has several statutory consultees, including Scottish Natural Heritage, the Scottish Environmental Protection Agency, local authorities and fisheries committees. Marine Scotland has additionally developed a consents manual covering offshore energy development, which aims to support developers in applications, and covers three key areas: the licencing process; the legislative context; and impact assessments (The Scottish Government, 2012). The EIA directive for RE developments is transposed in the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2008, which obliges the Scottish Ministers to consider the impacts of proposals for MRE developments on the environment. Table 4.3 summarizes the consenting procedures that apply for MRE developments in Scottish waters.

Table 4.3 Description of the consenting process for MRE in Scotland (Marine Scotland, 2014)

Stage	Description
<i>Pre-screening consultation</i>	<p>Developers should approach Marine Scotland in relation to licence discussions. Under the EIA regulations, the project undergoes a formal public consultation process. Developers must start informal consultations at the pre-application stage, and on-going consultation is encouraged with local interest groups and the public to ensure appropriate consideration of all stakeholder concerns and enable integration of opinions in decision-making (Marine Scotland, 2014).</p> <p>Marine Scotland manages consultation with statutory and non-statutory consultees at the EIA screening and scoping stages as well as pre-application stages.</p> <p>Production of a Consultation Strategy at the scoping stage is considered good practice. Because consultees have different needs, consultation should take a variety of forms, and can include; meetings, workshops, public events, and web-based consultation.</p> <p>At least one public event must be held during public pre-application consultation where local communities, environmental groups, NGOs, regulators and other interested parties can comment upon a planned application for those marine licensable activities that are prescribed in the Marine Licence Regulations.</p> <p>Notification should be made at least six weeks in advance of the event, and the event must be publicized in a local newspaper. Notification should include basic information relating to the application and include the time and location of the consultation event.</p>

Stage (continued)	Description (continued)
Environmental Screening and Scoping	<p>EIA screening is required to determine whether the statutory EIA is required. This provides the first identification and likely significance of any environmental effects and required information. Screening and scoping is often combined and a document must be submitted to Marine Scotland.</p> <p>All applications require supporting information on the environmental impacts of developments, normally through an EIA. EIA related consultation must be followed by the applicant.</p> <p>Marine Scotland comments on the Consultation Strategy provided by the applicant.</p>
Scoping consultation and feedback stages (ongoing)	<p>During the pre-application consultation, public consultations events must be held and a pre-application report must be produced. Notices must be published in a local newspaper, including a description of the project, timing, location and contact details. The report must be available for viewing in a public location prior to the application being submitted to Marine Scotland.</p> <p>A public consultation event, to be held early in the consultation process, must also be advertised. The consultation will be administered by Marine Scotland, which will collect and review feedback from consultees, and liaise between parties in order to resolve conflicting recommendations and discuss additional information or clarification requested during the process.</p> <p>A pre-application publication report, in the form prescribed in the Regulations, must be prepared and submitted with the marine licence application. The report must include: description of the consultation event and information provided by the applicant at the event; comments received from consultees at the event; a description of amendments to be made to the marine licence application in response to the comments (where applicable); if feedback from consultees is not acted upon, an explanation of the approach taken.</p> <p>Marine Scotland examines the report, and if deemed unsatisfactory, it may require further information to be supplied, a new report to be submitted, or the consultation to be repeated in full by the applicant (Marine Scotland, 2014).</p>
Submission preparation	<p>Before submission, Marine Scotland provides a gate-check of the documents during a three week process to ensure that all documents meet the requirements. Consultees will be contacted for copies of the documentation.</p>
Submission	<p>The application is submitted.</p>
Consultation stage	<p>Development applications must be published in at least one local paper. Those made under S. 36 of the Electricity Act must be published in one or more local papers for two consecutive weeks, the Edinburgh Gazette for two consecutive weeks, and one or more national newspapers according to the (The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2008).</p> <p>All consultees, and members of the public have 28 days from the date of the last advert to respond, except for the nearest public authority which has four calendar months to respond from the date of the application.</p> <p>Responses from statutory consultees must also be publicised in local newspapers and the Edinburgh Gazette for two consecutive weeks.</p>
Decision	<p>For all devolved responsibilities such as licences and consents, Marine Scotland will issue consents on behalf of the Scottish ministers.</p>
Post approval actions	<p>The decision period is followed by development of the project or a legal challenge.</p>

Although Scotland's high targets for RE create a need for many consented projects, the table shows that frontloading is an important aspect of consultation in processes in Scotland. Similar to English consultations, once an application is submitted, responses can only be in written form. Despite the procedures in place, it again appears that consultation remains limited to providing comments within the parameters of the project instead of being able to influence whether a decision should take place. Early stage consultation before a specific consultation was received, however, was conducted by Marine Scotland, as part of the Marine Spatial Plan (Aitken *et al*, 2014). This suggests that efforts are being made to improve consultation.

The stakeholder engagement processes above thus seem somewhat inconsistent with provisions of the Aarhus Convention and SEA Directive, which stipulate that all options must be open during consultation. Based on the above, contradictions can be identified between the push for RE to comply with international agreements on climate change, and peoples' rights to have a say in decisions that affect them. Similarly, regulatory frameworks that create a clear presumption in favour of providing development consent create further discrepancy in the consenting system. As a consequence, all options are not open during stakeholder consultation, and consultation takes place within the boundaries of the policies and regulations with their built-in biases and presumptions. Having reviewed the main regulatory frameworks affecting MRE, the next sections provide the historical and cultural backgrounds of the case study sites and their contemporary community and local economic profiles, and RE development in each area.

4.3 The Orkney Islands

The Orkney Islands are located 10 miles north of the Scottish Mainland, and consist of around 70 islands, of which 20 are inhabited. The Orkney 'Mainland' is the largest

island and most of the islands' 22,000 inhabitants live there. With the exception of Hoy, most islands are low-lying and fertile. Neither Orkney nor Shetland has many trees as a result of the strong winds.

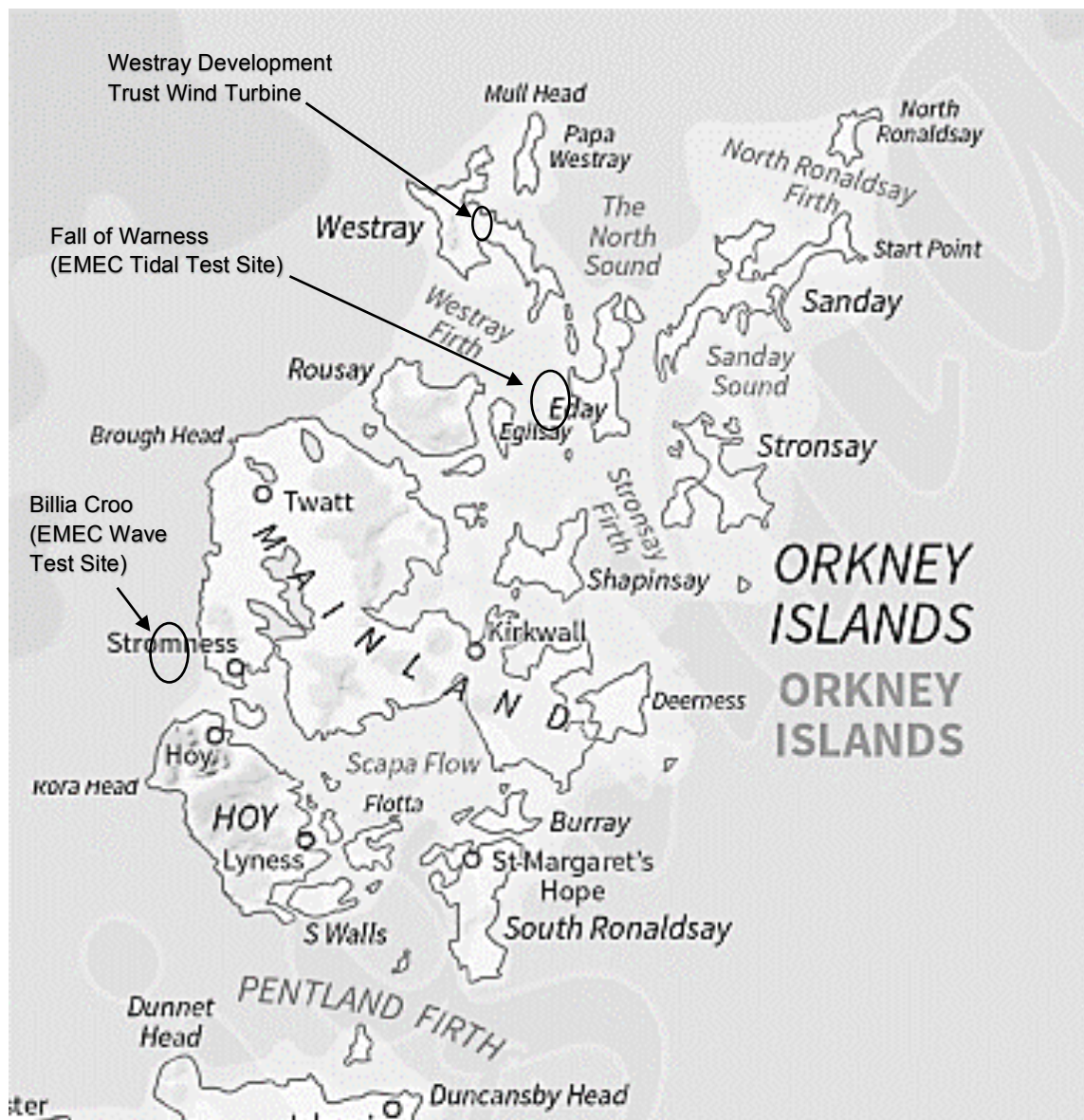


Figure 4.4 Map of the Orkney Islands Source: Digimap.

The Orkney Islands are well connected to the Scottish mainland, where a ferry service runs to the Scottish mainland and regular flights operate between Kirkwall and various UK airports. Inter-island ferries and air services also run between the inhabited islands a few times per day.

4.3.1 Historical and cultural background: Vikings and Scots

Orkney has a rich historical background, which dates back over 5,000 years to Stone Age settlements that are now UNESCO World Heritage Sites, and Pictish influences before Viking colonisation (Ritchie, 1985). Around 580 Common Era (CE), Christianity was brought to the islands. Orkney later became an important point on Norse exploration routes between Britain and Scandinavia, with settlers starting to arrive around 800CE (Barrett *et al.*, 2000). Orkney subsequently became the core of the Norse earldom that controlled most of Northern and Western Scotland, and functioned as an outpost of the Norse culture until 1231, when the last Norse earl was killed (Towrie, 2014). The islands nevertheless remained under Norse rule until 1472, when they were annexed by the Scottish Crown (Orkney.Com, 2014), but Orkney still cherishes its strong Norse heritage and a DNA study into the genetic heritage in Orkney men confirmed an overall Scandinavian ancestry of 30% (Goodacre *et al.*, 2005).

After Norse rule ended, the Scottish earls ruled Orkney. Under the Stewart rule, land reform was practiced and a feudal system implemented, which resulted in large scale poverty and suffering (McClanahan, 2004), exacerbated by the 'merchant laird' system (Cluness, 1951). In the mid-19th century, agricultural reform resulted in higher levels of production and lower poverty, and agriculture became more popular and profitable (McClanahan, 2004).

Sea trade also increased steadily over the centuries. Through history, Orkney functioned as a staging post for ships, in the 16th century when French and Spanish ships found shelter in Orkney's harbours, in the 18th century when conflict in Europe inhibited ships to access the English Channel, and in the 19th century for whaling ships, North Atlantic shipping and the herring boom, which attracted Dutch, French and Scottish Boats. Ships took on food, water and crew in Orkney, and many left to work in

Canada in the 17th century (Stromnessorkney.com, 2014; Thomson, 2001). The Scapa Flow's natural harbour increased military activity in the area during WWII.

These influence have provided Orkney with a unique culture that differs appreciably from mainland Scotland, and is most closely related to its Norse heritage (McClanahan, 2004). A study into community values in relation to heritage management argued that:

'Every islander is assumed to know their history and origins, and, as a group, they are attributed a static, 'authentic', and timeless identity. 'Orkney' is thus portrayed as having a distinct, unique, 'naturalised' identity that is remote from the chaos of contemporary society'(McClanahan, 2004, p.19)

Language, tradition and history are still visible and important to island identities, and are reflected in its Festival of the Horse, summer solstice celebrations, and other festivals, representing various times in Orkney history (McClanahan, 2004; Munro, 2001), More recently established festivals include the Orkney Folk Festival, the Nature Festival and the Orkney Country Show (Visit Scotland, 2014).

Although contested by some, research has found that Orkney is characterised by a shared way of life, in which a homogenous, relatively sealed and bounded culture has persisted through time (McClanahan, 2004).

4.3.2 Contemporary overview of the community and local economy

Like many peripheral areas, Orkney struggles to sustain its population, which varied from around 26,000 in the mid-19th century to fewer than 17,000 in the 1970s. The population decline predominantly took place in the outer islands, but population currently remains stable due to in-migration. Young people often leave the islands for education, housing issues, career opportunities and economic factors. Consequently, the islands (and in particular the outer islands) increasingly depend on in-migrants to

sustain their population (HallAitken, 2009). Although in-migration currently maintains a reasonably balanced age profile, Orkney's age structure is shifting, and an increasing proportion of elderly people on the outer islands. This threatens the long-term population stability and service provision of more remote communities. A population study indicated a need for around 23,000 inhabitants in the islands to achieve a sustainable workforce, education, and service provision (HallAitken, 2009).

Although still relatively narrow, the Orkney Islands have a broader economic base than the Isles of Scilly. Key sectors are tourism, agriculture and fishing, which, together with public services, provide most employment. The islands have low unemployment and a high proportion of the workforce is self-employed. Traditionally, Orkney primarily relied on fishing, but its importance has declined strongly since the 1970s. Food production, such as beef and dairy products, has also become an important part of Orkney's economic activity. Niche markets have become an integral part of island economy, as have beef exports. Similar to the rest of Britain, however, Orkney has been affected by a downturn in farming revenue (McClanahan, 2004) .

Due to a decline in other sectors, the tourist economy is becoming increasingly central to the Orkney economy. This together with the associated service jobs provides employment for many (McClanahan, 2004). The attraction of Orkney as a tourist destination lies in the combination of its natural environment, culture, and the historical environment. The tourism sector and its oil terminal, construction and transport sectors currently provide the main economic base of the islands. In the past 30 years large amounts of crude oil have been shipped through the Flotta oil terminal. However, a dramatic fall in value has raised doubts about its continuation past 2030 (Orkney Islands Council, 2009; Orkney Islands Council, 2013).

Orkney's Economic Strategy 2012-2016 identifies the islands' peripheral location, ageing population, diseconomies of scale, tight labour market and skills shortages as potential barriers to economic development (Orkney Islands Council, 2009). The

decline of traditional industries like fishing increased depopulation of the outer-isles, and many young people migrate to the Orkney Mainland for employment, leaving the smaller island economies at crisis points (McClanahan, 2004). Additionally, competition from other areas; contraction of the labour pool; the poor availability and low affordability of housing; and depopulation of the outer islands hinder the islands' islands development. The islands are also high users of fossil fuels due to their dependence on air travel, ferries, and freight. With energy prices in Orkney being 10% higher or more than on the Scottish mainland, there is high fuel poverty (Orkney Strategic Economic Forum, 2012). MRE is thus considered a development opportunity for the islands. However, the Economic Strategy highlights the important role of agriculture and fisheries, and indicates that these sectors must be respected and carefully balanced alongside an emergent MRE sector. The innovative outlook of the islands and an adaptable and educated work force is considered to facilitate this process (Orkney Strategic Economic Forum, 2012). Orkney also has a thriving voluntary and community sector to sustain local communities and to promote economic development. The Orkney Islands were required by the Local Government (Scotland) Act 1973 to prepare a Scheme of Administration for Community Councils to promote closer links between communities and service providers, and to represent local views in planning decisions and the provision of local services (Orkney Islands Council, 2014). Many of these organisations have taken the shape of Development Trusts, which generally aim to contribute to economically prosperous and sustainable communities(Orkney Communities, 2014; Westray Development Trust, 2013).

4.3.3 RE development in Orkney – A MRE leader

Orkney has long history of wind energy production, encouraged in part by a desire to move away from its high fossil fuels consumption and its ample RE resources. In 2013-2014, Orkney produced more electricity than it consumes from approximately 500

domestic and 28 larger generating sites (Scottish and Southern Energy, 2014).

Habitually, part of the revenues from RE generation in Orkney goes to the landowner, but this has changed in recent years, and more benefits are now made available to the Orkney community (Orkney Sustainable Energy, 2013).

Several community projects have been established in recent years. The Burray project, for example, consists of a single 900kw turbine and was consented under a local ownership structure in 2002 (Orkney Sustainable Energy, 2013). The project was fully funded by local investment, and all revenues are retained within Orkney. A local community investment fund is distributed each year to the Burray Community Association and other charities. A similar project was existed in Westray, where the income generated from a 900Kw wind turbine funds the Westray Development Trust, which was established in 1998 to 'develop the economic, social and cultural sustainability of our community by harnessing the quality of our resources, people and island environment' (Westray Development Trust, 2013). The trust decides how the income from the turbine is spent to benefit the community, for example through the provision of grants to community clubs, donations to the Heritage Trust and training grants and national registration for local farmers. In the past financial aid was also offered to a local farmer, who approached the trust for funds as he was interested in purchasing land locally to extend his farm. To avoid the land being sold outside the community, the trust agreed on funding. Although the land was eventually purchased by another community member, the example demonstrates that the Trust accommodates not only projects that improve sustainability in the community at large, but also individuals.

The seas surrounding Orkney, and between Orkney and mainland Scotland, all hold significant potential for MRE generation. Strong tidal currents, along with large wind and wave resources, have led to an estimated potential installed capacity of 1,600 MW (BVG Associates, 2011). The area was the first in the UK to be made available for commercial scale MRE development, and 11 leasing agreements were given by the

Crown Estate in 2010 (The Crown Estate, 2014). Wave and tidal projects planned for the area are among the largest worldwide. Orkney's development started in the early 2000s, when it became home to the European Marine Energy Centre (EMEC), a previously government supported research facility for device testing in live conditions. Since then, a variety of wave and tidal devices have been deployed in Orkney waters (EMEC, 2014).

Further developments include the designation of Enterprise Areas by the Scottish Government in support of Low Carbon and Renewable Energy Technology (Orkney Islands Council 2009). These are generally created in areas with the greatest potential to create new employment opportunities and boost economic growth. The Orkney Economic Strategy 2012-2016 acknowledges the potential importance of this industry to counterbalance the decline in primary sector jobs (Orkney Strategic Economic Forum, 2012), and suggests that developing MRE resources 'will help sustain the economy of the islands in the future' (Orkney Islands Council, 2009, p.2). A few hundred people are dependent on MRE for their livelihood, either through direct employment or indirectly (DECC, 2013b). If the area's full installed capacity of 1600 MW is reached, this would indicate that there is genuine potential for creation of additional hundreds of jobs.

Several organisations and networks have focused on supporting MRE development on the islands such as the Orkney Renewable Energy Forum; and Energy of Orkney. Nevertheless, development of a thriving MRE sector in Orkney and its potential as an energy supplier for the UK will be highly dependent on strengthening grid capacity, an inter-connector, and agreements on transmission charges (Orkney Islands Council, 2009; Orkney Strategic Economic Forum, 2012).

4.4 The Shetland Islands

The Shetland Islands are located around 200 miles north of Aberdeen, and consist of over 100 islands of which 16 are inhabited. Shetland has a population of around 22,200, of which around one third lives in the town of Lerwick, the largest town on the Shetland 'Mainland'. Shetland's population has varied greatly in recent decades. After falling to nearly 17,000 in the mid-1960s, its population rose sharply until 1981 as a result of the oil boom, then declined again in the 1980s, before stabilising in the 1990s (Shetland Islands Council, 2011). Similar to the other case study sites, Shetland's working age population is declining, and the islands have an ageing population. A large proportion of the islands' land is commonly held, open land, which is generally used for livestock.



Figure 4.5 Map of the Shetland Islands. Source: Digimap.

Although removed from the UK mainland, the Shetland Islands are relatively well connected. A daily ferry service connects the Islands to the Scottish mainland (approx. 14 hours) and regular flights operate between Lerwick and several airports in the UK. Inter-island ferries and air services also run frequently between the inhabited islands.

4.4.1 Historical and cultural background - From Vikings to 'herring boom'

Shetland shares part of its history with Orkney. Neolithic sites, such as Jarlshof, a UNESCO World Heritage Site, are dated at roughly 3500 Before Common Era (BCE). In the late Iron Age, Shetland became part of the Pictish Kingdom, and Christianity arrived after 500CE. In this era, population moved in primarily from the South (Small, 1969), and the isles were well-connected to mainland Scotland, Ireland and Scandinavia (Slee Blackadder, 2007). Shetland's Viking period lasted from between 800 and 1469, starting as a staging post for Norse explorers and later colonisation (Barrett *et al.*, 2000; Small, 1969). The islands were also used as a base for Viking raids to territories further south. (Slee Blackadder, 2007). The Viking era was followed by more organised and civilised Norse development, when Shetland was annexed to the Norwegian crown for over 300 years in 1194 after a failed plot to overthrow the Norse King (Slee Blackadder, 2007). During this time Udall law applied, in which land was the property of the person who had first claimed and improved it, regardless of social status, and taxes were claimed based on productivity of the land instead of size.

Shetland eventually became Scottish in 1469, and during Scottish rule, many freehold lands were taken by Scottish landowners. Shetlanders were made tenants, and the Protestant Church began to exert greater control over many people's lives (Slee Blackadder, 2007). During the 15th century, trading connections shifted from Scandinavia to links with Germany and, later, with Holland, which dominated Shetland's trading for many years as part of the Hanseatic League (Slee Blackadder, 2007). Those that were not involved in overseas trading were largely self-sufficient. During this period, Shetland remained far removed from English and Scottish rule, and the English King and parliament were largely ignored.

Shetland was again a stopover for ships during periods of recurring conflicts between European countries. At the onset of the Napoleonic wars (from 1800-1815), many Shetlanders were pressed into service for the British Navy because of their qualities as

sailors. The Shetland economy at that time was largely based on fishing, trade and smuggling, and some agriculture (Slee Blackadder, 2007). In the 1780s Methodist preachers arrived on the islands, and by the 1820s tenants were forcibly removed from their crofts to poorer lands that their families had held for hundreds of years. Over a quarter of the population left Shetland settling in New Zealand, America and Canada (Shetland Museum and Archives, 2012). The discovery of North Sea oil in the 1970s, however, led to enormous economic prosperity for Shetland in the decades to follow.

Shetland has the strongest Viking genetic heritage in Britain, with an overall Scandinavian ancestry of 44% in Shetland and 30% for Orkney (Goodacre *et al.*, 2005). Despite Scottish influence, the Isles never had a clan system or any Gaelic influence. Instead, Shetland remained associated with the Viking culture (McClanahan, 2004). Nowadays, Shetland culture is a mix between Christian customs and those surviving from the Viking times, but also shows influences from Shetland's exposure to other cultures. The strong Viking influence in Shetland has resulted in a culture with many Norse influences, including place names and dialect, and celebration of the connection to its Viking past (Visit Shetland, 2014).

4.4.2 Contemporary overview of the community and local economy

Shetland's economic base is relatively narrow. The fishing industry, which includes wild catch, aquaculture and processing of fish and shellfish, has been a key sector within the Shetland economy in recent history, and is still of significant importance. With the decline in conventional fisheries, aquaculture activity has expanded since the 1980s (Shetland Islands Council, 2011), and fisheries remains the dominant industry in terms of employment along with services (AB Associates Ltd, 2007).

However, oil is very important for the Shetland economy in revenue terms, following the discovery of North Sea oil in the late 1970s. During the oil boom the Sullom Voe oil

terminal was established as one of the largest terminals in Europe. Shetland has benefited greatly from this development, as royalties were negotiated to ensure community benefit for the inconvenience of having the terminal based on the islands. To manage the funds, the Shetland Charitable Trust was established in 1976 (The Shetland Charitable Trust, 2014). For every barrel of oil passing through Sullom Voe, royalties were paid into this trust until 2000 when the Disturbance Agreement ended (Morgan, 2009). Over the years, this has funded a well-developed road network, ferry connections and community facilities, and many local programmes and public services. Although its current worth is estimated at £220m, of which £40m is invested in the local economy, concerns have emerged about the long-term prospects of the trust. Contributing to these concerns is the decline of the oil industry since the early 1990s, when employment rates began to fall and an estimated 530 oil-related jobs were lost. (AB Associates Ltd, 2007). Since 2004, employment levels have remained relatively stable and new oil developments west of Shetland could benefit the islands in the short term. However, alternative income is deemed necessary to maintain the standard of services and the viability of Shetland communities (Slee Blackadder, 2007).

Currently, the Shetland Gas plant is under development and is planned to become a major hub in bringing gas ashore from North Atlantic gas fields. The development of the plant requires large amounts of labour from the mainland, many of whom are hosted locally in guesthouses, hotels, and floating accommodation (Griffiths, 2013). Some donations have again been made to the local community as means of engagement (Petrofac, 2014). The terminal will be located next to the gas turbine power station, which provides around half the electricity for the islands. In the summer of 2014, planning consent was granted for a new power station in Lerwick to contribute to 'clean fossil fuel power to provide a steady supply of energy' (The Scottish Government, 2014). This is imperative, as the use of fossil fuels is again high due to dependence on air travel, freight, ferries, and car use for Shetland's dispersed population. The Shetland economy is therefore very vulnerable to fluctuating oil prices,

and the islands have a high cost of living, and high fuel poverty rates (Shetland Islands Council, 2009).

The Shetland Islands are also a popular destination for cruise ship tourism, where prehistoric sites, bird reserves and pristine environments are the main attractions. A significant part of the island's natural environment has protected status, including 81 SSSIs, SSCs, National Nature Reserves, and a RAMSAR site (AB Associates Ltd, 2007). Shetland has low unemployment at below 2%. Similar to the other islands, the public sector is one of the largest employers on the islands, making up 35% of total employment. Most employment (around 75%) is located in the central area of the 'Mainland' (AB Associates Ltd, 2007), but the more remote communities face increasing out-migration. The Shetland Rural Development Strategy aims to halt this process, and identifies physical isolation as the fundamental underlying factor affecting economic and social activities, which increases their cost and hampers competition (AB Associates Ltd, 2007). The location means that opportunities for economic diversification and growth are rare.

4.4.3 RE in Shetland – 'Viking' wind, wave, and community tidal energy

RE is seen as an opportunity to diversify and develop the Shetland economy (Shetland Islands Council, 2009). To create large scale benefit from RE generation, in the same vein as the oil royalties, the Shetland Islands Council signed a partnership with Scottish and Southern Energy in 2007 to develop the Viking onshore wind farm. This project, which faced significant opposition from residents for aesthetic and health reasons, will consist of 103 turbines up to 145 metres tall set in the central mainland of Shetland. The project is estimated to meet the electricity needs of up to 335,000 homes. The developer anticipates that Viking will become the world's most productive onshore wind farm, creating an estimated 35 permanent jobs and an extra 140 during its construction. Because the Viking project is based on shareholding in a partnership deal between the

Shetland community and Scottish and Southern Energy, large sums of money are estimated to be injected into the Shetland economy, and in addition the islands would receive £1.85 million in community benefits each year (Viking Energy, 2014). However, the project has divided the community and has resulted in much controversy surrounding its development. Despite the potential contribution to the local economy, the project's landscape and environmental impacts have caused opposition. The main opposing organisation is Sustainable Shetland, which has over 800 members (Sustainable Shetland, 2014). A crowd-funding procedure was started to finance a legal procedure to prevent development. Even so, the Viking project received planning approval in July 2014.

The Shetland Islands also have among the most significant wave and tidal resources in the UK (Natural Power, 2011) and several areas have been allocated by the Crown Estate for lease. In 2011 a lease was secured by Aegis Wave Power to develop a 10MW Pelamis commercial wave farm (10-14 wave machines) off the southwest coast of Shetland (Aegir Wave Power, 2012). The project is in the early stages of development and is not expected to be operational for the next few years, as scoping studies are currently being conducted. Because Shetland is not connected to the national grid, its development will also depend on developing a connection, which has been pushed back to 2018 (Robertson, 2013). Until that point, Shetland will be unable to transport any generated energy to the Scottish mainland.

Similar to Orkney, most Shetland communities have organisations focusing on development in the islands in the form of community trusts and development companies. These groups are increasingly involved in community RE projects. One example is the North Yell Development Council, which is involved in development of a 5 turbine onshore wind farm. The proposal gained planning permission without public opposition, while a second project is the Bluemull Sound Tidal Project, the first tidal powered generator owned and operated by a community organisation in the UK. The test project consists of a 30kW tidal turbine, which is specifically designed for the area

and energy is brought onshore via a 1 km cable. The electricity generated will be used locally, and any surplus will feed into the Shetland Grid (North Yell Development Council, 2013).

4.5 The Isles of Scilly

The Isles of Scilly are located 28 miles off the most south-western coast of England and consist of numerous islands five of which are inhabited. The Isles have a population of around 2200, with the majority living on St Mary's (Office for National Statistics, 2011a).



Figure 4.6 Map of the Isles of Scilly Source: Digimap.

4.5.1 Historical and cultural overview: shipping, smuggling and English Channel stopovers

The history of the Isles of Scilly is surrounded by many unknowns, but includes tales of King Arthur and Greek and Roman mythology (Bowley, 2004). It is considered likely that until relatively recently, Scilly was one large island named Ennor, meaning 'the great island', and that due to rising sea-level around 400-500CE the central plain flooded, creating the Isles of Scilly (Thomas, 1985). The known first settlements date from the Bronze Age, and bear the characteristics of those this area of the Atlantic (Perez, 2013). Although the Isles were part of the Roman Empire, the Scillies experienced little influence because of its remote position and lack of resources (Thomas, 1985). During the first and fourth centuries CE people lived in prehistoric style huts, and a mixed farming economy, consisting of domesticated and wild resources, provided subsistence (Perez, 2013). Christianity was introduced on the Isles in the 5th century, and close contacts were established with traders from France and the Mediterranean (Bowley, 2004).

The Isles of Scilly were also raided by the Vikings in the late-8th century. Following the Norman conquest, the Isles of Scilly belonged to the Earldom of Cornwall from 1141 and the Duchy from 1337 (Bowley, 2004). During the early 12th century, the Isles of Scilly were a base for pirates, and the Isles are strongly associated with smuggling (Bowley, 2004; Parslow, 2007). To address illegal imports, a customs house was established in 1682. The Isles were also a staging point for ships sailing between Western Britain and ports around the British Channel and Atlantic coast (Cowan, 1975). During prolonged conflicts with France, Spain and Holland and the English Civil Wars in the 16th to 18th century, the Isles occupied a strategic position, and several defences were built. From 1579, the Godolphin family owned the Isles of Scilly for the next 215

years, establishing law and order, and migrants from Cornwall settled on the islands establishing Hugh Town, Scilly's largest settlement (Bowley, 2004).

From the 17th to early 19th century the burning of kelp was an important local industry for glass making, soap manufacturing and bleaching. A shipbuilding industry also emerged after the 1770s, where wooden ships were built, owned and crewed by Scillonians. However, it was unable to compete with steam-powered, iron ships and the industry had virtually disappeared by 1880 and Scilly was no longer a port of call (Bowley, 2004). The Isles remained home to many pilot boats to ensure safe passage for ships into and out of the islands. In addition, the gigs were used for smuggling. Soon after the 1880s, a period of bad harvests, a decline in fisheries and kelp harvests, and a decrease of the demand for pilots caused an economic downturn of Scilly. Fisheries declined, as did kelp, and by the end of the 1880s, Scilly turned to the flower trade (Bowley, 2004; Parslow, 2007). In the false expectation that Scilly would become an important naval base, fortifications were built between 1886 and 1905 (Bowley, 2004). The first half of the 20th century saw improvements in transport links with the mainland, increasing the importance of tourism in the island economy. This marked an important period of change for the Isles of Scilly, and further decline in traditional industries made tourism a main source of income. The Isles of Scilly culture is predominantly British, with some dominant local traditions such as gig racing and nature based cultural events (Isles of Scilly, 2014).

4.5.2 Contemporary overview of the community and the local economy

Although population numbers have remained fairly constant, the last three decades have shown considerable demographic change in the Scillies. Like many other island communities, younger people tend to leave the islands for education and job opportunities, and few return. The islands' reputedly sub-tropical climate, in turn, tends to attract economically inactive people, such as retirees (Cornwall Development

Company, 2009; Council of the Isles of Scilly, 2007b). This has resulted in skills and employment shortages in a variety of service areas. Furthermore, much employment is low paid, part-time or seasonal (Council of the Isles of Scilly, 2007b). In July 1999, the Isles of Scilly, as part of Cornwall, were designated as an Objective 1 area under the EU Cohesion Policy, to help improve the region's economic well-being (Europa, 2005). This provided considerable scope for regeneration, though the Isles' remoteness from markets was also acknowledged as an issue (Kirkham, 2003) .

Today, the Isles of Scilly have a very narrow economic base, with a high dependence on tourism (mainly micro-businesses) and public administration. Historically, fishing and flower farming were dominant industries, but like elsewhere in the UK, the importance of fisheries has declined. An increasingly internationalised market has also led to a decline in the flower sector (Council of the Isles of Scilly, 2005). Tourism now accounts for over 85% of GDP. Currently, tourism has also declined, with lower visitor numbers each year as a result of increasing fares and stronger competition (Penzance Chamber of Commerce, 2014).

Tourism is nevertheless focused on the coastal environment and bird watching and the natural environment is considered a major asset, most of which has protected status. In 1975, they were made a Conservation Area, and in 1976 they were designated an Area of Outstanding Natural Beauty (AONB) (Bowley, 2004). There are 27 Sites of Special Scientific Interest (SSSI), a RAMSAR Site and a Special Site of Conservation (SSC). Most of its freehold land is still owned by the Duchy of Cornwall, which leases it to, *inter alia*, the Scilly Wildlife Trust (Duchy of Cornwall, 2006). The significance of the natural environment for the island economy is recognised in the Isles' Sustainable Energy Strategy (Council of the Isles of Scilly, 2007a), which seeks to 'meet the energy needs of the Islands without impacting on their character and distinctiveness and therefore the success of tourism, the crucial economic input' (p. 22). Protection designations thus constrain new (energy) development opportunities. Although the strategy advocates a balance between protecting local and global environments, the sensitivity of the

environment and landscape to energy developments features strongly in suitability assessments of projects and it is stated that any RE development must not have an adverse impact (Council of the Isles of Scilly, 2007a). Although this leaves room for small, low impact projects, which may be permitted in protected areas, as set out in Planning Policy Statement 22 of the National Planning Policy Framework (Office of the Deputy Prime Minister, 2004), in reality there is limited scope for RE developments, particularly onshore. Apart from a few solar panels and ground source heat pumps, the energy requirements of the islands are currently met by a diesel powered generating station on St Mary's (the largest island) and a mainland cable connection. Overall, achieving energy sustainability appears low on the list of priorities. This is in contrast with the recommendations from the Penzance and Isles of Scilly Strategic Investment Framework, which stresses that the viability of the Isles depends on its capacity to be as self-sustaining as possible while maintaining of strong transport links to the mainland and communications with the wider world (Cornwall Development Company, 2009).

The cost of living on the islands is high, with prices of property, consumer goods and transportation much higher than in the rest of the UK. The price of consumables, for example, is more than 20% above mainland prices (Council of the Isles of Scilly, 2007b). This is the result of the high dependence on goods and services shipped in by sea. In November 2012, the helicopter connection to the mainland was discontinued, and since then the islands can only be reached by domestic flights operating from three airports in the South-West and a seasonal passenger ferry. This poses significant challenges for the Islands' viability and tourism activities.

4.5.3 RE potential and development: environmental parameters and testing the waters

As noted earlier the Isles' energy requirements are currently met by a diesel powered generating station on St Mary's as well as a mainland cable connection, which is expected to be replaced in 2028 by Western Power Distribution. The Isles of Scilly Sustainable Energy Strategy nevertheless recognises the potential for renewable energy to become an integral driving force for the local economy (Council of the Isles of Scilly, 2007a). Yet, the amount of RE generated on the isles is negligible, and fuel poverty rates remain high.

Of the three case study sites, the Isles of Scilly has the least experience with MRE. In 2004, a study commissioned by the South West Regional Development Agency examined the Islands' potential for wave and tidal technologies (METOC, 2004), and suggested that around 10 full-time jobs can be sustained for each MW of installed RE capacity on the islands. With a current demand of around 4MW, RE generation could thus potentially contribute around 40 jobs to the local economy (Council of the Isles of Scilly, 2007a).

Despite the indicated potential, the Isles have attracted little interest from the MRE sector. To date, no interest has been shown for large scale wave, tidal or wind power. In 2008 a scoping study was conducted for the deployment of a single device to power the local airport terminal. Currently, the potential for a small-scale wave energy pilot project is being investigated, with three initial devices being positioned near shore, if additional devices could be located further offshore. There is also a focus on the innovative involvement of the community in the ownership structure (40South Energy, 2013). At the time of writing, the project was engaged in preliminary talks with relevant authorities.

An important reason for the low interest and development of RE is the protected status of the Islands. Due to the various designations of protection, the potential to implement

RE projects appears restricted by a low tolerance to environmental impacts as very little impact on the area's amenity is tolerated (Isles of Scilly AONB, 2010).

4.6 Conclusion

This chapter has provided an overview of stakeholder consultation procedures relevant to MRE and the three case study sites to provide important background information about the local context. The descriptions of policy backgrounds illustrate that areas around the UK have different RE targets and follow different consultation procedures. Scotland's 100% target by 2020 intensifies the need for RE deployment, whereas England's more modest target of 15% leaves more room for compromise. However, England's separate procedures for developing nationally significant infrastructure suggest that, for some developments, the scope for consultation to influence outcomes remains limited. Recent changes in the Scottish and English (above 100MW) consenting systems towards a stronger focus on mandatory early consultation should increase the potential for the uptake of information, but ambitious targets may result in some bias towards approval. Importantly, however, the public has limited influence on the most basic decision regarding MRE siting, where the leasing areas should be held, which is entirely determined by the Crown Estate, and offshore energy developers have only recently gained some scope to influence this process.

The community portraits illustrate the distinct local histories and socio-economic backgrounds that potentially influence community attitudes towards MRE. All three areas face similar problems regarding community viability, in terms of population stability, ageing populations, high fuel prices, and limited economic opportunities on the outer islands. Orkney is characterised by a strong Norse history and an uneasy relationship with Scotland. As a result of the decline in traditional industries, it has become increasingly reliant on tourism. Despite the discovery of some oil in the area,

Shetland became the UK's main oil terminal, leaving Orkney relatively unsuccessful in its oil endeavours, though at a small scale, RE has provided benefits through community deployment. The establishment of the EMEC test centre could, however, increase the islands' prosperity, and enable Orkney to become a world leader in MRE development. Shetland, which shares a similar Viking heritage, has a less troublesome relationship with Scotland. The islands are characterised by many incoming cultural influences throughout history. Despite historic hardship and similar physical characteristics to Orkney, the oil industry made a major difference to Shetland's economic development, providing funds for community services and infrastructure. However, as traditional industries have declined, Shetland has diversified its economy towards aquaculture, making it a dominant industry on many islands. The islands are now further exploring RE opportunities, including community wind and tidal energy, large scale onshore wind, and wave energy. The Isles of Scilly are the most dissimilar to the other sites. It shares little Viking influence, but experienced more Mediterranean and East-Atlantic influences in addition to a strong English influence. Throughout history, the Isles of Scilly have struggled to maintain their economic viability and although some diversification took place in the form of ship building, kelp burning, the flower trade and more recently tourism, this remains an issue. However, largely because of concerns about protecting environmental quality and tourism, the Isles of Scilly have thus far appeared to embrace some onshore or MRE as a further stage of this diversification.

The next chapter will explore the communities in further detail, by investigating place values, community attitudes towards MRE, and the perceived effects of MRE on communities.

Chapter Five: Exploring attitudes towards MRE

5.1 Introduction

In line with objectives one and two of this thesis, the purpose of this chapter is to identify attitudes towards MRE, explore the local contexts in which attitudes are formed in each community, and to evaluate how factors within the communities researched contributed to support or opposition to local MRE developments. The results presented in this chapter include survey and interview data, to provide a general understanding of attitudes, and deeper insight into the reasoning behind opinions.

Section 5.2 provides the broad context in which MRE attitudes are explored, including demographic characteristics, place-based assessments of the study sites, and attitudes towards RE in general. Section 5.3 identifies community attitudes towards MRE and reasons for opinions. Section 5.4 then evaluates the perceived effects of MRE, based on impacts on the natural and socio-economic environment, and interactions with other users of the marine space. Section 5.5 synthesises the key issues identified for understanding attitudes towards MRE.

5.2 The context for examining MRE attitudes

This section establishes the context in which MRE attitudes are examined. It first describes the demographics of the survey sample to introduce the research participants and explore the representativeness of the survey for the island communities. At the heart of this section lies a description of the place attributes, values and attachments specified by survey respondents, the goal of which is to identify community strengths and threats. The section concludes by establishing

general attitudes towards RE in the study sites and preferences for development of different technologies in the UK.

5.2.1 Demographics of the survey samples

Of the 1570 questionnaires distributed⁹, 558 questionnaires were returned completed: 212 from Orkney (a 35.3% response rate), 212 from Shetland (a 38.5% response rate), and 134 from the Isles of Scilly (a 31.9% response rate), resulting in an overall response rate of 35.5%. Table 5.1 shows the demographic characteristics of the sample.

Table 5.1 Demographic characteristics of the survey sample in % of respondents (n=558)

Characteristic	%	Characteristic	%			
Study site	Orkney	38	Employment status	Retired	30	
	Shetland	38		Self-employed/ freelance	18	
	Isles of Scilly	24		Employee	44	
Gender	Male	46		Housewife/husband	4	
	Female	54		Student	2	
Age	18-28	9		Unemployed	2	
	29-39	14		Industry	Public administration	21
	40-52	26			Education	13
	53-64	22			Tourism	13
	65-78	21			Primary industry	14
	79-89	7			Manufacturing/construction	10
	90+	1	Transport		5	
Level of Education	Higher degree	8	Finance/business		5	
	Degree	21	Retail	7		
	A-levels	12	Arts/culture	2		
	NVQ or equivalent	16	Other	10		
	GCSEs	18				
	No formal education	17				
	Other	8				

The overall gender and age distribution of the sample is shown in Figure 5.1. In comparison with the 2011 census (Office for National Statistics, 2011c), the gender distribution of the Isles of Scilly sample is somewhat skewed towards males, with 42%

⁹ 600 in Orkney, 550 in Shetland and 420 in the Isles of Scilly

female and 58% male respondents. In contrast, the Shetland Islands sample is somewhat skewed towards females, with 46.1% male and 53.9% female. Orkney has the most representative gender distribution, with 48% male and 52% female respondents.

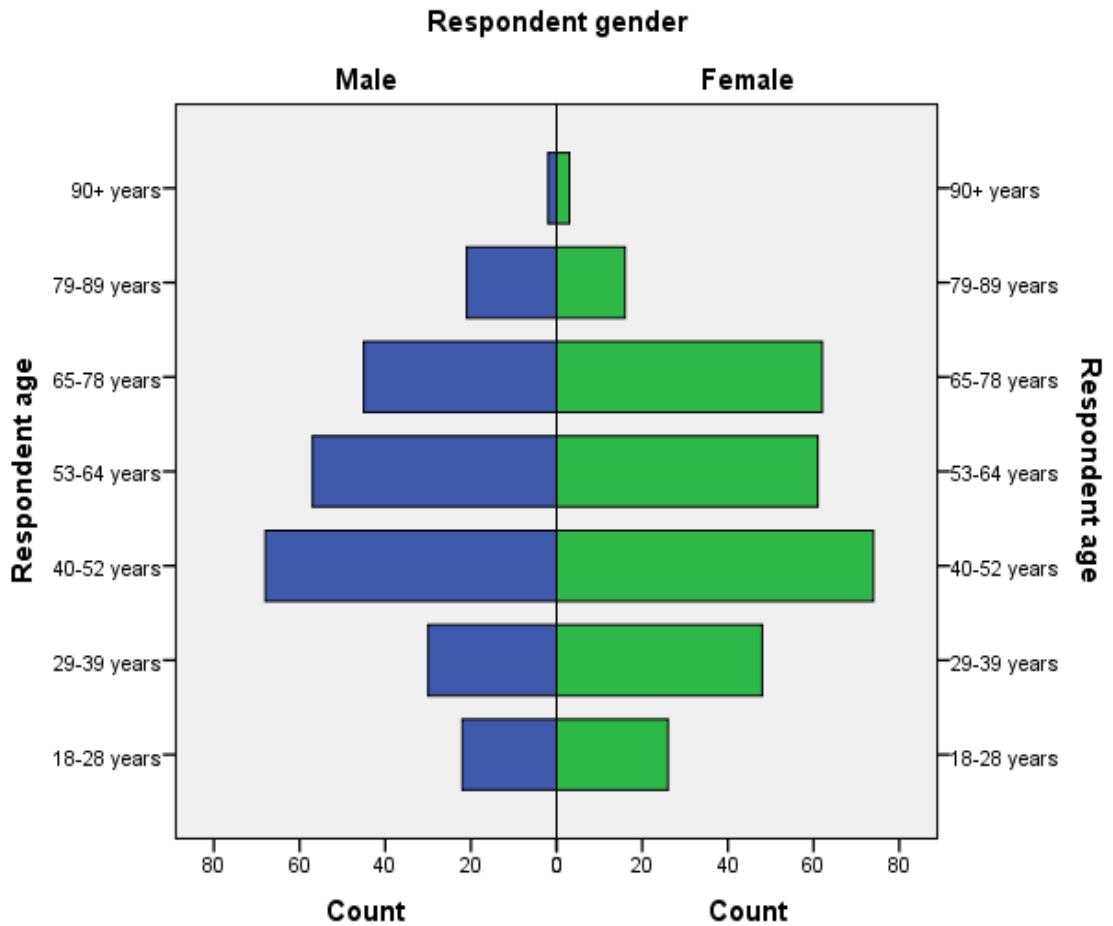


Figure 5.1 Gender and age distribution of the survey sample (n=558)

Age distribution of the survey sample shows an ageing population across the survey sites (see Figure 5.2), which is largely representative of the sites' wider population, (National Records of Scotland, 2012; Office for National Statistics, 2011b) and the ageing population discussed in Sections 4.3-4.5.

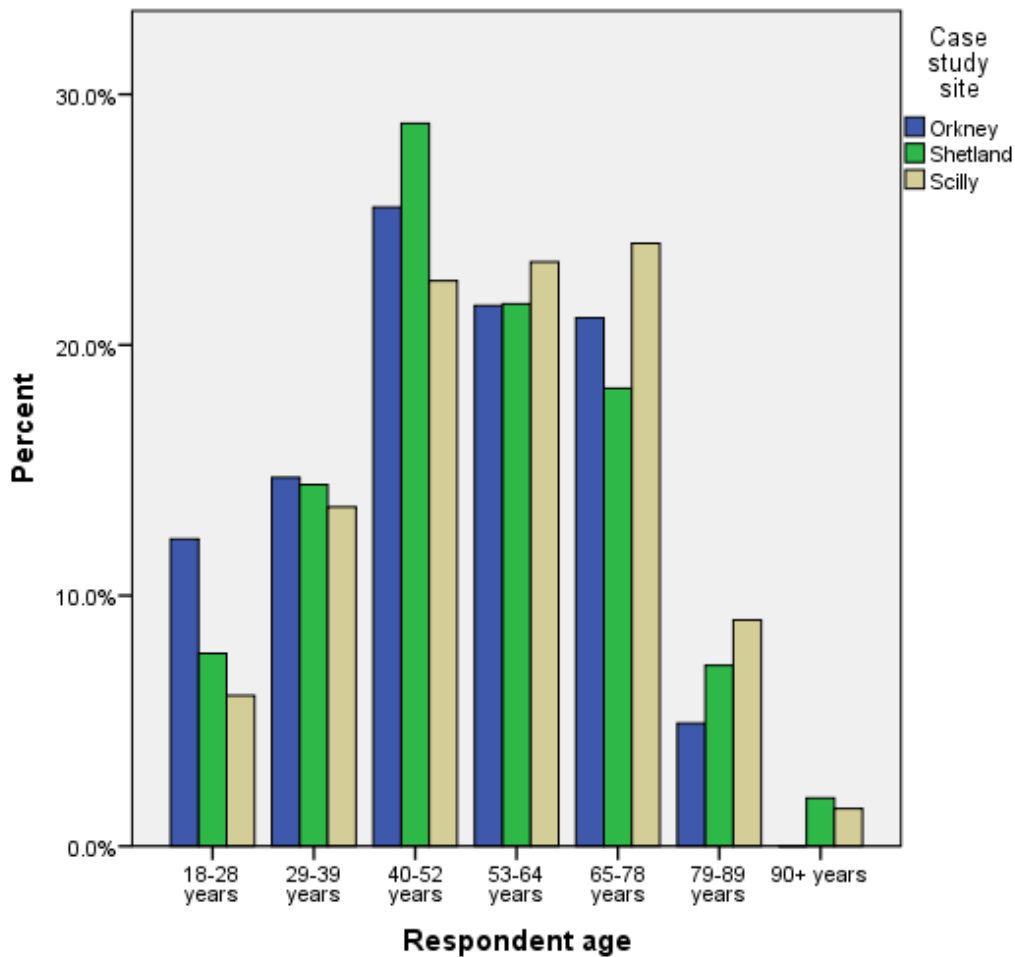


Figure 5.2 Age distribution of the study sites (n=558)

Some bias was observed in the Isles of Scilly sample, where respondent profiles were somewhat biased towards older respondents compared to the 2011 Census data (Office for National Statistics, 2011b): 6% of respondents were aged between 18-28 years, compared to an actual 12% according to the 2011 Census, and 34.6% of respondents were over 65 years of age. In comparison with Scottish and English census data (National Records of Scotland, 2013; Office for National Statistics, 2011d), survey respondents were fairly well-educated (Figure 5.3).

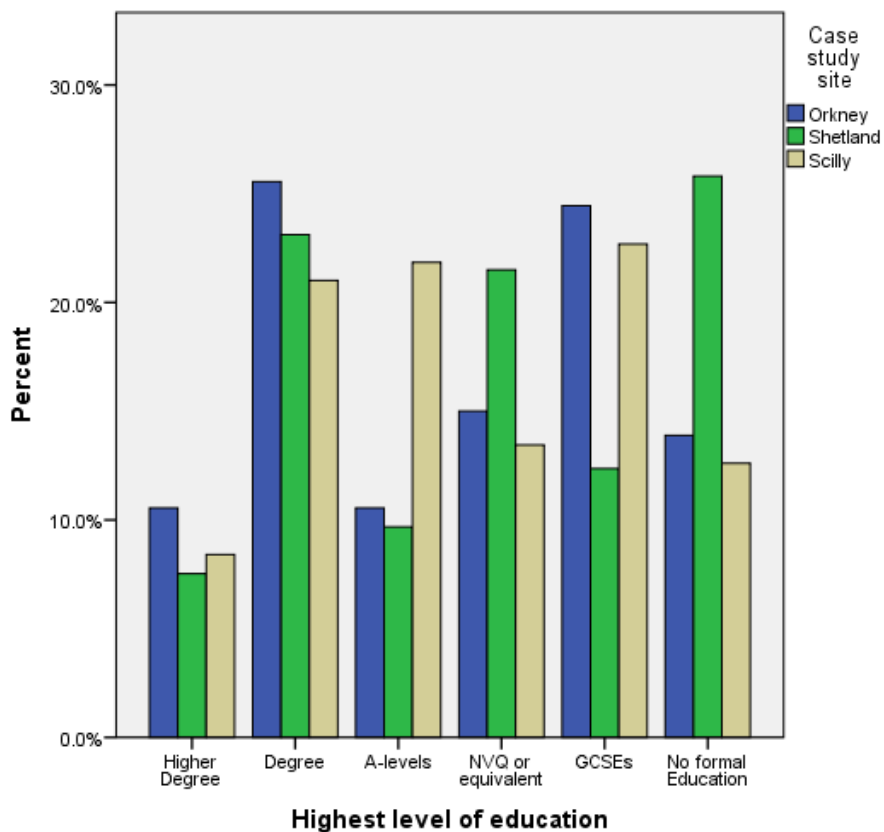


Figure 5.3 Highest level of education obtained by survey respondents (n=558)

In Orkney, 32.6% of respondents were educated to degree or higher degree level, the majority up to GCSE level, and only 12.6% had no formal education. Similarly, 28.1% of Shetland respondents were educated to degree or higher degree level; 19.7% of respondents were educated up to NVQ or equivalent level, and 11.3% up to GCSEs, which is representative of the Scottish census data (National Records of Scotland, 2013). Compared to the other sites, however, a greater proportion of Shetland respondents did not have formal qualifications (23.6%). Although in the Isles of Scilly fewest respondents were educated up to degree level or higher (26.9%), the proportion of respondents without formal qualifications (11.5%) was lower than the 14.2% described in the census data (Office for National Statistics, 2011d), which also

established that 33% of people held level 4 qualifications or higher¹⁰, while the majority of survey respondents were educated up to A-levels (20%) and GCSEs (20.8%).

The dominant employers of the survey sample were public administration, education, tourism and primary industries (See Table 5.1), which is consistent with public services, tourism and primary industries as main employers identified in Sections 4.3.2-4.5.2. Comparison between the sites regarding employment categories (Figure 5.4) found that the Isles of Scilly have fewer employment categories than the other sites.

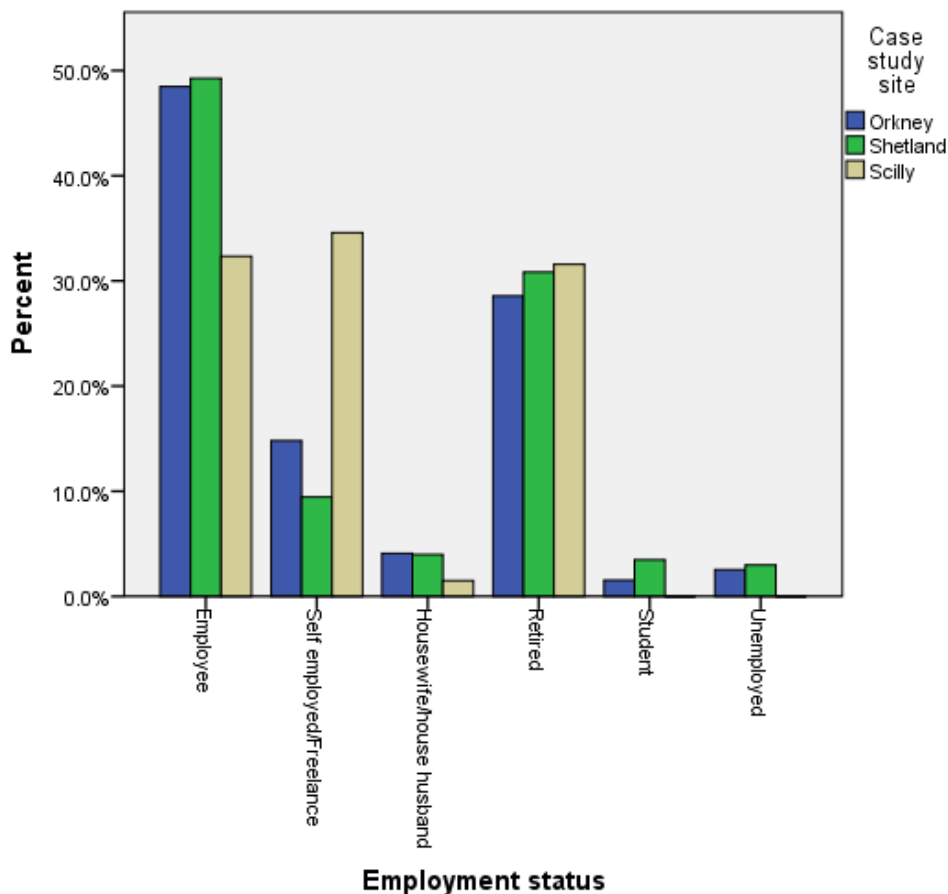


Figure 5.4 Employment status of survey respondents (n=550)

This confirms not only the Isles’ narrow economic base discussed in Section 4.5.2, but also Scilly’s ageing population as 31.6% of respondents were retired; 34.6% were self-

¹⁰ This includes degree level and up and NVQ 4-5.

employed or freelance; and 32.3% were employees. The number of self-employed respondents was much lower in Orkney (14%) and Shetland (9.3%) than in the Isles of Scilly. Although self-employed respondents are somewhat overrepresented in the sample, this is explained by the large number of tourism micro-businesses (described in Section 4.5.2), which often combine employment and retirement. Although this accurately reflects the study site, it may reduce the scope for direct statistical comparison between sites which have somewhat different employment and age profiles.

Of Shetland respondents, 57.6% were economically active, compared to 62.9% in Orkney. Mirroring the demographic profile of the Isles of Scilly, 28% of Orkney respondents were retired, and 30.2% in Shetland. The relatively high number of retirees in Shetland reflects its ageing population but does not fully reflect its status of being the council area in Scotland with the highest proportion of economically active people (National Records of Scotland, 2013). The low unemployment rates across the sites were reflected in the survey sample; in the Isles of Scilly no respondents were unemployed, this figure was 2.9% among Shetland respondents, and 2.5% in Orkney. This corresponds with the local census data (National Records of Scotland, 2013). Few respondents were students, 1.5% in Orkney, 3.4% in Shetland, and no students in the Isles of Scilly, as a result of the absence of educational facilities past the age of 16.

5.2.2 Place attributes, values and attachments

To identify place related values, survey respondents were asked to describe: (i) three main characteristics of their islands (either positive or negative); (ii) a characteristic they most wanted to protect; (iii) and something they wanted to change (Table 5.2).

Table 5.2 Dominant place characteristics, features to protect and change in the study sites

	Isles of Scilly	Orkney	Shetland
	(n=337)	(n=395)	(n=454)
Positive	natural beauty 49	safety 53	community spirit 55
	community spirit 45	community spirit 38	safety 47
	Scenery/landscape 36	friendliness 33	scenery/landscape 37
	Tranquil/peaceful 27	tranquil/peaceful 31	natural beauty 36
	safety 25	scenery/landscape 26	wildlife 22
	isolation 14	natural beauty 21	remote/isolation 21
	sea 11	history 18	friendliness 19
		wildlife 14	weather 14
	(n=38)	(n=31)	(n=50)
Negative	isolation/remoteness 13	weather 19	weather 21
	expensive 9	expensive 4	remoteness 14
	nosiness 5	isolation/remoteness 4	expensive 8
	reluctance to change 5	poor transportation 2	isolation 4
	poor transportation 3	travel cost 2	poor transportation 3
	travel cost 3		
	(n=121)	(n=175)	(n=199)
Protect	natural environment 23	community spirit 54	community spirit 69
	community spirit 20	wildlife 33	wildlife 24
	wildlife 14	beaches 17	natural beauty 10
	beaches 12	scenery/landscape 17	scenery/landscape 10
	level of development 7	natural beauty 15	beaches 10
	everything 7		
	(n=106)	(n=129)	(n=145)
Change	transport links 36	travel cost 15	council 21
	travel cost 11	nothing in particular 12	transport links 17
	council 9	opportunities for the young 11	nothing in particular 10
	fewer cars 6	transport links 10	centralisation 10
	housing 5	no more incomers 9	drug/alcohol abuse 7
			cost of living 7

In all sites, respondents appeared favourable to their area and a total of 1186 positive characteristics were identified. In the Isles of Scilly the main characteristics identified were natural beauty, community spirit, scenery and tranquillity. In contrast, Orkney's safe environment was declared most often as a key local feature (often related to raising a family), closely followed by community spirit, friendly atmosphere and tranquillity/peacefulness. Crucially, characteristics related to the natural environment only ranked fifth or lower. Shetland's place characteristics resemble Orkney's, but

community spirit was identified by most respondents as the dominant feature of Shetland, followed by safety, scenery, natural beauty and wildlife.

Negative characteristics (119 in total) were identified by only a small proportion of respondents. In the Isles of Scilly these were isolation and remoteness, followed by the high cost of living and travel costs. Isolation was identified as both a negative and positive characteristic. The weather featured in many Orkney and Shetland responses. In Orkney this was distantly followed by high costs of living, remoteness and transportation, and in Shetland by remoteness, high cost of living, isolation and poor transportation, echoing the Isles of Scilly responses.

Differences were identified between the study sites with regard to which aspects of their local area people wanted to protect most. Whereas in the Isles of Scilly, most respondents wanted to protect their natural environment, followed by community spirit, in Orkney and Shetland community spirit was followed only by identified aspects that related to the natural environment, including wildlife, beaches, natural beauty, and landscape. The desire to protect community spirit was greatest in the Shetland Islands.

Local features that people wanted to change also differed between the study sites. In the Isles of Scilly, transportation, both links and expense, was undoubtedly the main the main thing people wanted to change. In Orkney, this was reduced to travel cost, followed by those who did not want to change anything in particular. In Orkney and Shetland respondents also wanted to change the lack of opportunities for young people to stay and work on the islands. This did not appear in the Isles of Scilly data. In Shetland, most respondents wanted to change their local council, an issue that also arose in the Isles of Scilly data. Respondents additionally wanted to change the centralisation of decisions away from the outer islands to Lerwick or the national level.

The results presented above demonstrate that the communities have many characteristics in common and that respondents generally wanted to protect the most dominant characteristics of their local areas. Yet, their protection was differently

prioritised, as were priorities for change. Whereas Orkney and Shetland mostly valued their community spirit, the natural environment of the Isles of Scilly was the most valued asset. This trend was further evident when respondents' relationships with their local area were explored through their place attachments.

Respondents indicated their level of agreement with a number of perception statements about their relationship with place (Table 5.3). One sample t-tests were conducted to investigate whether the results for the study sites were statistically different, which they were at $p \leq 0.05$. Several trends were identified.

Table 5.3 Mean scores, standard deviation and agreement or disagreement with place attachment perception statements measured on a five point Likert scale (where 1 is strongly agree, 5 is strongly disagree)

Place attachment statement	Orkney (n=210)			Shetland (n=209)			Isles of Scilly (n=134)		
	mean	st. dev	Opinion	mean	st. dev	Opinion	mean	st. dev	Opinion
I have never considered how I think of the islands	3.86	1.067	Disagree	4.01	0.965	Disagree	4.14	0.897	Disagree
The Islands mean a lot to me	1.55	0.746	Agree	1.39	0.633	Agree	1.36	0.655	Agree
I feel a strong connection with the Islands	1.66	0.812	Agree	1.47	0.728	Agree	1.50	0.775	Agree
I live on the (...) because of its natural surroundings	1.96	0.985	Agree	2.05	1.069	Agree	1.68	0.988	Agree
The Islands have a strong sense of community cohesion	1.82	0.806	Agree	1.75	0.794	Agree	1.80	0.793	Agree
My employment ties me to the Islands	2.89	1.366	Disagree	2.70	1.369	Neutral	2.75	1.406	Neutral
I am on the Islands because of family ties	2.51	1.438	Neutral/Agree	2.00	1.299	Agree	2.72	1.524	Neutral
I like to be involved in what is going on in the Islands	2.29	0.855	Agree	2.17	0.866	Agree	2.08	0.858	Agree
I am keen to leave the Islands	4.00	1.077	Disagree	4.18	0.989	Disagree	4.19	0.922	Disagree
The tranquillity of the Islands is important to me	1.76	0.848	Agree	1.74	0.755	Agree	1.50	0.743	Agree
I approve of change on the Islands	2.54	0.915	Neutral	2.34	0.852	Agree	2.80	0.949	Neutral

Firstly, strong place attachment was found in all sites and people felt strong connections to their islands. Secondly, the large majority of respondents felt that their islands had strong community cohesion. This is consistent with the large number of

respondents identifying community spirit as a defining characteristic of their islands. Thirdly, employment was not the dominant factor connecting most respondents to their place. Instead, family ties were a more influencing factor. In Shetland, nearly 75% of respondents agreed that family bonds connected them to the islands, and 60% of Orkney respondents. In contrast, almost 40% of Isles of Scilly respondents indicated that this was not the case. These findings echo the population pattern of the Isles of Scilly, where the islands attract economically inactive people (Section 4.5.2).

Length of residence was explored in relation to place attachment (Figure 5.5), as it could affect the type of bonds people have with places.

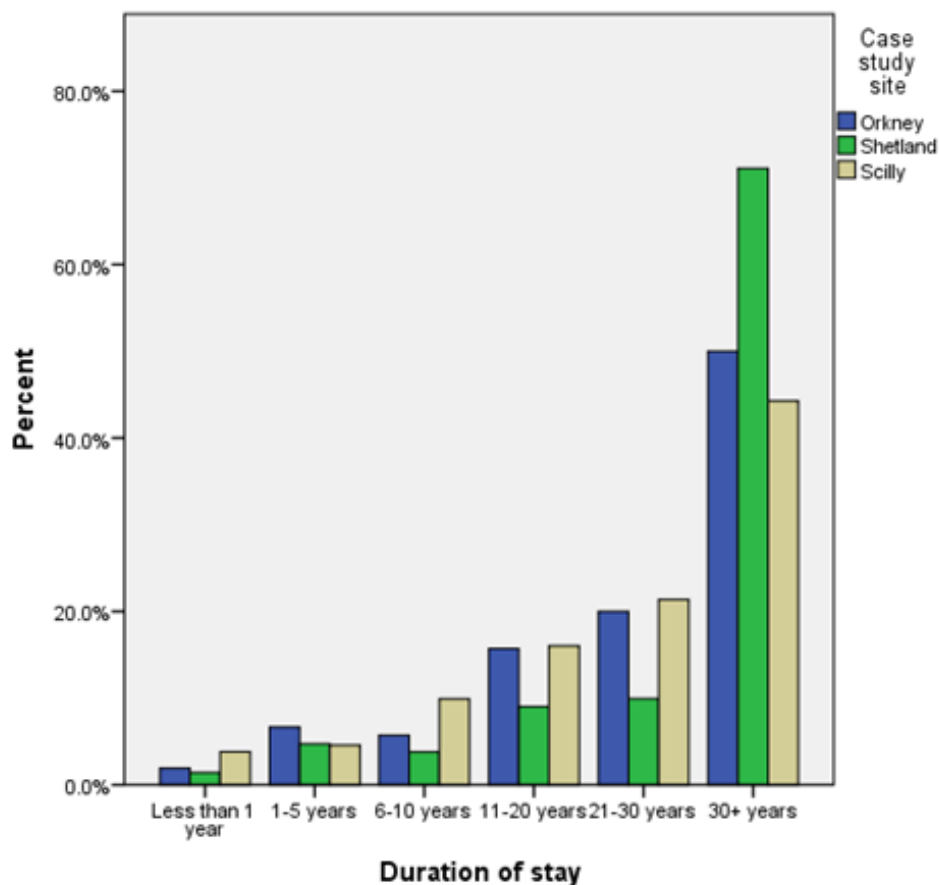


Figure 5.5 Respondents length of residence on the islands (n=532)

In Shetland, where the strongest family connections were identified, the majority of respondents had lived on the islands for over 30 years. The survey sample was not significantly skewed towards a specific age category and respondents younger than 30

years of age would have appeared in lower categories of length of residency. As a result, in Shetland, based on strong attachments, important family ties and length of residence, predominantly traditional and active attachments were identified (Lewicka, 2011b). Although to a lesser extent, this trend was still visible in Orkney.

Whereas family ties were a factor shaping people's place attachment in Shetland and Orkney, in the Isles of Scilly, despite its older population, fewer people lived on the islands for 30 years or more. Instead of residing on the islands because of family ties, Isles of Scilly respondents were often connected to their residence by natural surroundings. This supports the previous findings that identified the natural environment as a dominant, and also most valued, local characteristic and reflects the islands' background described in Section 4.5.2. These factors create different types of communities: one type where people have come to live on the islands by choice drawn to the area's natural environment, and the other based on continuity of family ties. Based on the survey results (Table 5.3), Isles of Scilly respondent's relationships with place could predominantly be classified as active attachment, where people are tied by their natural surroundings, but also tranquillity and community factors, as well as some traditional attachment based on procedural memory. Little evidence was found in any site for place indifference, alienation, and placelessness, the other types of place attachment identified by Lewicka (2011b) and Devine-Wright (2012).

These results provide an important first step towards exploring reasons for local attitudes to MRE because they establish a general portfolio of what each community perceives to be its key assets and threats; those strengths that they may wish to protect, and those weaker aspects that they may seek to change. For instance, the dominant and most valued characteristic identified in the Isles of Scilly was the natural environment. Together with the place attachment results, the natural environment was identified as the main asset in the Isles of Scilly. Similarly, Shetland's main characteristic was community spirit and respondents above all wanted to protect this local feature. Community spirit and social cohesion were identified as key assets in

Orkney and Shetland based on place attachments and locally valued place characteristics.

Although the low number of negative characteristics provided limited straightforward translation of negative characteristics and desired changes into threats and risks to valued community assets, connections were made between negative characteristics and desired changes. For example, the Isles of Scilly's high travel costs and high cost of living relate to the Isles' peripheral location and isolation. Some negative characteristics, such as the weather are impossible to alter. Nevertheless, connections existed between threats to community assets and desired changes to each local area, including transport links, administrative centralisation, and opportunities for the young which were all identified in Sections 4.3 - 4.5 as challenges for island communities, making them threats to the long-term viability¹¹ of each community and its local well-being. Crucially, although many characteristics were shared by the communities, different assets and risks were also identified. The next section explores how the place values, assets and threats identified in this section relate to attitudes towards RE in general.

5.2.3 General views towards RE

Significant support for RE in general was found, with 82.1% of respondents indicating positive attitudes towards RE (Figure 5.6). This is slightly higher than the most recent UK public attitude tracker, which found 79% support (DECC, 2014a) . Only 2.6% of respondents opposed RE and 15.3% were unsure.

¹¹ The use of the term viability is a shorthand for a combination of outright viability and a broader sense of well-being and resilience.

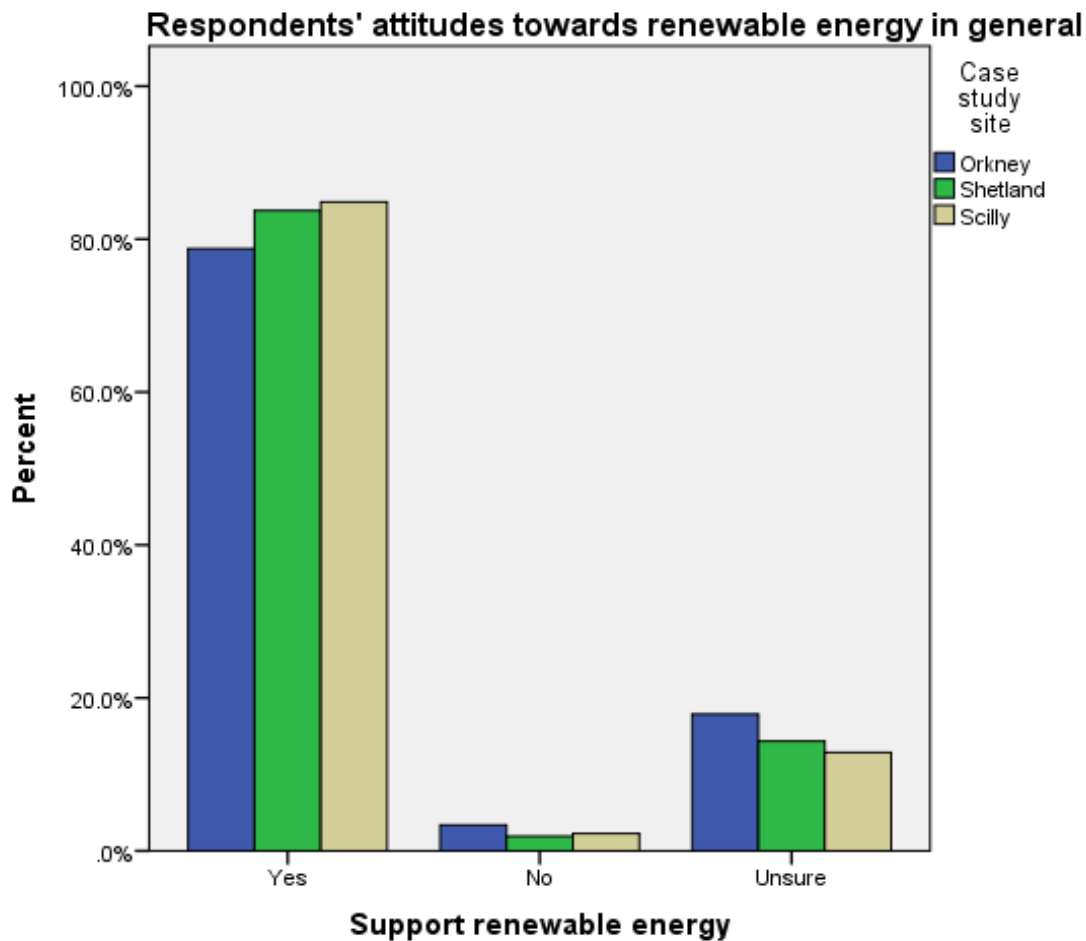


Figure 5.6 Support for RE in general in the study sites (n=554)

Respondents' explanations of their opinion were analysed using an NVivo query based on the frequency of codes (Figure 5.7). The query found that although similar levels of support were found for RE across the sites, reasons for this support differed.

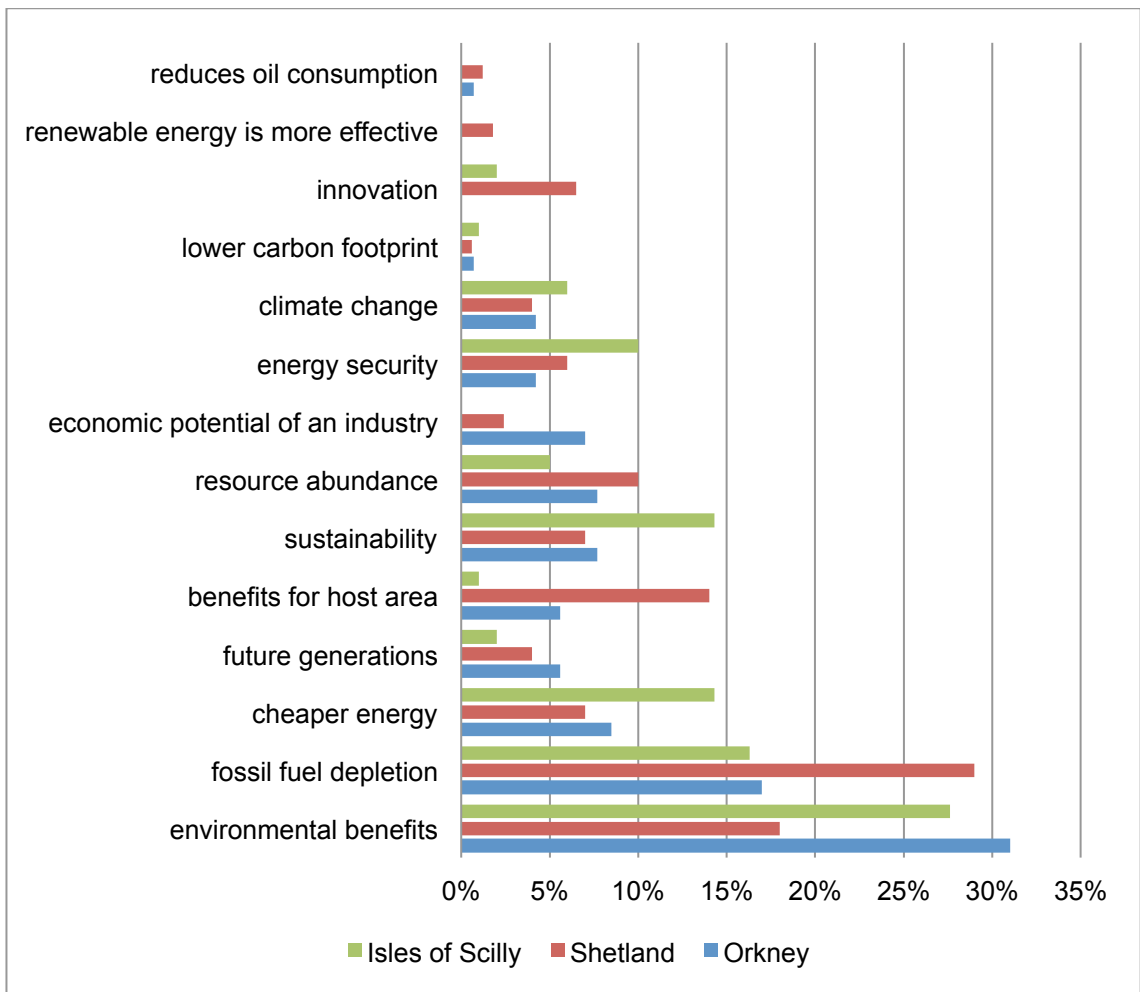


Figure 5.7 Reasons for support for RE in general in percentage of responses (n=499)

Some overarching values underlying support and opposition for RE were found across the sites, where environmentally-related reasons dominated. The majority of Orkney and Isles of Scilly respondents supported RE for its environmental benefits; this was less so in Shetland, where RE’s potential to address depletion of fossil fuel was the main reason given for support. An explanation for this could be the importance of the oil industry for the local economy in Shetland, which over the years has supported many public and community services. An emerging RE industry could possibly be seen as a potential substitute for oil revenues (See Section 4.4). Adding to this observation, expected benefits for host areas also featured as an important reason for support in Shetland reflecting Shetland’s history with the Shetland Charitable Trust. The main reasons for opposing RE identified were its high costs and a lack of (or insufficiently proven) environmental benefits. Few people opposed RE in general because of

possible environmental impacts. Respondents that were unsure generally did not explain their opinion across the sites.

Respondents were then provided with a list of RE technologies and asked whether the UK should develop this particular type of energy (Figure 5.8). MRE technologies emerged as the most popular, with tidal (70.3% definitely and 18.3% maybe) and wave technologies (67.7% definitely and 19.4% maybe) rated the highest, followed by offshore wind (49.1% definitely and 25.1% maybe). These findings are comparable to other studies (DECC, 2014a), although MRE was perceived more favourably and hydropower and solar power less favourably than the national average.

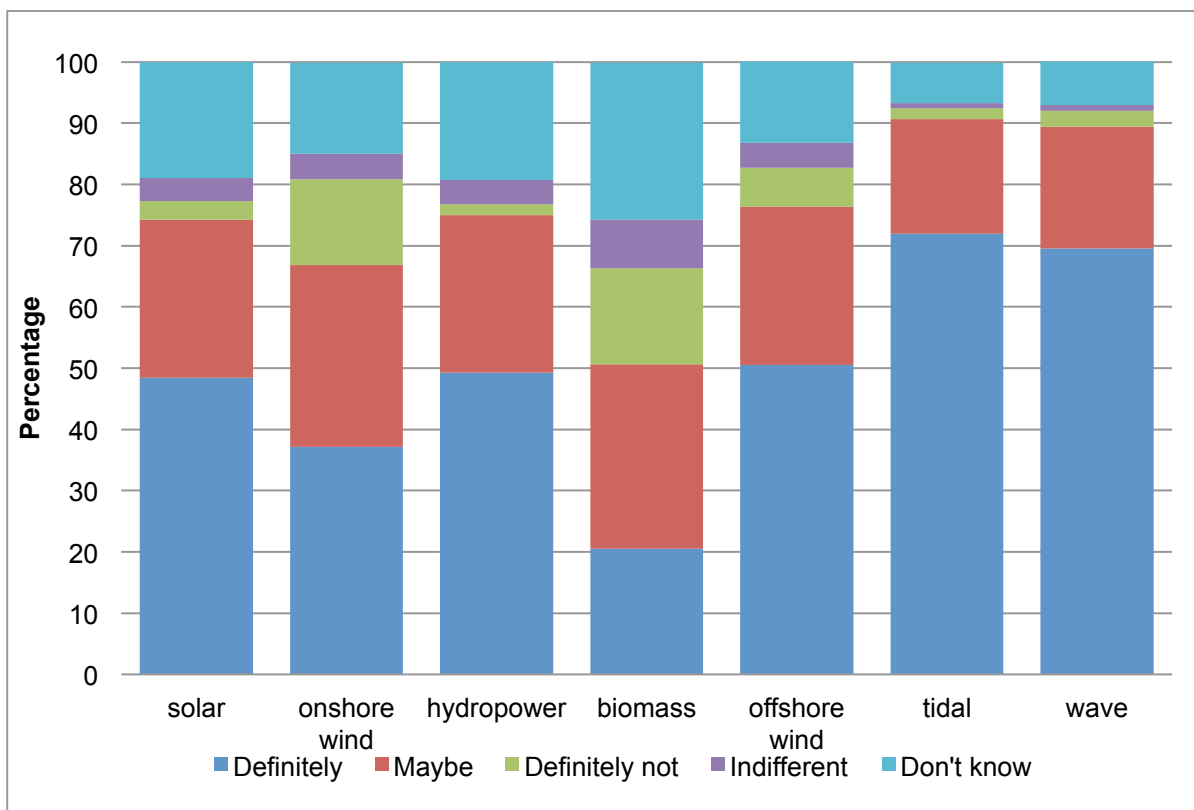


Figure 5.8 Preference for the type of RE to be developed in the UK across the sites in percentage of respondents (n=490)

Comparison between the sites showed that tidal energy was the preferred option in all sites, followed by wave. The third most preferred option varied between sites: solar energy in the Isles of Scilly, hydropower in Orkney, and offshore wind in Shetland. Onshore wind and biomass were the least favoured in all sites, and onshore wind was

seen by the majority of local interviewees as a threat to the natural environment, an important local asset. In Shetland, which showed generally positive attitudes towards most RE, the proposed Viking Wind farm might have had an influence on Shetland responses. A chi-square test was conducted to investigate differences in preferences between sites. Apart from attitudes towards solar energy ($X^2 = 40.53$ df 8 $p=0.00$), which was perceived more favourably in the Isles of Scilly, no significant differences were found.

Respondents also ranked their views on the importance of the main objectives for energy policy in the UK: energy security, affordability, competitiveness of UK markets, and climate change (DECC, 2011c). The results are shown in Figure 5.9. Although all reasons for developing RE were considered important, energy security was most valued by over 70% of respondents. This contrasts with the UK attitude tracker, in which only 48% identified energy security as a concern (DECC, 2014a). A possible explanation for this is the sites' high dependence on grid upgrades which are planned, but face long delays (Xero Energy, 2014).

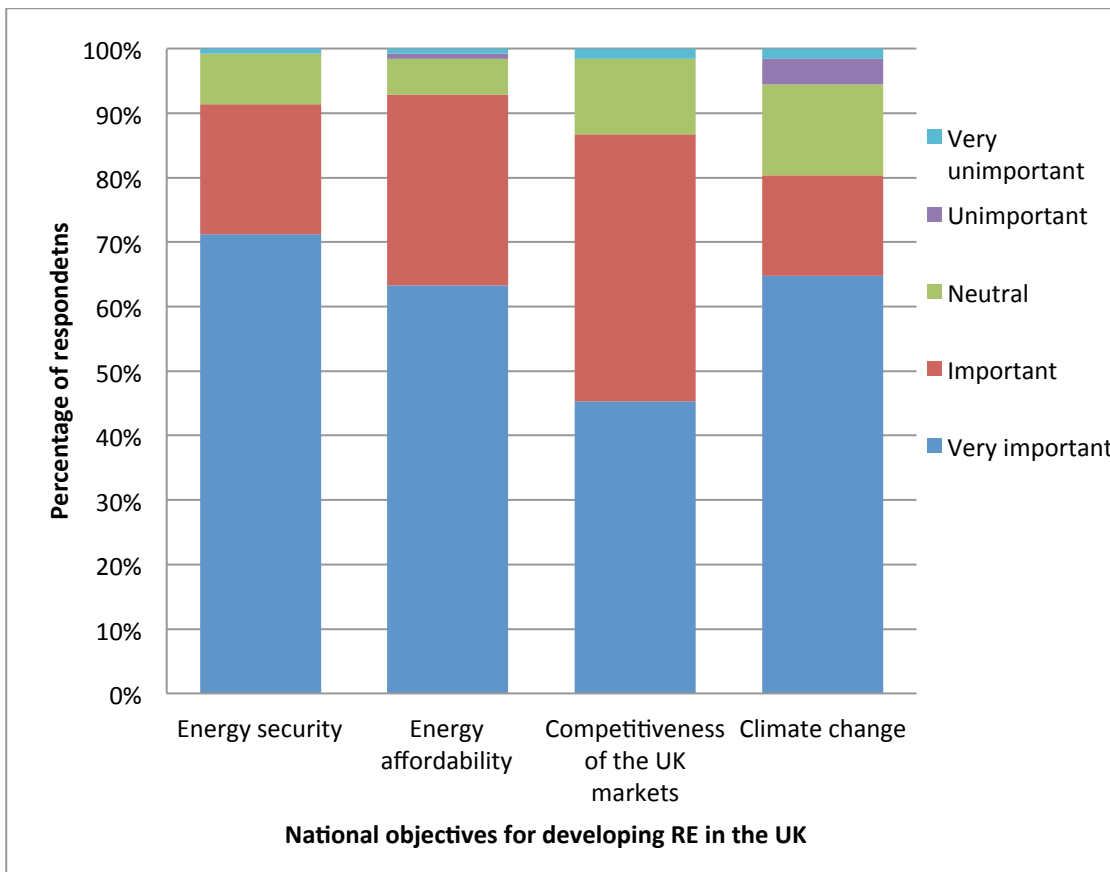


Figure 5.9 Perceived importance of the main objectives for UK energy policy as reasons for developing RE in the UK across the study sites (n=476)

No differences were found between the case study sites for energy security ($X^2 = 14.74$ df 8 $p=0.064$), UK market competition ($X^2 = 13.92$ df=8 $p=0.084$) or climate change ($X^2 = 10.385$ df=8 $p=0.239$). Significant differences were, however, found for energy affordability ($X^2 = 15.669$ df=8 $p= 0.047$), which was considered more important by Isles of Scilly respondents. This echoes previous findings that many supported RE because of its perceived potential to lower energy prices (See Figure 5.7). An interviewee from the local energy sector claimed that this was the result of the Isles' generally high electricity prices caused by a relatively recent step increase in the electrical heating of homes. All local interviewees expected that a reduction in electricity bills would increase acceptance of RE developments.

A reduction in your electricity charges... This gets people on board (IOSR1).

Although no significant difference was found between the perceived importance of climate change as a reason to develop RE, the issue emerged during the Isles of Scilly interviews as a threat to the long-term viability of the islands. Because the Scilly's low lying location increases its exposure to sea-level rise and increased storm events, a council member indicated that RE development could increase local resilience and mitigate the impacts of climate change. Correspondingly, climate change was indicated by more Isles of Scilly respondents as a reason to support RE than in the other sites (See Figure 5.17).

An important trend identified was that although RE was evaluated positively based on its perceived environmental benefits, and its potential contribution to a more sustainable society, RE was evaluated differently in the sites dependent on specific local considerations, such as its potential to mitigate the impacts of climate change in the low-lying Isles of Scilly, and in Shetland, its foreseen potential to address fossil fuel depletion, reflecting the Isles' high dependence on the oil industry. The expectation that RE would bring benefits to the host area adds to this impression. The next section examines attitudes to MRE in general and at the local level.

5.3 Attitudes towards MRE and underlying reasons

To gain comprehensive insights into attitudes towards MRE, a distinction was made between attitudes in general towards local MRE developments. Overall, the survey found positive attitudes towards MRE technologies (Figure 5.10); over 80% of respondents indicated a positive attitude, 8.8% were neutral, and 5.7% did not know. Only 4.7% of respondents indicated a negative attitude. The levels of support found are above the national averages reported in DECC's latest survey of public opinions on RE in the UK (DECC, 2014a).

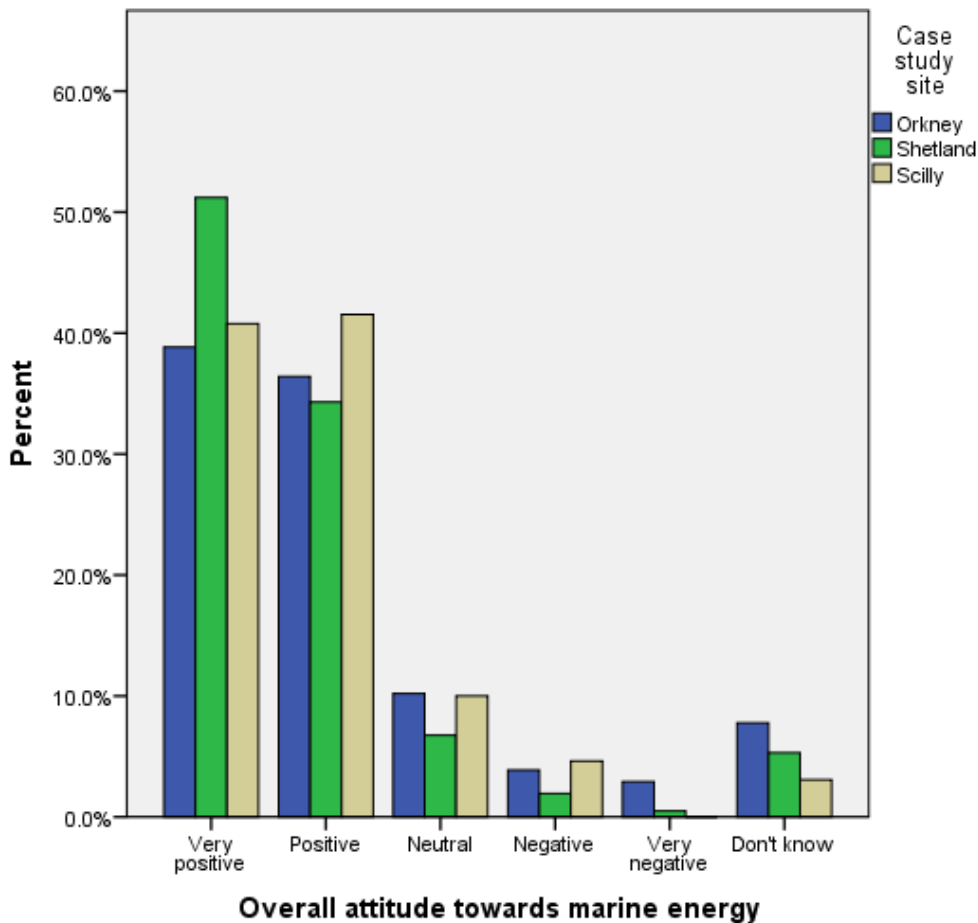


Figure 5.10 Attitudes towards development of MRE in general (n=543)

It is possible that respondents who answered ‘neutral’ or ‘don’t know’ to the development of MRE let their opinion depend on local circumstances, such as local environmental impacts. This phenomenon is described in the literature as conditional support (Wolsink, 2012), or people supporting RE but with limits to their support in a particular location (Bell *et al.*, 2005). This will be discussed in more detail later in Section 5.6, where the perceived impacts of MRE are investigated. Several trends were identified alongside predominantly positive attitudes towards MRE, and a chi-square test (χ^2 18.94 df 20 p=0.041) identified significant differences between the case study sites. Attitudes were most positive in Shetland, followed by the Isles of Scilly and Orkney, and further differences were established for individual technologies.

Attitudes towards tidal energy were most positive, with 81.1% positive and 5.4% negative responses (Figure 5.11). The most positive attitudes were found in Shetland

(89.3%), followed by Orkney (77.5%) and the Isles of Scilly (73.8%) but significant differences were found between case study sites, with χ^2 26.168 df 10 p=0.004).

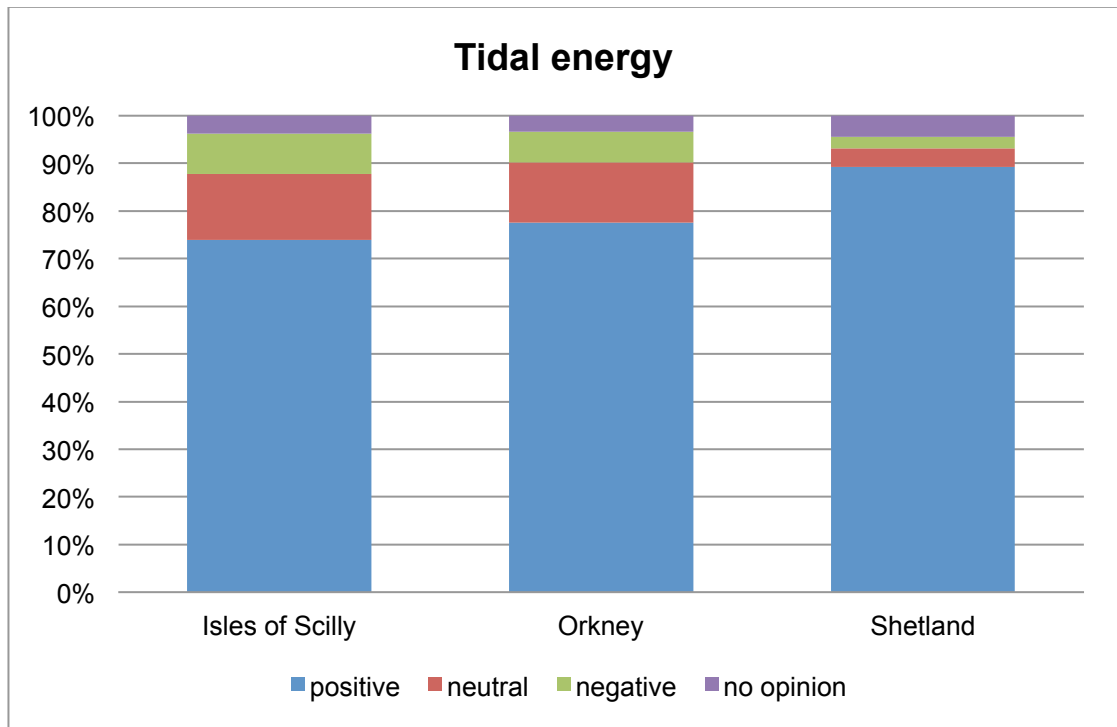


Figure 5.11 Attitudes towards development of tidal energy locally in % of respondents (n=543)

Attitudes towards wave energy were also generally positive (Figure 5.12), and chi-square tests confirmed significant differences between study sites in their support for wave energy development locally, with (χ^2 25.76 df 10 p=0.004). Again, Shetland respondents were most positive towards wave energy (86.5%), followed by the Isles of Scilly (78.5%) and Orkney (74.5%). Importantly, whereas in the Isles of Scilly support levels for MRE development locally diminished from 82.3% support for MRE in general to 78.5% support for wave and 73.8% for tidal energy, support increased in Shetland with 89.3% of respondents indicating positive attitudes towards tidal energy and 86.5% for wave energy compared to 85.5% support for MRE in general. In Orkney, where the lowest levels for support for MRE in general were found (75.2%), levels remained similar for wave and tidal energy with 74.5% and 77.5% respectively.

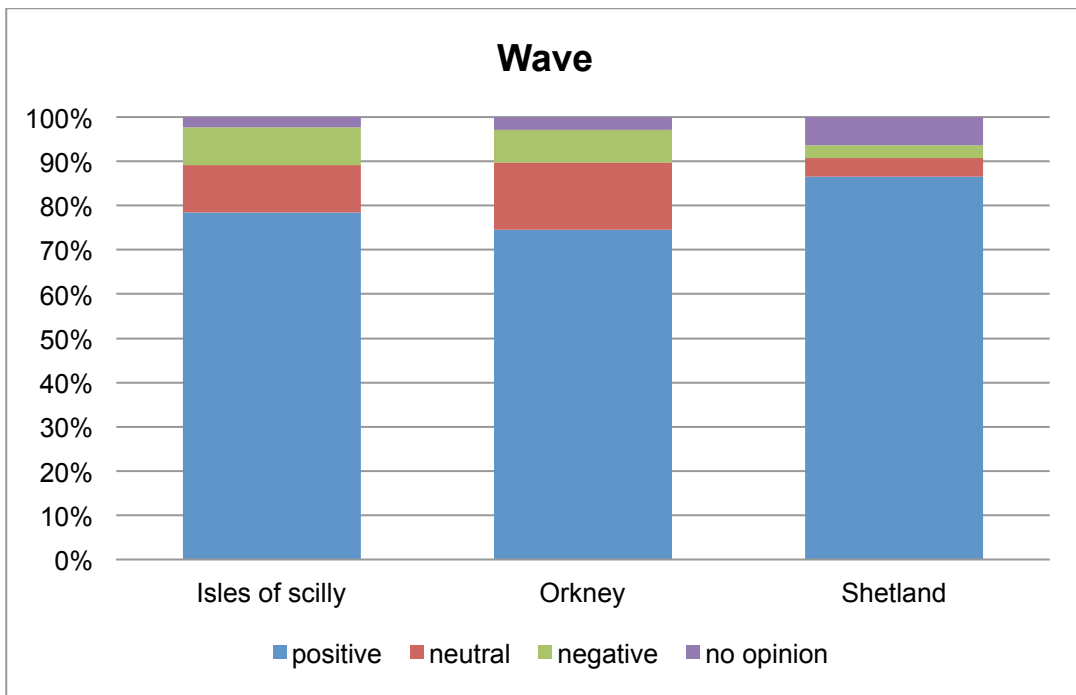


Figure 5.12 Attitudes towards development of wave energy locally in % of respondents (n=543)

Another trend identified was that in general, attitudes towards offshore wind were least positive in all study sites (Figure 5.13), with 58.9% support and 14.8% opposition, and again a chi-square test found significant differences between study sites with (χ^2 38.255 df 10 p= 0.000).

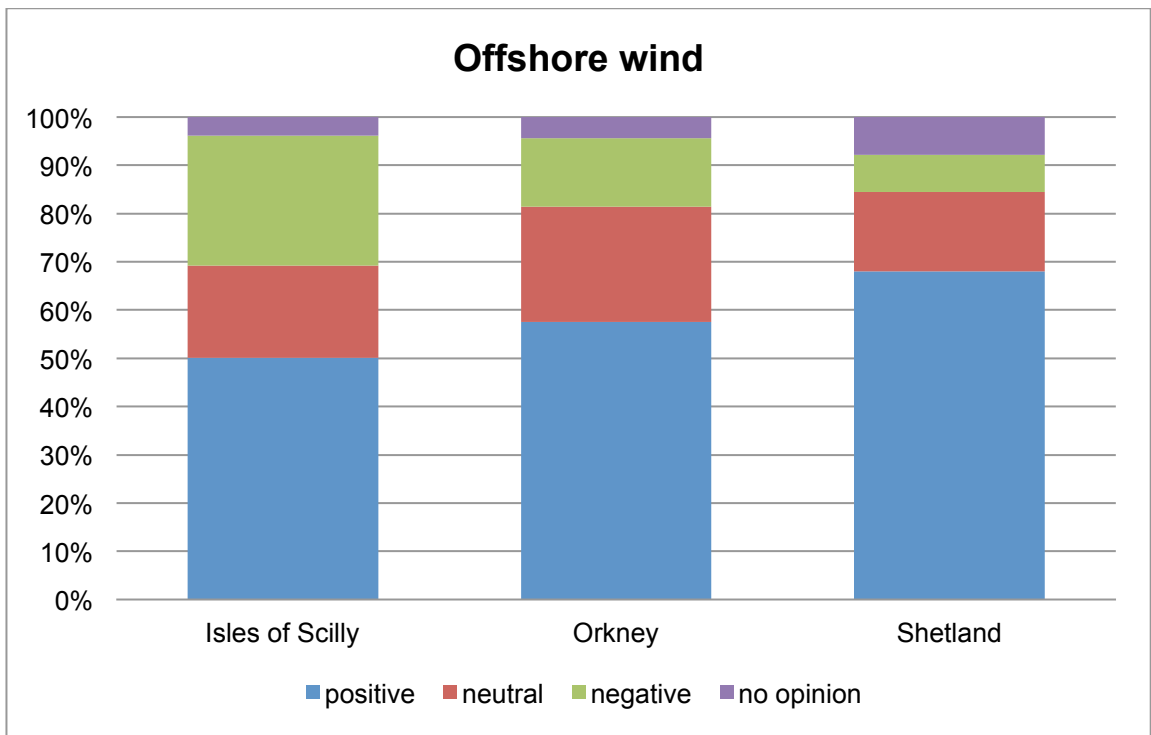


Figure 5.13 Attitudes towards development of offshore wind locally in % of respondents (n=543)

The Isles of Scilly were the least positive towards offshore wind, and only 50% of respondents indicated support for this technology. Support for offshore wind was slightly higher in Orkney, where 57.2% of respondents supported its development locally. Reinforcing the trend described above where most positive attitudes were found in Shetland, the Isles' respondents were most positive towards offshore wind, although support for offshore wind dropped significantly, with 68% of respondents indicating positive attitudes towards its development locally, support was nevertheless still the highest. In addition to highest levels of support, the lowest levels of opposition were also found in Shetland (2.9% for wave, 2.4% for tidal and 7.7% for offshore wind). Compared to Shetland, much more indecision was found in Orkney and the Isles of Scilly.

Chi-square tests confirmed that attitudes towards offshore wind were more negative compared to the other technologies. In the Isles of Scilly chi-square tests confirmed significant differences between respondents' attitudes towards offshore wind and tidal

energy, with (χ^2 161.56, df25 p=0.00) and also for wave with (χ^2 158.27 df25 p=0.00). Similarly in Orkney, significant differences were observed between attitudes towards offshore wind and wave (X^2 290.5 df 25 p=0.00), and tidal technologies (X^2 292.75 df25 p=0.00). Even in Shetland, where the most positive attitudes towards all types of MRE were found, significant differences existed between attitudes towards offshore wind and the development of wave (X^2 267.4 df 20 p=0.000) and tidal energy (X^2 215.3 df 20 p=0.000) locally.

An important observation regarding attitudes towards offshore wind was that in the Isles of Scilly much more negative attitudes were found. Whereas in Orkney and to a degree in Shetland many more respondents adopted a neutral attitude, in the Isles of Scilly negative attitudes increased to 26.9% of respondents, compared to 14.1% in Orkney and 7.7% in Shetland. This suggests that although Isles of Scilly respondents considered MRE to be a good idea in principle, they may be less sure about its development locally for reasons to be explored later. This in fact reduced support for offshore wind in the study sites to below the levels found in the public attitudes tracker, which found 72% support (DECC, 2014a).

Respondents also explained their attitudes to MRE through qualitative responses. An NVivo query based on coding frequency found that although levels of support are similar across the sites, reasons for support differed. Table 5.4 shows the main five reasons given for positive attitudes towards MRE in each site. In all areas, the abundance and availability of the resource was a dominant reason, and there was a common conception that because MRE is not a fossil fuel, the 'raw materials' are infinite, plentiful or abundant. Respondents' comments such as 'Orkney has plenty of wind and tides, we might as well use it' and 'there is abundance of resources on our doorstep' illustrate this viewpoint. Respondents also evaluated MRE based on the characteristics of their local area, which suggests that the physical characteristics of the location contributed to a pragmatic evaluation of whether particular locations were appropriate to develop MRE.

Table 5.4 Main explanations for positive attitude towards marine energy (% of total responses per site)

Area	Reason for opinion	%	Examples
Orkney (n=152)	Resource availability	20.4	'we have the resource available, so why not use them?'
	Resource abundance	14.5	'Orkney has plenty of wind and tide, we may as well use it'
	Not visually intrusive	13.8	'it is a way of getting energy without spoiling landscapes'
	Better for the environment	13.1	'we have to find ways of making energy: the world is destroying itself'
	Beneficial for the area	11.8	'it will bring jobs and prosperity for Orkney'
Shetland (n=185)	Resource availability	18.4	'we are surrounded by sea and have great tides'
	Resource abundance	14.1	'there are massive amounts of free energy waiting to be used!'
	Economic benefits for the area	8.6	'seize the moment so we will be at the forefront of the new industry'
	Good use of natural resources	8.6	'nature's gift. Use it'
	Not visually intrusive	8.1	'this keeps the land from unsightly constructions'
	Cheaper energy	5.9	'Anything to keep the costs down'
Isles of Scilly (n=108)	Reliable resource	5.9	'Marine energy in here has the potential to be very reliable'
	Resource abundance	19.4	'the incredible energy of the sea and wind is so evident living on Scilly. We need to harness it'
	Not visually intrusive	15.7	'marine energy can be tucked out of the way easier'
	Resource availability	14.8	'to be able to use the natural resources available on our own doorstep'
	Good use of natural resources	11.1	'using something that is natural to make energy is a good thing'
Reliable resource	11.1	'It is there all the time and NEVER goes away = good way to go'	

In addition to reasons for support based on the physical characteristics of locations and pragmatic evaluations of the resource, MRE was also perceived as visually unobtrusive, or at least less intrusive than onshore wind. This was often based on local experiences with RE technologies and other developments. For example, Orkney respondents indicated that there are too many small wind turbines being installed, and also felt that they would be less visually intrusive. One Orkney community member indicated that:

I think it would be a good thing...It is less visual than windfarms (OICM2).

In Shetland marine energy was compared to the large Viking onshore wind project proposed on the Mainland. An interviewee involved with both onshore wind and a tidal energy project commented that:

So in some ways it has been useful to contrast our project to the Viking one, although the Viking project will benefit us as well, people often think that our three turbines fall into nothing compared to what is proposed on the Mainland in terms of visual and environmental impacts. This helps us put our turbines up without any problems (SICS1).

No specific comparisons were made in the Isles of Scilly, but concerns about wind turbines impacting on scenery and landscape were expressed by all interviewees, and a local government representative indicated that:

We are keener on marine energy technology than on wind turbines... because they are obtrusive, they ruin the landscape (IOSMS1).

Although the survey results found that opposition towards marine energy is low, several reasons were given for opposition or being unsure. In the Isles of Scilly, the main reason for opposition was that the environmental effects were too great. More negative issues related to offshore wind also emerged in the interviews, particularly related to visual intrusion and environmental impacts on the landscape. In Orkney, where most opposition was recorded, those opposed generally thought the technology did not work and the sea was too hostile. Several respondents indicated that they saw devices being towed away and fail, which decreased their confidence in MRE in general. Landscape and scenery impacts were the main reasons for opposition given in Shetland.

Evaluation of MRE development locally thus differed markedly from appraisal of MRE in general and based on the above, it is identified that respondents viewed MRE quite significantly through local lenses. Instead of broad environmental reasons that guided general RE attitudes, the development of MRE locally was evaluated more in relation to the local environmental conditions in which the technology is placed, and potential

effects on the community. Reasons for support, such as the abundance of MRE resources, again reinforced this perception.

5.4 Perceived effects of MRE and interactions with other uses

In addition to exploring attitudes, the perceived effects of MRE were also explored and are assessed below based on the types of effect, including effects on the natural environment; socio-economic factors, and other industries with which MRE would interact.

5.4.1 Perceived effects on the natural environment

A variety of effects of MRE on the natural environment were explored, mostly related to impacts on the local environment, but also to wider environmental benefits. The questionnaire survey explored perceived environmental effects of MRE through two perception statements, shown in Table 5.5.

Table 5.5 Mean scores, standard deviation and indication of agreement or disagreement on MRE effects perception statements measured on a five point Likert scale (where 1 is strongly agree, 5 is strongly disagree)¹²

Statement	Orkney (n=200)			Shetland (n=206)			Isles of Scilly (n=125)		
	mean	st. dev	Opinion	mean	st. dev	Opinion	mean	st. dev	Opinion
Marine energy will impact positively on fish and wildlife habitats	2.98	0.956	Neutral	2.80	0.876	Neutral	3.01	0.778	Neutral
Marine energy will negatively impact on the seascape	2.90	1.028	Neutral	3.15	0.943	Neutral	2.82	0.874	Neutral

A clear trend was identified that people were undecided about MRE's possible environmental effects, and 51.5% of respondents were undecided whether MRE would positively impact on fish and wildlife habitats. The remaining responses were almost

¹² Depending on whether the statement was positively or negatively framed, the Likert scale was interpreted accordingly

equally divided. In Orkney, for example, 25.6% of respondents expected positive impacts and 24.6% expected negative ones. Chi-square analysis found no significant differences between case study sites for impacts on fish and wildlife habitats (χ^2 14.552 df 8 p=0.068). However, it is important to note that this is not far from being significant. The Isles of Scilly somewhat appear to be an outlier, with more people disagreeing and being undecided and fewer people agreeing with the statement.

Protection of the local natural environment was considered the first priority in the Isles of Scilly, and in Orkney and Shetland several factors related to the natural environment (including wildlife, landscape, beaches, and natural environment in general) were also stressed as a secondary issue after community spirit. An important issue here is that despite identification of the natural environment as a major asset, respondents were unsure about how this asset may be affected by MRE. The strong support found for MRE in all study sites appears to be inconsistent with the indecision about potential effects on this asset, in this case fish and wildlife habitats. Lack of knowledge about the potential impacts of MRE is perhaps unsurprising, and an industry representative indicated that although much research has been done:

We don't know about the impacts it will have if there are a lot of devices in the water. It can be wide ranging impacts. But you won't know that until you do it (OIME2).

The data, nevertheless, suggest that the potential exists that people made up their mind even though their answers to the questions regarding perceived affects suggest that they are not really sure about the potential effects of MRE on valued local assets. Although no direct answers were found that explain this trend, other perceived effects may provide further insight into this issue.

Concerns were expressed during the interviews regarding wildlife impacts. Depending on the study site, interviewees feared that birds, killer whales, otters, seals and dolphins may be hurt by MRE devices, and could get caught up in the blades of tidal or wind turbines. Others expected incidents to be quite low. A Shetland wildlife guide,

however, felt that marine mammals are too small to be caught in devices; equally, most marine birds dive up to 2-3 metres making them unlikely to fall victim of marine energy devices, particularly tidal stream devices located on the seabed. Overall, fear for wildlife impacts did not seem to affect support, even for local developments, as it remained higher than national average at 80% (See Section 5.3). Similar sentiments as that of the wildlife guide were voiced by other interviewees. Regarding porpoises and dolphins, for example, people were confident that these animals were sufficiently intelligent to avoid MRE devices once they are deployed. Nevertheless, based on these observations, somewhat cautious support might be expected until more information is available on the potential impacts on the natural environment. Nevertheless, there was strong agreement among all interviewees that it was important to research and monitor potential impacts on wildlife.

Aesthetic impacts on the seascape were an important focus point when discussing potential impacts on the natural environment. Seascape impacts have been identified in the literature as important factors influencing support (Haggett, 2008; Haggett, 2011a; Van der Horst, 2007). The questionnaire survey also included a perception statement investigating perceptions of the aesthetic and seascape impacts of MRE (Table 5.5). Respondents generally were undecided about the perceived negative impacts of MRE on the seascape. A chi-square test nevertheless established significant differences between study sites (χ^2 16.825, df 8 p= 0.032). Isles of Scilly respondents were most undecided (52%), followed by Shetland (42.7%) and Orkney (41.1%), while lack of knowledge on the visual impacts of MRE technologies and unfamiliarity with the technology was expressed by several community interviewees across the sites. One MRE supporter indicated:

I don't know what the Pelamis looks like from, how many miles they are out. I take it you'll see them (SICM4).

Negative seascape impacts were expected by 27.5%, with highest levels found in Isles of Scilly (29.6%), slightly less in Orkney (27.4%), and least in Shetland (22.3%).

Shetland interviewees described how they had experienced significant seascape changes in the past, and that currently many things occupy the marine space, including oil and gas structures, aquaculture, and ships. One interviewee directly compared aquaculture development to MRE technologies, and expected that:

You will see waves breaking on them I suppose as well. If you go into every Voe here, you see mussel farms and people have totally accepted them now (SICM4).

Several interviewees considered it strange that people would complain about pristine seascapes when the British marine area is full of ships on the horizon. All Shetland interviewees expected that people will get used to the seascape changes that MRE might bring. A community member explained that:

We see so many things on the horizon: ships in the distance, fishing boats closer by, and aquaculture pens in the Voers. I don't believe that the impacts of your MRE machines will be so big that we cannot get used to them (SICM2).

An important difference was nevertheless observed between the perceived seascape impacts of offshore wind versus those from wave and tidal developments. Some interviewees felt that the visual impacts of wind turbines were a reason to oppose offshore wind, or a reason to support wave and tidal technologies. In Orkney onshore turbines were given by many interviewees as reasons to support MRE, and in Shetland, developments were often compared to the Viking onshore wind farm (Section 4.4.3). In the Isles of Scilly, multiple designations for landscape protection were stated during the stakeholder interviews as a reason to oppose wind turbines. This applied to both onshore and offshore turbines. The reasoning behind this was that the Isles of Scilly landscape was so special that anything visible on the horizon would detract from the beauty of the local scenery. Community interviewees from all study sites felt, however, that MRE technologies would have less impact:

I'd far rather have marine energy than wind energy, because it wouldn't be so visible (SICM3).

People's perceptions about the visual impacts of the Viking wind farm may have affected responses, perhaps causing them to think that developments in the marine environment would have lower visual impact. Commenting on a proposal for three wave devices near the Isles of Scilly, another interviewee from the Isles of Scilly indicated that the project

Will probably get 100% approval from the local authority and community. People are keener on marine technology than on turbines because of the sites. Nobody really wants wind farms over here, because they are obtrusive, they ruin the landscape. Marine technologies are different (IOSMS1).

Many suggested that placing technologies underwater would overcome problems related to visual impacts. One interview, for example, reasoned that:

Rather than things bobbing up and down on top of the waves where they are visible, stick them under water (IOCM2).

Others thought that MRE technologies would be visible, but respondents appeared optimistic that visual impacts would be less than those of wind turbines, and that the only visible parts of wave and tidal technologies would be buoys marking the area. One interviewee indicated that:

We can see nine lighthouses on a clear day, so we can deal with the light from a buoy (IOSMS1).

Supporting these findings, a MRE stakeholder claimed that:

People fully support things if they don't have to look at them and if it won't affect them (OIME2).

These findings suggest that the possible effects of MRE were assessed against existing local effects and influences, such as the visual impacts of shipping, and aquaculture, but also the distinct features of individual MRE technologies, e.g. wave devices on the surface versus those below the water, and other types of RE. The interviews confirmed the survey findings that wave and tidal technologies were

perceived to cause little visual impact, which became a frequently given reason for supporting the technologies compared to (onshore) wind energy. For example, in Shetland comparisons were often made between MRE and perceived effects of the Viking onshore wind farm. There are no offshore wind projects or arrays of MRE devices near the study sites for an assessment based on experience, and MRE may be more visible than people anticipate. Nevertheless, the results demonstrate that less visible technologies were preferred for aesthetic impacts. Similar to wildlife impacts, ambivalence about seascape effects appeared not to impact on support for MRE in general, which remained high. An important observation is that MRE and individual technologies were compared with what was familiar to people and issues they can relate to. This was particularly evident when the possible effects of MRE related to undesirable issues, such as the visual impacts of existing structures in the landscape.

5.4.2 Perceived socio-economic effects and community benefits

The perceived socio-economic effects of MRE on communities were investigated in the survey and further discussed during the interviews. The perception statements related to socio-economic effects and the levels of agreement are shown in Table 5.6.

Table 5.6 Mean scores, standard deviation and indication of agreement or disagreement on MRE effects perception statements using a five point Likert scale (1 is strongly agree, 5 is strongly disagree)

statement	Orkney (n=200)			Shetland (n=206)			Isles of Scilly (n=125)		
	mean	st. dev	Opinion	mean	st. dev	Opinion	mean	st. dev	Opinion
Marine energy will produce benefits for local communities	2.24	0.868	Agree	2.17	0.843	Agree	2.27	0.700	Agree
Marine energy will increase business opportunities on the islands	2.25	0.853	Agree	2.37	0.861	Agree	2.62	0.727	Agree/ Neutral
Marine energy will lead to more jobs on the islands	2.21	0.830	Agree	2.33	0.831	Agree	2.6	0.793	Agree/ Neutral
Marine energy will provide cheap energy in the future	2.51	0.979	Agree/ Neutral	2.42	0.889	Agree	2.56	0.837	Agree/ Neutral

Respondents from all study sites agreed that MRE would bring economic benefits to their local areas. The results suggest that high levels of support for MRE were in part based on the presumption that MRE would benefit the local community, and 65.7% agreed with the statement among Orkney respondents, 68% in the Isles of Scilly and 70.9% in Shetland. Only 6% of Orkney respondents expected no benefits for local communities, compared to 4.8% for the Isles of Scilly and 6.8% for Shetland. No significant differences were found between sites and perceived community benefits (χ^2 11.765 df 8 p=0.162).

Two survey questions investigated the perceived socio-economic effects of MRE on local communities. The first concerned business opportunities, where the majority of survey respondents thought that MRE would increase business opportunities (60.5%). A chi-square test found significant differences between sites and expected increases in business opportunities (χ^2 24.450 df 8 p=0.002). Based on the statements shown in Table 5.6, Orkney (67.2%) and Shetland (62.2%) respondents agreed that MRE would bring business opportunities, whereas the Isles of Scilly responses were more hesitant (47.2%). Importantly, less indecision was found about this issue than for the statements about potential environmental impacts. These findings echo existing studies that identified the importance of community benefits for RE development offshore (Rudolph et al, 2014)

Community benefits emerged as a main topic of discussion during interviews, and all interviewees felt that hosting MRE developments should bring benefits to the local community. This was supported by several statements:

It is really important to make sure that communities get something back from hosting marine energy developments in the future (OICM5).

In Orkney, the existing experience with small-scale community wind projects such as on Westray and Burray, where revenues fund local projects (See Section 4.3.3), were advocated by most Orkney community interviewees as a way to achieve local benefits

from MRE. A representative of the Westray Development Trust in Orkney noted that the wind turbines enabled the community to:

Get our own income, and to keep ourselves going instead of relying on other grants (OICS1).

The turbine finances local projects and provided support for locals in purchasing land.

A strong interest was expressed in MRE because similar benefits were expected:

The Trust would be interested and jump on it, and keeping the money going in the community. In years to come we would have to look to the next stage which would be marine renewables (OICS1).

Similar sentiments were expressed in Shetland. The North Yell Development Company in Shetland was given by local interviewees as an example of how communities could keep the benefits resulting from MRE. A community interviewee described this as follows:

I think when we are talking about job creation for a possible fragile community, in a region where it is difficult to grow. Community organisations like the North Yell Development Company can bring community resources together so we can plan community projects such as the local wind farm that will bring cash directly into the community (SICM3).

Although it was agreed that some benefits should stay locally, interviewees expressed concern about the distribution of benefits. A Shetland interviewee related this to high local petrol, food and other consumables' prices on the islands. Despite the fact that oil is brought ashore in Shetland, he felt that fuel prices kept rising, so that the oil sector provided limited benefits for the local community:

If it is going to be produced here, it is going to go away and we will have to pay to get it back here. So we will have to overcome that by keeping it in the community (SICM3).

In the Isles of Scilly, a stakeholder expressed concerns that MRE might bypass the community, leaving only environmental impacts:

Somebody would build a big wave installation or tidal installation off the Isles of Scilly and almost bypass the Isles of Scilly and go straight back to the main land without any social or economic benefits to the islands. So all we got is the potential impacts of the development (IOSR1).

Interviewees from all sectors and study sites were sceptical about large local benefits resulting from MRE and pointed out that, because most of the activity happens offshore (where the Crown Estate is the landowner), the islands will see limited benefits.

Respondents generally held strong views on this topic, and there was a strong 'local versus national' divide, in which people felt that their communities were disadvantaged in relation to interests at a national level, often simplified to 'Westminster' or 'London'. Sentiments were voiced that RE was deployed in peripheral areas because they were out of sight of the major population centres and, hence, avoided opposition. A local government representative summarized the issue thus:

All the benefits at the moment go to the country. The sea bed is owned by the Crown and that is it...It would keep people happy if benefits would stay more locally (OIR1).

Further doubts were expressed that even if benefits stayed on the islands, only a few people would benefit, for example, because they owned the land that the RE sector would need to use for onshore activities. Based on previous experiences with cable laying in Orkney, many community interviewees feared that only a few landowners would benefit from financial payments for MRE:

Some economic benefit might be happening to the area in general, but most of the 'mega bucks' will go to the one that 'gets the cable' (OICM9).

Again, community benefits were evaluated against existing ways in which communities benefited from developments. Where problems occurred in the past, possible benefits were perceived more negatively. An Orkney interviewee, for example, was unhappy with the level of benefits gained by the community on his island from cable laying in the past:

All the benefits will pass us by and will go to the Orkney Mainland. The large landowners that will get the cable will get all the money, and Hoy will not see a single penny! We've seen this in the past and we are not expecting anything now (OICM6).

If the interviewees had positive experiences with community benefits from other developments, the issue was perceived more favourably.

In Shetland and Orkney the potential benefits to the community were often evaluated against existing incomes. In Shetland for example, there was a strong realisation that current incomes, in particular from oil, may be temporary, as current oil royalty payment agreements have expired (Section 4.4.3). Interviewees from all sites and stakeholder groups in Orkney and Shetland emphasised the importance of identifying potential future sources of safeguard communities. This was often related to MRE as a potential new industry that could benefit the community. One Orkney respondent compared MRE to Flotta, the local oil terminal, and indicated that MRE could bring:

Even bigger bucks coming into Orkney and it could be the next Flotta (OICM8).

Another interviewee also linked this to the long term viability of the community, arguing that MRE had the potential to:

Make Shetland viable so they can continue into the 21st century because I don't know when the oil and gas is going to run out, but it is. I think it is good to look ahead, to see how the islands are going to go ahead (SICM4).

An important local benefit was employment, and based on the perception statements presented in Table 5.6, there was general agreement in Orkney and Shetland that MRE would result in local jobs, though in the Isles of Scilly more indecision was found. Overall, 63.3% of respondents felt that marine energy would bring additional employment to the islands, versus 8% of respondents that thought it would not. A chi-square test (χ^2 25.966 df 8 p=0.001) found significant differences between sites. The Isles of Scilly were least convinced with 48.8%. Orkney and Shetland were most

convinced that MRE would create jobs, with 72.6% and 63.1% respectively. Their reasoning is summarized by the statement from a local business in Shetland:

Build as much as you want wherever you want, because it is going to be worth it. It will bring important jobs to the islands that people need. It is important to create jobs in these places to keep them going (OICM5).

Despite low unemployment in all three sites, all interviewees emphasised the significance of long-term job creation at various skill levels in the islands, and many anticipated that MRE could contribute to this by creating employment diversity.

In Unst (Shetland), interviewees emphasised that due to the remote location of the island¹³, employment is limited, forcing people to accept any available local employment consisting largely of work at: the salmon farms, the few available local shops and tourist businesses. Several people were also employed by the oil industry as the oil terminal is commuting distance from the island. Those needing employment are tied to these jobs. Interviewees agreed that due to the size of the islands, even a few extra jobs made a large difference to the islands' economy. The local benefits that MRE could bring for employment and business opportunities thus contributes to maintaining communities' priorities for continuity.

To achieve job creation locally, interviewees from all sectors felt that the MRE industry should make use of local resources whenever possible, because it was right to give communities the potential to benefit from MRE, but also because MRE could benefit from local knowledge. One Orkney MRE sector interviewee explained that MRE is already making this contribution to Orkney employment because around 250 people are working on MRE projects locally:

About 10 of them are in manufacturing. The other 240 are doing different jobs. That is where we think the focus should be, for creating jobs locally (OIRME1).

¹³ Unst is most northern British Isle, 90 kilometres from Lerwick.

As an added advantage, this interviewee argued that MRE companies could gain from using local companies' local perspectives and knowledge, for example, during the EIA stage:

If you come to Orkney you need to first ascertain if there is anybody in Orkney that can help you that has the knowledge, the skill set and the understanding. If they have, you should use them (OIRME1).

Although there was widespread agreement among stakeholders that using local expertise first was desirable, in practice it has not always happened. A local fisherman, interested in working with the MRE industry, claimed that he was never given the chance and work was subcontracted to boats from outside the islands. The fact that local people were not approached for work caused frustration by those interested in the work. Where suitable skill sets were not available, community representatives and local interviewees in all study sites considered it important to develop them to ensure long-term benefits and to aid confidence building.

Creating employment locally was seen to contribute to maintaining continuity of the community in several ways. Firstly, it was expected to increase in-migration to the outer islands to increase or maintain community viability. Local interviewees, especially from the outer islands, anticipated that MRE development would encourage an influx of workers to their islands, contributing to the viability of communities and services on the outer islands and avoiding depopulation. An interviewee explained the significance of this:

There are parts of Orkney that need growth. Stromness needs more people to sustain the economic fabric of the town. There are other communities in Orkney that similarly need more people, and they need those people to come and live in ways which support those towns and settlement and villages, and schools and services and child support and all these things might be better preserved and enhanced (OIRME1).

Secondly, MRE employment could also create career prospects for young islanders if they obtained appropriate qualifications and work was available for them. The

importance of qualifications, in particular engineering and marine qualifications, was recognised as a prerequisite for gaining benefit from the marine sector. A fisher from one of the Orkney outer islands claimed that:

Qualifications are the thing that can get the young ones involved. A lot of the young ones go away. And this way they could stay (OIMS4)

A Shetland interviewee further emphasised that this was needed at various skill levels, and that the isles:

Need jobs for people that go to university and come back to start a family and need skilled jobs (SICM2).

Another interviewee described how several Orcadians had left for career reasons, who had qualifications relevant to the MREs sector, and are now working for the renewables industry on the islands. Interviewees from both the MRE sector and community sectors anticipated that MRE could help to broaden the workforce and increase skills development.

The spinoff effect of MRE coming here is enormous.... Because it brings in young people... it improves our skill base, it improves our knowledge base, it raises the standards of education, all these things happen (OICM8).

In Orkney, several examples were given about how they are trying to build this skill base to benefit from MRE, and how local businesses are adapting their skills to take advantage of the MRE industry, including environmental consultancies, marine engineering, and others that have scaled up skills from the onshore wind sector. Stimulating relationships between the MRE industry and the community was advocated by many community representatives to facilitate this process, for example through the inclusion of community members in relevant training courses.

The third reason why MRE was seen to contribute to community continuity was that MRE was maintaining important traditional local skills, related to maritime industries. Interviewees described several things that could increase the local benefits of the MRE

sector, building on existing skills (see Sections 4.3, 4.4. and 4.5). One such local skill that could be built on to increase Orkney's benefit from MRE was identified by one interviewee:

We are strong on environmental science and nautical skills. They need people that can keep a vessel afloat and stable while they move heavy devices in and out of fast going water. That is a skill few mariners have, and it needs to be further developed. And if we are going to develop that skill we can become a centre of excellence for the whole world (OICM8).

Such new opportunities resonate with traditional professions and thus could potentially contribute to socio-cultural continuity in the islands. Employment in the MRE sector was seen by many community interviewees as a 'natural' continuation of existing skills and relatively compatible with the community.

The North Yell Development Council supports existing businesses and encourages new ones in Shetland, to maintain community viability. Its tidal development consists of local manufactured technology components and is deployed with local boats, and so provides the ambition to increase community benefit from MRE by establishing a new local industry based on the local design of turbine blades. Although this is still in its infancy, the Council representative explained that in their capacity they can:

Encourage local businesses to supply services, and help the industry. Then, as things progress, these companies can play a bigger and bigger part in the project (SICS1).

In addition to direct benefits and employment resulting from the MRE sector, the economic opportunities resulting from spin-off effects were also discussed by interviewees. Several interviewees in Orkney, including MRE sector representatives, community representatives, and local businesses, claimed that there were many spin-off effects as a result of the EMEC test centre, which kept MRE benefits in the community:

The potential economic benefit for Orkney is huge. Every time somebody comes up here, they have to stay somewhere, and have to eat somewhere... there are huge sums of money flying around in Orkney (OIME2).

A local MRE developer meanwhile described its contribution to local businesses through the increased use of accommodation, income for local restaurants and shops, and that the company tries to use local resources whenever possible. In Orkney, demand from the MRE industry for skills and material cannot always be met, resulting in spin-off effects extending as far as Shetland. Several interviewees indicated that in some areas in Orkney¹⁴ accommodation is fully booked and boats come in from Shetland to meet demand for survey work. Although multiple spin-off effects were described, several MRE sector, local businesses and community sector interviewees felt that the wider population did not always realise that these benefits occurred because they are not always visible.

The issues discussed above are closely associated with some of the challenges identified for the communities discussed in session (4.3- 4.5), including young people leaving for careers, underemployment, depopulation of the outer islands, and the narrow economic base of some communities. Furthermore, the perceived potential of MRE to create employment and contribute to the local economy ties in with the islands' social-cultural continuity. This is illustrated by the following statement about the openness to change that is deeply rooted in Shetland society:

Shetland has always been a place that had a transient population. The herring way back, and we had an influx of people to deal with that. When the season was finished they went away again. A lot of Shetlanders went to South Georgia. It is a sea faring culture here, and there have always been these periods, through history, where Shetland has taken on board and embraced the changes, for example, immigration. One of Shetland's greatest exports has always been young people. And that is an unfortunate thing, because there simply aren't the jobs here to sustain them. I think it is in the Shetland psyche to be open to change (SICM7)

¹⁴ Such as in Westray and Eday where one of the tidal test beds is located.

Connecting the above statement to the contemporary problem of young people leaving the islands, the historical development of the islands may influence peoples' evaluation of MRE and predispose certain communities in favour of the changes MRE could bring, and others against it. MRE is thus not always evaluated on its own merits, but also through how it relates to priorities for continuity in the community such as diverse employment. Community spirit is another important factor in this evaluation process, because if this is a community's most valued asset, this naturally becomes a priority. As identified in Chapter 5, many issues could threaten the spirit of the local community, for example, depopulation of the outer islands, an ageing population, and limited job availability, forcing people to leave the islands. If MRE, and its perceived benefits, is seen as reducing risks to this asset by maintaining population stability and increasing local opportunities, this contributes to a more positive evaluation of MRE.

Community benefits were also discussed in the form of lowering energy prices. As discussed in Section 4.3 - 4.5, the sites are intensive energy users, with high rates of fuel poverty, which was identified as a possible threat to long term community viability. Community interviewees felt that they would benefit from hosting developments by paying less for their energy. The survey explored this issue, and the majority of respondents agreed that MRE could be a source of cheap energy, although many respondents were also undecided (Table 5.6). Chi-square analysis again found significant differences between the case study sites (χ^2 16.550 df 8 $p=$ 0.035). Shetland respondents were most positive (54.4%) that MRE would provide cheap energy, followed by the Isles of Scilly (52%). Orkney respondents were least convinced (47.2%).

Several interviewees also claimed that lower energy prices were fair compensation for hosting MRE developments, and suggested that it would increase acceptance. Yet many community interviewees expressed doubts about whether MRE would lower energy prices. Two Shetland interviewees felt that:

If cheap energy is an option we would be keen (SICM2)... But we know from experience that we are not going to get it (SICM3)¹⁵.

Contrasting results were found in the Isles of Scilly, where the experience with a wave developer that proposed a local partnership to supply the isles with energy in return for hosting the development, raised expectations. Importantly, high energy prices (in relation to cost of living) was given as an important negative characteristics in the study sites (See Section 4.3-4.5), particularly in the Isles of Scilly.

At a practical level, Orkney and Shetland have systems in place to create community benefits from RE developments. Orkney and Shetland have a track record of communities benefitting from developments, for example, the use of finance from wind farms erected by community organisations to fund community projects, or the Shetland Charitable Trust that negotiated benefits from hosting the oil terminal. This could create similar expectations that comparable benefits would occur as a result of MRE, but also experience of inequitably divided benefits for the community, leaving people rather sceptical about who benefits. The Isles of Scilly has no real history of these types of projects, but at the same time have the largest percentage of respondents believing in community benefits. This could be the result of messages given with the aforementioned proposed wave development, that promised to provide the islands with free electricity. Regardless of whether experience with community benefits from local developments increased or decreased the belief that MRE might bring community benefits, local experiences were identified as important for understanding local attitudes towards MRE.

Community benefits were consistently associated with the key challenges for island communities identified in the background chapter, and with the idea of community assets and threats discussed in Section 5.2.2. MRE was expected to create and diversify employment, and was compared to other activities that the islands had benefited from throughout the years. MRE was also evaluated in relation to the socio-

¹⁵ See the discussion on high fuel prices and cable laying earlier in this section.

cultural continuity it could bring and interviewees believed that the opportunities arising from MRE could maintain traditional skills and professions. The issues discussed above indicate communities expect benefits from hosting MRE developments, and that these benefits can form an important part of the MRE evaluation process in terms of how they compare to strategies to maintain the long-term viability of communities based on its potential to enhance community assets and neutralise threats.

5.4.3 Interaction of MRE with other users of the marine space

Although interviewees thought that MRE would bring economic benefits, they emphasised the importance of finding the right balance between MRE and existing uses of the sea, in the case of this study predominantly fisheries, aquaculture and tourism. At the heart of the discussion was that existing uses should not be removed to accommodate MRE, and that the sector should adapt to local circumstances:

There will be a compromise and there will be settlement reached between all competing uses of the sea, and a balance must be struck. I think that means in practice that not all developments will happen, but I think some of it will happen (OIME3).

To achieve this, all agreed that compromises were needed. Although many respondents were hopeful that MRE development would not cause many conflicts for reasons discussed below, this section also identifies potential causes of conflict.

The expected interactions between MRE and other users of the marine space were explored in the questionnaire survey through three perception statements, shown in Table 5.7, related to interactions with fisheries, tourism, and recreation.

Table 5.7 Mean scores, standard deviation and indication of agreement or disagreement on MRE interaction with other users of the marine environment perception statements using a five point Likert scale (1 is strongly agree, 5 is strongly disagree)¹⁶

Statement	Orkney (n=198)			Shetland (n=205)			Isles of Scilly (n=125)		
	mean	st. dev	Opinion	mean	st. dev	Opinion	mean	st. dev	Opinion
Marine energy will negatively impact on local fisheries	2.85	0.841	Neutral	3.12	0.872	Neutral	3.07	0.753	Neutral
Marine energy will positively impact the attractiveness of the islands for tourists	3.09	0.938	Neutral	3.10	0.908	Neutral	3.32	0.867	Neutral
Marine energy will negatively impact marine recreation	3.08	0.961	Neutral	3.29	0.901	Neutral	3.14	0.790	Neutral

Based on these results, the majority of survey respondents were neutral about impacts on fisheries, with 50.4% of respondents adopting a neutral attitude and the remaining responses almost equally divided. A chi-square test found significant differences between sites (χ^2 17.042 df 8 p=0.030). Negative impacts on local fisheries were expected by fewest respondents in Shetland (21%) and in the Isles of Scilly (19.2%).

Contrasting results were found in Orkney, where the highest percentage of respondents perceived that local fisheries would be negatively affected (28.8%), and 18.2% thought there would be no negative impacts. A possible explanation for these results is that, to date, no devices have been deployed in Shetland or the Isles of Scilly, so no impacts on local fisheries have occurred. In Orkney, fisheries have experienced impacts, and interviewees from this sector feared MRE could be a threat to their livelihoods. Interviewees from both the MRE and fisheries sectors agreed that displacement from fishing grounds was the key issue for interactions between the sectors, because the open access that used to characterise the marine area was challenged by the renewables sector because it requires exclusive rights to areas for safety reasons. The significance of this issue is demonstrated by the example of a proposed 40-machine wave development near Stromness, where a local fisher argued that:

¹⁶ Depending on whether the statement was positively or negatively framed, the Likert scale was interpreted accordingly.

You take an enormous area and will exclude fishermen completely. You cannot just compensate. How do you compensate somebody for losing their complete livelihoods (OIMS4)?

A MRE industry representative stressed that potential fishery impacts must be taken seriously because:

You are dealing with other people's livelihoods. It is quite difficult...some fishers are taking advantage of the new opportunities. They shouldn't have to. They just should be able to fish if that is what they want to do and they should have the choice (OIME2).

However, as the above quote indicates, there were also hints that opportunities would arise for fishers to take advantage of MRE developments:

A few fishermen have actually been employed by renewables developments, so they have benefited, working on the survey boats. I think generally it is the fear for their livelihoods first of all that they are coming from' (OIMS2).

When asked whether he was interested in working for the renewables, one young fisherman indicated:

Yes, I definitely would. If it brought in more money than I could make in whatever I would be happening to be doing, then yes... money would be the bottom line basically (IOMS3).

The results therefore suggest that there are opportunities for the fishing sector to take advantage of potential opportunities that might arise from MRE development, including survey work, fisheries liaison, or other marine works. At the same time, the potential threats that MRE can pose to fishing livelihoods should be considered carefully. Such effects are likely to be dependent on the type, size and location of developments, but also accompanying marine space legislation such as exclusion zones. Nevertheless, the results suggested the potential for reasonable co-existence between the two sectors.

Several respondents from the MRE and fishing sectors indicated that in the absence of arrays or commercial development, there seems to be little opposition. However, neither the fishing nor the MRE industries know exactly what MRE developments will look like in the future, in terms of the types of devices or the areas used. At the moment many interviewees from the fishing sector did not expect significant displacement because both sectors were thought to use different areas. An Orkney creel fisher, for example, argued that tidal energy was less harmful than wave devices for his activities because:

The wave machines cover very extensive areas of sea bottom. If they do what they are planning to do, it will pretty much stop the fishing that I do: the inshore fishing. Because they want to take up such big areas of the sea, with the exclusion zones around it, it just pushes everybody away. The tidal machines do not quite have the same problems, because they take areas that are not so heavily fished, and they tend to be around the bottom... and they don't take up such big areas (OIMS4).

This was reinforced by a Shetland fisher:

Fishing here will not be affected by tidal development. You fish alongside the tide, so you don't fish in the main tidal current but on the edges of that because that is where the fish are (SICM8)

Interviewees from the fishing sector and also the MRE sector stressed the importance of detailed information about MRE projects for potentially affected stakeholders to form well-balanced opinions. Although no information was provided to survey and interview participants about possible MRE devices¹⁷, the above examples imply that research participants had some knowledge about MRE devices, for example, their positioning in the water and the amount of seabed that they might cover.

To avoid conflict between the two sectors, an Orkney fisheries representative recommended strong involvement of the industry in siting processes:

Fishing is such a big industry here. We don't want half the island not to be able to fish where they want to fish. We definitely want to be included in decisions on

¹⁷ No explicit information was provided to participants because no dominant MRE designs for different technologies has yet emerged.

where it is going to go, its impact, and being consulted at every stage, so we can go back and ask the fishermen what impact it will have on them (OIMS2).

Orkney fishers identified that the main cause of their displacement concern was the poor engagement by the Crown Estate during the early stages of leasing areas of seabed, which resulted in conflict and distrust. This issue is discussed in detail in the next chapter (Section 6.2.3).

Whereas Orkney has an important fishing sector, it has minimal aquaculture activity. No aquaculture is practiced in the Isles of Scilly, but aquaculture is an important industry in Shetland (and in some outlying islands, the only industry) and is of high socio-economic importance, as argued by a community sector representative:

Traditionally, we were a fishing community, and have been for a long, long time. But over the last 10-20 years, the fishing industry is declined considerably. Thankfully, the aquaculture industry filled its place. In the Northern Isles we have many salmon farms and mussel farms (SICS1).

Aquaculture, however, did not only provide new income, it also contributed to the continuation of local skills and traditions and increased the viability of several Shetland Islands:

Not only is it culturally and traditionally important, but also in terms of cold hard cash it is fundamental to island life. Certainly here, but probably in other island communities as well (SICS2).

It is hard to think of a better industry for Shetland than salmon farming... it is exactly what Shetland needed to keep the boating traditions, working on the water and all the rest of it, and it keeps folk in the outer parts. Many people work in Lerwick, but now we can operate salmon farming in Mid-Yell. It helps to keep people there (SICM7).

As a result of the economic, social and cultural importance of aquaculture, interviewees emphasised that MRE should avoid impacts on the sector:

Aquaculture is a red line, the absolute red line (SICM2) ... Unless it created more jobs (SICM3).

These results reinforce the earlier identification of Shetland as taking advantage of new opportunities discussed in section (4.5.3). Interestingly, to maintain community viability, interviewees do not rule out a similar shift from aquaculture to MRE, particularly if the incoming industry brings community benefits such as increased employment and diversification of the local economy to improve the long term viability of the community and protect community assets. If adopting a new industry is required for this to happen, islanders appeared to embrace changes. However, this is highly dependent on whether the incoming industry creates more opportunities than the existing industry is providing. Interviewees from the aquaculture sector were not concerned about displacement as a result of MRE developments or potential for impacts on their business as a result of conflicting areas of use. An interviewee from the North Yell Development Council, which is exploring options for deploying MRE locally, described that he expected few tensions between developing tidal, and to an extent wave energy, on a potentially larger scale and aquaculture as the dominant industry in the area because:

With aquaculture you designate an area for it and it is quite easy to say that the two are not going to interfere with each other. The salmon and mussel farms have to keep out of the tides and waves, whereas tidal power must be in the tide and still probably out of waves. And wave power, you probably want to stay out of the tide for that. So it is different geographical areas that are ideal. I can't think of any even small conflict there with tidal (SICS1).

Nevertheless, similar to the fisheries sector, the main fear concerned exclusion zones, which is illustrated by the statement of the owner of a large aquaculture business:

The only negative is when they start to earmark large areas that we must stay out of. That would be a danger (SIMS1).

Although currently few direct conflicts and displacement were expected, there was some fear that a thriving MRE sector in Orkney or Shetland could nevertheless impact on aquaculture. This was already taking place in Shetland, because increased MRE activity in Orkney, and a short supply of suitable local boats had resulted in the non-

availability of boats for the construction and maintenance of salmon cages for the aquaculture sector.

Furthermore, there was some apprehension that MRE could take away local labour from the aquaculture sites, because, as discussed in Section 5.2.1, the study sites are characterised by very low unemployment, and interviewees from the local aquaculture sector feared that two sectors requiring similar skills could result in labour shortages during crucial aquaculture harvesting times. An example given by a representative of a marine engineering company illustrated this:

Put a wind farm off shore and you need 10 boats to service that wind farm. The aquaculture sector would frown upon that because you would be taking qualified boat handlers away. You would be competing with them for hands on the boats (SICM7).

The above highlights that although potential local benefits of MRE regarding employment and population stability are important for understanding MRE attitudes, an important factor underlying attitudes is also how it then meshes with existing marine industries in other ways.

The final potential area of interaction concerned overlaps between MRE and tourism and recreation. Across the sites, tourism-related impacts were generally linked to the income generated from the appeal of the natural environment and the possible environmental impacts resulting from MRE. The majority of respondents, however, adopted a neutral attitude about the effects of MRE on tourism and recreation (See Table 5.7), and survey results found that 45.3% of respondents were unsure of the impacts of MRE on tourism and 42.2% for recreation. Importantly, 34.8% of respondents did not think that marine energy would enhance the attractiveness of their islands for tourists. Chi-Square analysis found no significant differences between study sites and the perceived effects of MRE on tourism (χ^2 7.977 df 8 p=0.436) or recreation (χ^2 15.358 df 8 p=0.053).

Although responses to local MRE development were positive, there was a particularly strong awareness in the Isles of Scilly that MRE must fit in with tourism and the environment to maintain current providers of income:

Everybody here is aware that the environment is giving them a living: 85% of the islands' GDP is tourism. If you piss on the environment, you are going to lose your living, your income. Basically the core element that brings people here is the environment and if it stays constant, it will keep people coming (IOSMS1).

These findings echo concerns and opposition identified in a study by Rudolph (2014) on offshore wind.

Interviewees thought that MRE could provide an additional source of income for the islands, but similar to the importance of aquaculture to Shetland, MRE should not impact on the industry it should co-exist with:

Those marine technologies might well bring additional economic opportunities to the islands, but it is how that then meshes with existing economic income, perhaps future ambitions as well (IOSR1)

A local government representative explained that

We work on the assumption that tourism remains dominant. We wouldn't do anything to compromise that. The bottom line is that tourists come here entirely for the environment (IOSC1).

This attitude became evident from all interviews. Nevertheless, the potential of MRE to contribute to the local economy was recognised, but as an addition to tourism rather than as a replacement. At a more abstract level, the natural environment is the islands' main asset, and its continuity is a priority for keeping the Isles of Scilly community viable. If MRE is seen to detract from the Isles of Scilly as a place of natural beauty, it seems unlikely that residents will support its deployment. Although the Isles of Scilly seem open to the change, there is an undercurrent of resisting changes to protect its main assets.

Despite tourism also being important to the Shetland and Orkney economies, concerns were less pronounced about impacts on tourism and recreation. For example, a large

part of Orkney's tourist attraction focuses on archaeological features, such as the Neolithic settlement of Skara Brae on the North Coast, and other prehistoric and Iron Age sites. Although these are all terrestrial monuments, concern was expressed whether the visibility of MRE would impact on the attractiveness of coastal sites. Mostly, however, it was considered as a compatible activity and that most impacts could be mitigated. In Shetland, these competing interests are incorporated into the Marine Spatial Plan (Shetland Islands Council & NAFC Marine Centre, 2014), enabling future developers to mitigate this type of conflicts.

Similar to fishing and aquaculture displacement the large majority of interviewees did not expect displacement of recreational activities as a result of MRE. Concerning recreational diving, a popular recreational activity in Orkney, a dive charter owner indicated that he expected no real impact as a result of MRE. He indicated that sites suitable for recreational diving are either sites without strong currents or ship wrecks. Indeed, around all the study sites there are wrecks of historical importance¹⁸. Their protected status makes them unlikely locations for MRE developments. In addition, areas with strong tides were also considered unsuitable for recreational boating. Therefore, no conflict was expected with this activity.

The relatively low (38%) perceived impacts on marine recreation appear in contrast with the large amount of media attention in other areas in the UK and concern from the surfing industry about impacts on their recreational activity, such as the Protect Our Waves campaign initiated by Surfers Against Sewage about the impact of marine energy on the surfing industry (Surfers Against Sewage, 2014)¹⁹. A large amount of this

¹⁸ Examples include: the Eagle, a Royal Navy ship that sank in 1707 near the isles of Scilly is protected under the Protection of Wrecks Act; in the Scapa Flow in Orkney, 7 German ships that were destroyed in 1919 are dive sites protected under the Ancient Monuments and Archaeological Areas Act. Other ship wrecks of historical importance but that are not suitable for diving are protected under the Protecting of Military Remains Act.

¹⁹ Surfing was mentioned as a prompt for survey respondents to relate marine recreation to this activity.

attention was focused on Cornwall, and therefore is outside the scope of this study²⁰. Although there is some surfing in Orkney and Shetland, it is not a dominant component of their tourism industry, which is largely focused on wildlife tourism and historical sites. This further supports earlier observations that MRE is evaluated through local lenses and locally significant industries. Depending on the importance of individual local factors, such as the significance or otherwise of an industry, and the perceived compatibility of MRE with this significant local industry or local feature, MRE may be perceived more or less favourable.

5.5 Conclusions

The results discussed in this chapter indicate that, overall, MRE was supported in each case study location. Shetland respondents were consistently most positive, followed by the Isles of Scilly, while Orkney respondents were the most cautious in their support. Several reasons were identified as underpinning support for MRE, including: overall general worldviews, in which wider concern for the natural environment often led to support; the local characteristics of the resource, leading to perceptions that MRE is a suitable type of RE for these local areas; and evaluations of MRE based on local factors. Environmental values were, however, employed as a reason for both support and opposition. Important local factors that were identified in this chapter related to dominant community characteristics, community assets, threats to those assets, and approaches to maintain continuity of the community.

The assets referred to the resources that people considered important to sustain their local areas. Community characteristics, together with place values, provided a strong basis for identification of local assets. Several community assets and threats were identified, including: beautiful natural environments and community spirit as key assets,

²⁰ It is worth mentioning, however, that MRE receives significant media attention in the study sites. For example, this study was reported in the local newspaper and on local radio in Shetland and the Isles of Scilly.

and the high cost of living, transportation, employment, out-migration of young people of the islands, and limited opportunities as important threats. These assets and threats were found to influence how MRE was perceived based on how MRE would affect them.

In addition to attitudes and underlying reasons, the perceived effects of MRE were also investigated. Based on this analysis it was established that community benefits were expected in all study sites alongside increased employment and business opportunities, all of which were expected to contribute to the long term viability of local communities. The results also showed that respondents often were not sure about the potential effects of MRE on a variety of issues, including wildlife habitats and seascape impacts but this did not seem to have significantly affected support.

In Shetland, support for MRE was closely associated with the success of other industries in the area, such as oil and aquaculture, and the benefits this brought to the community. Most respondents perceived that MRE would bring economic benefits, and would create jobs and business opportunities. Most importantly, it was considered to potentially contribute to community continuity by providing these benefits. The Orkney case shows that, although there was still strong support, experience with the MRE sector had made respondents less optimistic, because some problems had already occurred with the Crown Estate and the fishing industry, and because there was greater awareness of the practicalities of the technologies. The Isles of Scilly case showed strong support and perceived benefits. However, although survey results suggested that this community was ready to embrace MRE to overcome issues related to community viability, they appeared less willing to accept the changes that this could bring. To maintain long term and protect the most important local assets (the natural environment and tourism), continuity appeared to be prioritised rather than change.

In conclusion, MRE appears to be strongly evaluated in relation to a variety of issues. This led to the identification of a series of lenses that determine how MRE is viewed in

each area: (i) people's overall worldview, which leads them to support RE in general; (ii) a pragmatic lens, when people like MRE because of practical research such as the local availability of the resource; (iii) a socio-historical lens, in which MRE as an industry was compared to the broader socio-historical development of the islands and how this was considered to fit in; and (iv) a comparative lens, when people compare MRE to familiar developments in their localities in order to relate to them. This seemed particularly the case when MRE was related to something that is undesirable, such as the visual impacts of the other issues or developments. The comparative 'lens' was applied at two levels: a comparison between technologies, such as the comparison often made between MRE technologies and onshore wind, and the effects of MRE on the community, where evaluation seemed based on issues experienced on the islands, such as the large seascape changes brought by the oil industry and aquaculture development. Again, community benefits were compared with existing ways in which the communities benefit from developments, and were judged based on these experiences. Where problems occurred in the past, issues were perceived more negatively, and where the community benefited through certain schemes or developments, community benefits were perceived more favourably.

The above factors were found to interact with each community's a priori priorities for continuity and priorities for change as part of strategies to maintain long-term viability of the local community. Based on these, priorities for continuity and change were identified. A fundamental issue observed in this chapter is that participants generally wanted to protect the core of what the islands meant to them. Overall, if adopting a MRE development or even a whole MRE sector was seen to contribute towards maintaining the most valued aspects of the local areas, islanders appeared open to the changes such developments would bring, depending on the perceived effects of the MRE development in question. If, however, MRE was considered to threaten the most valued local characteristics, people seemed more resistant to such changes.

The results also suggest that conflicts were created, or made worse by poor consultation processes. This could also affect attitudes towards MRE developments locally. Having explored attitudes towards MRE and the values and the factors underlying support in this chapter, the next chapter turns to incorporating attitudes into decision-making. The chapter will explore the dynamics of community engagement in MRE decision-making and the key local issues that should be considered when engaging with small island communities.

Chapter Six: Community engagement with MRE decision-making

6.1 Introduction

The previous chapter found predominantly positive attitudes towards MRE and established the importance of the local context and place values for understanding attitudes, which appear to be based predominantly on evaluations of how MRE interacted with local community strengths and weaknesses and the potential contribution of developments to long-term community viability. An important component of ensuring that local concerns are incorporated into MRE decision-making, nevertheless, is the stakeholder engagement processes used. This chapter accordingly examines the dynamics of community engagement in MRE decision-making to ensure that key local issues are considered when engaging with small island communities. The importance of local consultations was further reinforced in Chapter 2, because people not only care about the outcomes of decision-making processes but also about the way decisions are made.

Based on the findings of Chapter 5, it appears likely that local context is also important in determining suitable ways for incorporating community views into decision-making. Therefore, this chapter explores peoples' opinions of engagement processes and incorporating attitudes in MRE decision-making. Section 6.2 discusses the context in which engagement with MRE is discussed in each study site, including experiences to date, the transition from conceptual engagement to practical engagement, and factors influencing decisions, and identifies tensions at three levels which reduced the opportunity for communities to influence decisions: the regulatory and policy-making level; the development level; and the community level; Section 6.3 then considers stakeholder views on how to improve engagement processes and increase local autonomy; Section 6.4 explores participation and representation in engagement

processes; Section 6.5 discusses the tailoring of procedures to fit local circumstances, including approaching communities and local methods for engagement; and Section 6.6 synthesises the main findings of this chapter. This chapter primarily discusses interview data, combined with one survey element in Section 6.4.

6.2 Experience with engagement in a developing industry

6.2.1 Experience to date

Of the three case study sites, Orkney has the highest level of experience with MRE and community engagement. Interviewees predominantly described the establishment of the EMEC test centre (Section 4.3.3, and the site selection for leasing rounds by the Crown Estate and MRE stakeholders, and portrayed a welcoming community when consultations for EMEC commenced. Indeed, dialogue with local interest groups resulted in an active local lobby for the establishment of EMEC. As one representative of a community group noted:

EMEC is a facility that we as a community have fought for. We got together as community groups and stakeholders within the renewable energy sector, and we were really campaigning and lobbying to get them to come here (OIME3).

Many interviewees also acknowledged the extensive engagement initiated in Orkney:

A lot of effort has been put into consultation in the past with lots of exhibitions by developers and EMEC, in collaboration with the council, to make sure the community was aware of MRE. There was no complaining about that (OICM3).

Nevertheless, several interviewees pointed out that the major issue with the process was that, despite substantial engagement and groups driving the process, the views of the public about hosting a research and development centre for MRE were never asked:

Really nobody stopped and asked: do we want that? Did we prefer a smaller scale? Unfortunately, nobody has asked the public at any stage along the way what scale of development we want and at what pace (OIME3).

As a consequence, several interviewees feared a rise in negative attitudes, and possible opposition, when larger developments are proposed. A planning official in Orkney, for example, expressed concerns that:

When larger, real, planning applications come, would there be a kickback? Will the community kick back against development until they know enough? Because we don't know much, we can't communicate much detailed information. All of that could be better developed and worked with if you had more information to hand from the community and the industry. For that to happen, the community must engage more with the developers (OIR1)

Poor engagement was also discussed in Orkney regarding the site selection for leasing areas by the Crown Estate. Interviewees claimed that the Crown Estate, as the owner of the seabed, did not seek input on suitable locations and was accused of not engaging with local stakeholders and communities during the process. Maritime stakeholders were not consulted about their activities in the area, fisheries interests were disregarded and communities felt uninformed. Community interviewees felt that they thought this was the result of differences in priorities between the Crown Estate and communities:

They have seen the economic potential as a landowner. So they really stepped it up to the next level but the communities are being lost in that process (OIME3)

This lack of engagement caused anger and frustration in the community. Only after the decision of leasing areas was engagement initiated and participants became hostile. A fisheries representative argued that:

There was a meeting and the fishers were invited to speak to a member of the Crown Estate and a selection of developers, and it was chaos. The fishermen were really angry; it was just bashing the developers and nothing good came from it, because it was basically a shouting match (IOMS2).

The above example echoes the engagement literature, which identified that if people feel excluded from decisions affecting them, this can create hostility or suspicion towards developments (Gross, 2007; Haggett & Vigar, 2004; Jobert *et al.*, 2007). Since these events, interviewees accepted that the Crown Estate has improved local engagement by providing information about the leasing rounds and has involved various developers. Although poor engagement did not result in direct action against the development, MRE stakeholders felt it had negative consequences for other MRE engagement activities and indicated damaged trust in the MRE sector locally.

Fisheries stakeholders nevertheless described how continued dialogue with the local MRE sector has overcome some of this mistrust:

The renewables sector was willing to give some money towards the fishing industry to do research and restocking. I think it is because the fishermen in Orkney kept talking with the renewables people. There is a little bit more understanding here than there is in other areas. There are a few issues, but I think on the whole they get on relatively well (OIMS4).

Since the site selection process and the development of EMEC, few consultations have taken place for the deployment of specific devices, but MRE and community sector interviewees foresaw that engagement would increase again with proposals for specific developments.

In Shetland, interviewees generally referred to the Bluemull Sound Project, a proposed community development in North Yell²¹, and introductory engagement for the projected 10MW commercial wave farm (Section 4.4.3). They felt that the community was closely engaged throughout the development process, and to overcome financial constraints, some environmental studies were conducted with community assistance:

We did our ornithology studies locally. We were able to save that cost and move it ahead as cheaply as possible. It has helped because the community has all chipped in and worked towards it, which has created a huge amount of community engagement (SICS1).

²¹ As described in Section 4.4.3, the North Yell Development Council is involved in an onshore wind and tidal project. The engagement discussed here refers to engagement conducted for both projects.

The project's representative also identified continuous engagement, dialogue and real consideration of local concerns as key factors that contributed to the success of the project:

We listened to their concerns from the outset. We are a community group and are not going to fall out with a large chunk of the community over a project (SICS1)

Their commitment to engagement was confirmed by other Shetland interviewees.

In contrast to the lack of engagement experienced in Orkney over site selection, this example illustrates how dealing with community concerns at an early stage can avoid or reduce conflict, although, this was a community organisation-led project rather than an outsider developer. Nevertheless, the engagement and local contribution to the project appears to have resulted in a sense of ownership and increased support because the concerns of people were taken seriously and efforts were made to address them. These findings support Warren and McFadyen's (2010) view that local attitudes towards RE developments could be more positive if they are owned by local communities. These seem to be important contributors to the project becoming the UK's first community tidal energy project in 2014 (BBC News, 2014).

Interviewees also discussed experiences with the introductory engagement for a 10MW commercial wave farm off the Shetland Mainland (Section 4.4.3). Fisheries liaison and public drop-in sessions were held in nearby communities to provide information about the project and answer questions. The developer described the events as well-attended:

So far, people were very keen to hear about the project and very supportive. We had a genuine interest from the population (SIME1).

Several interviewees indicated awareness of the events, but indicated that other commitments inhibited their attendance, or considered them irrelevant or inappropriate to attend because they did not live near the site. This featured predominantly in

Shetland and to a degree in Orkney. In Orkney, this was only related to local, single-turbine developments, but in Shetland, this concerned the location for the islands' first planned commercial wave development. This suggests that this trend is not just limited to local developers and projects.

Experience in the Isles of Scilly primarily concentrated on dialogue between local government and local stakeholders concerning the deployment of a wave buoy near the Isles. Early engagement again took place with the Islands' Council and local fishing stakeholders, and a fisheries representative claimed that:

The best thing about that site is that it was chosen with full consultation with the fishermen. We got them all into a meeting and said: this is what is proposed, where would you put it (IOSMS1)?

During these discussions, the fishers indicated the most appropriate site based on local environmental circumstances. The technology was also received favourably because fishers expected it to increase the quality of the fishing in the surrounding area. Early involvement, in this case with local fishers, is also advocated by Rydin and Pennington (2000), who argued that gathering locally specific information may help to avoid inappropriate developments. Interviewees suggested that the community would have embraced the project because of these qualities and the level of engagement with relevant groups, if it had not been discontinued by the developer.

6.2.2 A transition from conceptual to practical engagement

As shown above, engagement has thus far been conducted largely at a conceptual level or around small projects instead of for major development proposals. For example in Orkney, a period of active dialogue to establish the MRE test centre was followed by a period of relative calm because the sites were consented and testing had commenced. Likewise, the Orkney community showed strong interest initially, but more

recently interest has diminished, and some scepticism has surfaced about the feasibility of MRE. Interviewees from the MRE and community sectors identified that the time-lag between EMEC's establishment, the testing of devices, and concrete development proposals resulted in consultation-fatigue, and felt that a balance had to be found between keeping communities engaged and facing apathy as a result of over-engagement.

All Orkney interviewees agreed that maintaining support was essential to build a MRE industry. To achieve this, they felt that the community must be kept informed but without demanding too much input, and that the appropriate moment to increase engagement again was the proposal of concrete developments:

At the stage where concrete plans are available they have something concrete to like or dislike. Once the reality hits and people start to see that things are really starting to happen they will start to engage in the process (OIR1).

The above implies a link between engaging and being affected by a development, and has been discussed by Wolsink (1994), who identified a U-shaped curve of people's engagement with RE, in which initial high support falls when more details of a development become available and negative impacts are discovered. Support then recovers when people get used to the development and the impacts are less than feared. All Orkney interviewees thought the community would re-engage when further developments are proposed as it enables evaluation of more tangible effects on the local area. However, the immaturity of the industry, ambiguous regulations and other uncertainties related to the development of new technologies were identified as barriers to renewed engagement, a view supported by Section 5.4, which found that the majority of respondents were often unsure about the possible effects of MRE. At the moment, however, MRE was considered to be too abstract to allow detailed engagement, and until more information becomes available interviewees thought it was sufficient just to keep communities abreast of MRE activities through information giving

to avoid consultation-fatigue, comply with statutory requirements and learn about local contexts.

MRE and regulator interviewees also argued that because of the immaturity of the MRE sector, the regulator, technology developers and communities are also at various stages of learning about MRE deployment. This reinforces the importance of early engagement between developers, regulators and communities, as advocated in the guidance documents developed for MRE deployment (See Section 4.2), but also to avoid the potential hostility identified by (Gross, 2007; Haggett & Vigar, 2004; Jobert *et al.*, 2007) that may result if people feel excluded from decision-making.

6.2.3 Representing local interests and influencing decisions

Based on the experiences discussed above, a range of issues were identified that affected the influence of communities on decision-making and the representation of local interests. The first factor is a perceived discrepancy between representation of local concerns, including the socio-economic impacts of decisions, and that of broader issues, such as environmental protection. Interviewees felt that, in general, environmental organisations had a significant influence on decision-making. MRE stakeholder interviewees, for example, described how their main concern was to comply with regulations concerning the natural environment and formal engagement with environmental consultees. They acknowledged, however, that socio-economic impacts should also be investigated as part of EIA, but argued that, in practice, this was not a substantive factor for obtaining development consent. The limited assessment of social, cultural, and corresponding economic impacts on locally significant sectors in a community was identified as a key issue:

There is very poor treatment of social issues in impact assessments because government is not requiring EIAs to deal with that. The regulators are not asking the questions, so the consultants are not using it, the clients are not expecting it to be done, and there's a problem there (OIRME1).

These observations support arguments in the literature that generalizable aspects, such as environmental impacts, take precedence over context dependent ones, such as social and cultural impacts (Andrew & Robottom, 2005). An example from the fisheries sector illustrates this problem:

Particularly in fisheries, it seems like the authorities do not care that decades, and in some instances centuries of tradition and history get lost because of badly planned developments whilst the actors can easily work together (GME1).

One representative from a consenting body confirmed these observations:

The majority of engagement we do is formal with representatives of organisations and industry who have a much bigger stake and therefore it is really important for them to address the negative impacts, so I guess that is what they focus on more. I think your survey results will not be representative for many of the stakeholders that we deal with (GR1).

Community interviewees also felt that community interests, such as the socio-economic impacts of decreased fishing in local areas, which causes knock-on effects on communities, were often overlooked in decision-making (Section 4.2). This is illustrated by the example of the closure of a local fishing ground after the discovery of a shark-nursing area. The closure was thought to cause considerable socio-economic impact on local communities because:

Small communities rely on simple things like fishing. Environmentalists from outside bring in these things, the newspaper report them, and then the masses think it is a good idea without looking at the real impact in the small communities. They have no idea and I feel that small communities get railroaded by the masses (OIMS4).

Fishers claimed that the nursing-ground's existence was common knowledge, and questioned the legitimacy of the discovery which coincided with existing plans to ban fishing in the area. They felt that the timing of this investigation and its nationwide publicity was staged to create sufficient ground for the area-closure on environmental grounds. Maritime sector and community interviewees argued that environmental

stakes often dominated decision-making because of their strong representation, for example by statutory consultees²², creating a risk of underrepresenting local social or economic interests, which were not as clearly identified in statute.

Although EIA procedures should include assessment of environmental, economic and social impacts (See Section 4.2), interviewees felt that better assessment of community factors in EIAs was needed. This issue was previously identified by Wolsink (2011), who called for increased understanding among developers and regulators of community factors, which are often culturally rooted and subjective, and therefore less easy to generalise. Furthermore, not only were special interests seen as important factors for MRE decisions, but also the general interest of local communities.

Interviewees from all stakeholder groups agreed that balanced decisions could only be made when environmental, social and economic effects are all made clear.

Differences in priorities at the strategic and local levels were identified as a factor limiting local influence on decision-making in relation to social issues. Community and MRE sector interviewees often felt that despite statutory requirements for engagement, in reality, wider societal concerns prevailed over those of local communities, leaving little opportunity for local actors to influence siting decisions despite policies suggesting otherwise. For example, the presumption in favour of granting development consent for developments that increase energy security (Section 4.2) was identified as a limiting local influence on decisions. A regulator interviewee involved in MSP explained this further:

Energy security is a very important issue for the nation. It may be that when a proposal comes through if they were to interact for fishing grounds, it could still get approved even though it goes against the policy because of the importance of energy security. It is a policy, not a law (SIR1).

This supports observations in Section 4.2 that, despite agreements on public participation in decision-making, community influence is limited despite agreements

²² Several environmental organisations are considered statutory consultees (Section 4.2), e.g. Natural England and the Environment Agency.

made under the Aarhus Convention and ideas of the Big Society. Meanwhile, MRE stakeholders identified tensions between fulfilling regulatory requirement for public engagement and maintaining economically viable projects. This substantiates Haggett's (2011b) warning that, by setting a range of requirements, engagement can become an end in itself, instead of a guarantee that stakeholder concerns are adequately addressed.

Views expressed by community interviewees also suggested that engagement was often primarily performed to comply with the regulatory requirements for obtaining planning permission, and that they often had little influence on final outcomes. This is illustrated by the following statement from an Orkney fisher:

No, I feel like we cannot influence outcomes. They basically find a way they are going to do something (OIMS4)

Across the sites, interviewees from all sectors referred to token engagement and engagement as tick-box exercises, solely conducted to comply with regulatory requirements. Interviewees from the MRE and community sectors alike confirmed a degree of tokenistic engagement as part of MRE development:

At the moment, engagement is more of a PR exercise. It is not going to be a showstopper, so it is more tokenism (OIME2).

Several community interviewees claimed that token engagement took generally place when large outside companies came to the islands, overruling local opinions and dictating outcomes. However, these sentiments were largely based on engagement in decision-making in general, and illustrate the insider/outsider effect in which the motives of those wanting to implement developments who come from outside the local community are questioned. In Orkney, the outsider effect was noticeable with regard to the Crown Estate, and was often based on experiences from the site-selection process for offshore renewables (See Section 6.2):

As long as the developers and the Crown Estate are able to tick the box that they have held these things, it is assumed that it is ok. That is the way it is seen to be done, and that is why the whole consultation process is so flawed (OICM8)

A flawed process was thought to decrease people's interest in participation and several interviewees, including a marine planner, suggested that people would show more interest if they believed it made a difference:

I suppose that you have to believe that your view will have a result to express it (SIR1)

Summing up the above experiences, tensions were identified between three levels, each of which reduced the opportunity for communities to influence decisions: (i) the regulatory and policy-making level which establishes measures to overcome energy issues and sets obligations for public engagement; (ii) the development level, where the MRE sector must comply with obligations for community participation and must adequately address issues identified during the engagement (See Section 4.2); and (iii) at the community level, where engagement takes place and the impacts of developments will be felt.

Despite processes to encourage participation, interviewees from all stakeholder groups felt that the overriding importance of energy issues was likely to ensure consent, often reducing consultation to a token exercise in which developers engage but where there is limited prospect of influencing decisions. Although developers and regulators also encourage public engagement to increase the likelihood of consent, it sits uneasily with the other purposes for engagement in the literature, for example the right to participate based on fairness of process and outcome (Gross, 2007; Kempton *et al.*, 2005) and the application of local knowledge and expertise to improve siting (Haggett, 2011b).

Although these have been discussed extensively in the literature as key to appropriate RE siting, the immature stage of the MRE sector and the evolving regulatory frameworks (See Section 4.2) appear to have contributed to the shortcomings identified above.

Interviewees from all stakeholder groups agreed that a better balance needed to be found between achieving energy goals, engagement objectives and deploying developments that are acceptable locally. An MRE interviewee summarized what they saw as best practice for engagement between developers and communities:

There is no point going in with a sledgehammer, and there is no point going in wrapped in cotton wool accepting and planning to change everything just to keep everybody happy. You have got to be prepared to have an intelligent discussion with somebody in a reasonably sensible and respectful way (OIME4).

Ultimately, such discussions were seen to contribute to improve consideration of local socio-economic impacts alongside environmental effects and understanding among developers and authorities of contextual factors, such as the history of fishing communities, influencing the socio-economic effects of MRE developments. Crucially, the findings discussed are all related to place, about the value and role of local and national places, and how these are prioritised in MRE decision-making. The next section will consider approaches to improve the consideration of stakeholder views in decision-making.

6.3 Consideration of stakeholder views

From the interviews two general positions were identified to improve the consideration of stakeholder views. The first focused on improvements to engagement processes, for instance, through the increased application of local knowledge and expertise, using local resources to increase trust, ensure local benefits, and promote collaboration between sectors. The second focuses on increased local autonomy and a move towards energy independence.

6.3.1 Improved engagement processes

To achieve better outcomes for communities and developers, interviewees from all stakeholder groups suggested improvements to engagement processes so that stakeholder opinions were heard and concerns could be addressed. The engagement process for the North Yell community wind turbine illustrates the potential to mitigate stakeholder concerns by considering their opinions:

Everybody that has had an opinion has come forward and has influenced the project in some way. There was not a great deal of real concern, I think that we pre-empted most questions and could show them what it looked like and we could tell them about the noise levels. There were new people that moved to the community and they had some reservations, but we asked them to go and look at the wind farm outside Lerwick, and they went and stood next to it and listened, so they could be reassured that even if it wasn't exactly to their liking they had a good idea of what it is going to look like (SICS1).

The key message from this example is that even though not everybody was entirely happy with the project, concerns were sufficiently addressed during the engagement process to avoid opposition. This echoes other studies, including Glasbergen (1995) and Yearley *et al.* (2003), who discuss conditions and good practice examples through which involvement of stakeholders could lead to more positive outcomes for developers and communities alike.

To achieve this, however, the community organisation initiating the project moved beyond statutory requirements in order to mitigate conflict. As discussed in Section 4.2, statutory consultation is the official mechanism used to engage with communities and a range of consultees are consulted on every occasion, including environmental and navigational organisations. However, there was widespread agreement among interviewees from all areas that it is often necessary to move beyond statutory requirements. EMEC, for example, sought advice from additional organisations because:

Even Orkney Island Council and the harbour department are actually not formal consultees for our main grid connected sites. The sites lie just outside their

coverage, but it makes sense to consult them. They have so much help they can give. It would be nonsense if we didn't consult with them. But we don't formally have to, so it is being sensible about whom you consult with (OIME4).

In the Isles of Scilly, the fishing sector and the Island Council were extensively consulted by an MRE developer and site selection for a wave buoy deployment took place in full consultation with fishing groups. Furthermore, local expertise on fishing sites was incorporated into site-selection.

In Orkney and Shetland, interviewees described how stakeholder concerns could also be incorporated into decision-making through Marine Spatial Plans. In Shetland, for example, fishing grounds are marked in the Marine Spatial Plan, providing MRE developers with an opportunity to avoid important fishing grounds. A researcher involved in developing the plan indicated that:

I hope a developer would use the information to avoid doing that, so they could say: 'Right, in this bay, if we went around the edge we would avoid the fishing ground'. There is the opportunity for them to avoid the fishing grounds (SIR1).

In this example, the fishers were not engaged directly, but their previous input into the Marine Spatial Plan facilitated consideration of their concerns by developers. A key observation from these examples is that involvement of local actors was considered to result in better projects in terms of location whilst also improving acceptance and mitigating conflict.

There was general agreement among all interviewees that local users of the marine space have important knowledge of the local environment in which devices are proposed. For example, all interviewees involved in marine activities claimed that the knowledge of local actors about waves, tides and local environmental conditions was indispensable for good siting decisions:

Don't pay hundreds of thousands on consultants because consultants don't have a clue. Local expertise is far more viable; the people here know the sea far better than somebody from elsewhere. So if you want to put something

somewhere, talk to the people who use that area and ask if they can foresee any problems (OICM2).

This was also considered an opportunity to work together with local actors:

I think it would be a better approach, with fisheries especially, to come to them when they need them for advice, when it is needed (IOMS2).

The potential for long-term collaboration was also discussed, and was already evident in Orkney and Shetland, where people had been employed by the RE sector as liaison officers and surveyors because of their knowledge of the local natural and social environment. Local interviewees felt that this was important, not only for the appropriate siting of developments, but also to secure the economic benefits that communities expected from MRE developments (Section 5.4.2). This was also stressed by MRE sector interviewees:

You can create an incentive and ensure that some benefits go to local people, which is particularly important in these small island communities. People then have real decision-making power but also see benefits of becoming a host community for marine energy (SIME1).

Interviewees generally felt that this approach created significant goodwill in the community because it acknowledged local expertise and contributed towards building trust in the MRE sector. This demonstrates the importance of considering local issues in decision-making processes to ensure local acceptance of siting decisions, but also for knowledge exchange between local actors and the MRE sector. These findings are consistent with the literature, which established that local actors may have information that is important to the policy process and that may improve siting decisions (Gross, 2007; Haggett, 2011b).

The application of local knowledge forms a prominent theme in the literature related to the increasingly complex geographies of energy generation, in which interactions between technologies and the environment are less understood than in the past (Walker & Cass, 2011). The observations are consistent with further themes in the

engagement literature on the use of contextualised knowledge of local areas in development processes (Haggett, 2011b; Wynne, 1996), using local and lay knowledge alongside technical and scientific considerations, because this knowledge might not be available to professional agencies, (Royal Commission on Environmental Pollution, 1998; Rydin & Pennington, 2000).

In this study, the application of local knowledge and expertise was also often discussed in relation to increasing the transparency of consultation processes, which again engendered trust. Trust and accountability were considered to be more important in small communities than in larger, more 'anonymous' communities. Several interviewees claimed that, as a consequence, incoming businesses would be less trusted than a local business that has knowledge of the community. One local MRE developer in Orkney recognised that:

Being a local company makes working here both easier and gives us more responsibility. Because we live and work in same area as these people, we don't want to upset people so you would probably go the extra mile to resolve issues (OIME2).

Personal contact with people on the ground was further thought to increase trust in developers, and community interviewees from all sites identified a degree of suspicion towards outsiders, especially large Edinburgh or London-based companies that appear in the press regularly. Engagement was thus not solely improved by applying local knowledge and expertise, but also by the accountability at a local level that this was seemed to provide. Furthermore, interviewees from the community sector stressed that it must be clear that the motive to engage is sincere. This point was illustrated by a MRE sector representative who claimed that:

The only sensible reason to undertake stakeholder engagement is if you are genuinely prepared to have their comments affect your plans. You must be prepared to take notice of what they say, and to show that you have taken notice of what they say. If you have got your plan and know exactly what you are going to do, there is no point in doing tokenistic engagement, because you are asking for trouble (OIME4).

MRE stakeholders, based on the experience of wind energy, further emphasised the importance of ensuring that people feel they have a voice in decisions and that they are part of the process. This was confirmed during the community interviews, which suggested that the participation of local communities and consideration of their issues in the decision-making process created a sense of project ownership, and increased local acceptance.

The continued dialogue and engagement of communities in aspects of projects was also further enhanced by the community benefits resulting from the project. Links between sense of ownership over the project and process, community benefits, and the application of local knowledge could be an important contributor to incorporating community values in decision-making. This is particularly important because community benefits and local business were identified in Section 5.4.2 as expected effects of hosting MRE developments. Considering local concerns thus created the potential to benefit from local knowledge and expertise, gave people a voice, increased the accountability of developers, encouraged collaboration, and created a sense of ownership.

6.3.2 Increasing local autonomy

In addition to improved engagement in decision-making, interviewees felt that achieving a sense of ownership and ensuring community benefits could be achieved through increased local autonomy on energy matters. This was achieved through increased local authority in decision-making and a move towards greater energy independence.

An underlying reason for this viewpoint was the local distinctiveness of island communities and their expressed desire for self-determination and autonomy. Despite discussions about localism and the Big Society, however, interviewees felt that

decision-making power was increasingly centralised to the main towns of Kirkwall (Orkney), Lerwick (Shetland) and Hugh Town (Isles of Scilly), and via the National Planning Policy Framework and EU and national legislation, out of local areas entirely:

‘A move to localism would be a good idea. It is talked about but isn’t delivered: they talk localism but you see centralism (OIME3).

In addition, centralisation of authority was previously identified as a threat to sustaining communities (See Section 5.2.2) because of its insensitivity to local contexts and needs. Around half of the community sector interviewees advocated energy independence to overcome these issues:

‘Once you are generating your own energy you are no longer dependent of fuel prices elsewhere and have the resources in the community. That is what you want. You want more of that empowerment to go and do things. But that comes with responsibility too, a heavy burden to have (OIME3).

Local autonomy was considered to be particularly important in this type of community, with one community representative arguing that authority:

Has to be devolved as far as possible, because here particularly we have distinct communities of geography. People might think it is the Orkney Islands, but it isn’t. It is a cluster of distinct communities. Here you have Westray as a community with distinct geographical boundaries, as well as other islands. Even on the mainland, Kirkwall is dramatically different from East Mainland. It should be respected that our communities are different and we should be allowed to come up with our own ideas, and make our own choices (OIME3).

The above quote demonstrates that island communities are not homogenous. Despite their identification as the Orkney Islands, distinct places, communities and identities exist within the geographical unit characterised as the Orkneys. As a consequence, place and identity processes may affect MRE development at multiple local levels.

The community turbines developed by community organisations were given as examples of how communities could increase their authority:

The community is very pro-active; there is a real realisation that we live in a marginalised, remote island and that things are not going to just be handed to us on a plate. We have to do it ourselves if we want to so I think probably going

on the success or failure of what happens in North Yell, they might be a bit more receptive to it (SICM2).

Community developments have been discussed in the literature and have been associated with: fewer planning refusals because communities drive developments; access to new sources of capital; and increased public support (Patterson, 2007; Scottish Renewables, 2007). Differences in individual and organisational capacity within communities has also been recognised (Haggett *et al*, 2013), though Head (2007) identified that their capacity to be involved will vary widely.

Although many respondents advocated increased authority on decisions concerning their islands, several issues were identified with the 'increased authority approach', including a lack of confidence, skills and resources in the community to achieve autonomy. This is illustrated by the following example:

Because you don't have a big company behind you, you can be in a situation in which you feel exposed and isolated. You have a community that will judge you and hold you accountable for what you are doing so it can be quite difficult sometimes. And that usually leads to periods of intense activity and then burnout. Volunteer fatigue is what you are trying to guard against (OIME3).

Thus, despite an interest in autonomy, in practice, a few people were seen to carry the burden of driving RE developments, which caused them to burn out after one or two projects. Volunteer fatigue was considered a problem in particular for small communities, which, because of their small population base, often find that the same volunteers take part in many activities. The demands and pressures were often considered to cause fatigue, as the representative of a community organisation noted:

Whether they will have the energy to do something again or whether they are all tired after doing the turbines, that will be the issue (OICS1).

To overcome the volunteer fatigue identified in all study sites, the interviewees (especially those from the community sector) suggested collaboration between the RE industry and communities, in particular if companies were local:

To twin with a local professional company, for example Pure Energy²³. They would be seen to be involved and have input. Then people might think: Pure is going along, Pure is interested, lets support them and try to get a local contract, and you might find that you get a bit more support (SICM2).

Interviewees identified that for this type of partnership, sufficient capacity within the community was still required. At present, interviewees felt that this was lacking to some degree in some communities. For example, a community fund for wind turbine applications was established in Orkney, but despite expectations that the fund would be overloaded with applications, only a few applications were made. A community development officer commented that:

There is only a certain capacity within a community to develop and create projects and be entrepreneurial. You have to maximize the level of expectation and level of resource you put in to what can be delivered. I think that is one of the big areas that is missed out on; the skills and experiences and building community confidence and leaders within a community. How do you get them jump to a level where they are confident enough to take the lead and develop further projects to make the community go forward. There are not many folk out there or community groups. So that is where a lot of the work could be done (OICS1).

The issue of community capacity and RE developments has been identified by Haggett *et al* (2013), who identified this as a factor influencing the success of community energy in Scotland.

Despite the challenges involved in developing community energy projects, and the constraints on what could be achieved autonomously in small communities with limited resources, time and expertise, proponents of increased local autonomy in MRE decision-making felt that it was beneficial for two reasons: (1) it ensures local influence on MRE decisions for the benefit of host communities; and (2) it overcomes threats to communities such as high energy prices and the centralisation of authority identified in Section 5.2.2. Nevertheless, the trends described raise questions about the potential of these strategies, and whether the public are willing to take on responsibility for the energy sector.

²³ An energy company in Shetland specialising in sustainable solutions.

6.4 Participation and representation in engagement processes

The previous section established two main viewpoints on how to promote the uptake of local attitudes in decision-making: (i) improved consideration of stakeholder views; and (ii) increased local autonomy regarding energy matters. Building on these findings, this section explores local preferences on different methods of engagement employed in the UK. This provided insight into the practicability of the viewpoints described above, and elicited whether and how much people were capable of, or prepared to, become engaged.

To explore people's opinions of engagement strategies, survey respondents were asked to indicate the appropriateness of different strategies in the UK for engaging the public in decision-making (for an extensive description of each strategy, see Section 2.8). The results are shown in Table 6.1.

Table 6.1 Perceived suitability of community engagement strategy (n= 496)

Community engagement strategy	Positive	Negative	Neutral
Information giving (provision of balanced and objective information to the public to help them understand the issue)	73.6%	5.5 %	20.9%
Information gathering (actively collecting information from the public, e.g. surveys to use in decision-making)	69.8%	8.7 %	21.5%
Consultation (A two way flow of information, for example obtaining public feedback on analysis, alternatives and/or decisions)	66.9%	8.3 %	24.8%
Involvement (To work with the public throughout the process to ensure public interests are consistently understood and considered through dialogue)	60.7%	8.9 %	30.4%
Partnership (collaboration in each aspect of the decision between developer and the public)	61.1%	8.3 %	30.6%
Empowerment (Placing final decision-making in the hands of the public)	57.0%	12.3%	30.7%

The survey found generally positive attitudes towards all engagement strategies, though the overall trend was that less intensive forms of engagement were perceived more positively than more intensive forms. Information giving, which refers to the provision of information by the developer and is the least empowering engagement strategy, was perceived the most positively (73.6% positive and 5.5% negative), whereas empowerment, the form of engagement strategy that places greatest decision-making power in the hands of local communities was perceived the least positively (57% positive and 12.3% negative). These results raise doubts about the

amount of authority and responsibility that communities are willing to take, or are capable of taking, for energy developments. Although these appear to contradict the call for increased authority in decision-making by local communities, observations were made in Section 6.3 that communities might be lacking the confidence, skills or resources and that if these could be addressed, more favourable attitudes to intensive engagement techniques might emerge.

To explore these issues further, respondents identified which activities they would consider participating in. To help respondents visualise the different strategies, specific activities were mentioned where possible. Responses to this question are shown in Table 6.2.

Table 6.2 Intention to participate in community engagement strategies (n=496)

Community engagement strategy	Intention to participate (in % of respondents)				Differences between sites
	Yes	No	Maybe	Unsure	
Information giving	41.4	16.6	29.0	13.0	$\chi^2=10.133$ df 6 p=0.119
Information giving/ information evening	40.6	17.3	34.5	7.6	$\chi^2=14.724$ df 6 p=0.023*
Information gathering	33.7	21.7	31.7	12.8	$\chi^2= 2.502$ df 6 p= 0.868
- community survey	51.1	13.8	27.9	7.2	$\chi^2= 5.195$ df 6 p=0.519
- small unofficial discussion group	17.5	31.3	39.4	11.8	$\chi^2= 3.517$ df 6 p=0.742
Consultation	31.0	19.6	35.4	14.0	$\chi^2= 4.375$ df 6 p=0.626
- public meeting	40.9	17.4	35.1	6.6	$\chi^2= 4.108$ df 6 p=0.662
- written or oral contribution during official consultation	25.8	24.0	38.2	12.0	$\chi^2= 5.926$ df 6 p=0.431
Involvement	17.2	29.7	38.3	14.8	$\chi^2= 3.405$ df 6 p=0.757
- official workgroup for discussing a development	16.0	40.5	30.1	13.4	$\chi^2= 3.405$ df 6 p=0.757
Partnership	16.2	39.4	30.0	14.4	$\chi^2= 2.248$ df 6 p= 0.896
Empowerment	18.6	30.9	34.7	15.8	$\chi^2= 2.260$ df 6 p= 0.894
Joining a protest group	8.3	56.5	21.1	14.1	$\chi^2= 6.263$ df 6 p= 0.394

* = significant at 95%

Chi Square was used to establish differences between general opinions on engagement strategies and respondents' willingness to participate in those strategies.

The same trend was established as for opinions towards engagement strategies in

general: less intensive forms of engagement were preferred over more intensive forms, yet the magnitude of the trend was greater. Respondents were most inclined to participate in information giving and information gathering. Except for interest in attending information evenings, which Isles of Scilly respondents were more likely to attend (Figure 6.1), no significant differences were found between study sites (Table 6.2). Consequently, the survey results presented below are based on all study sites combined.

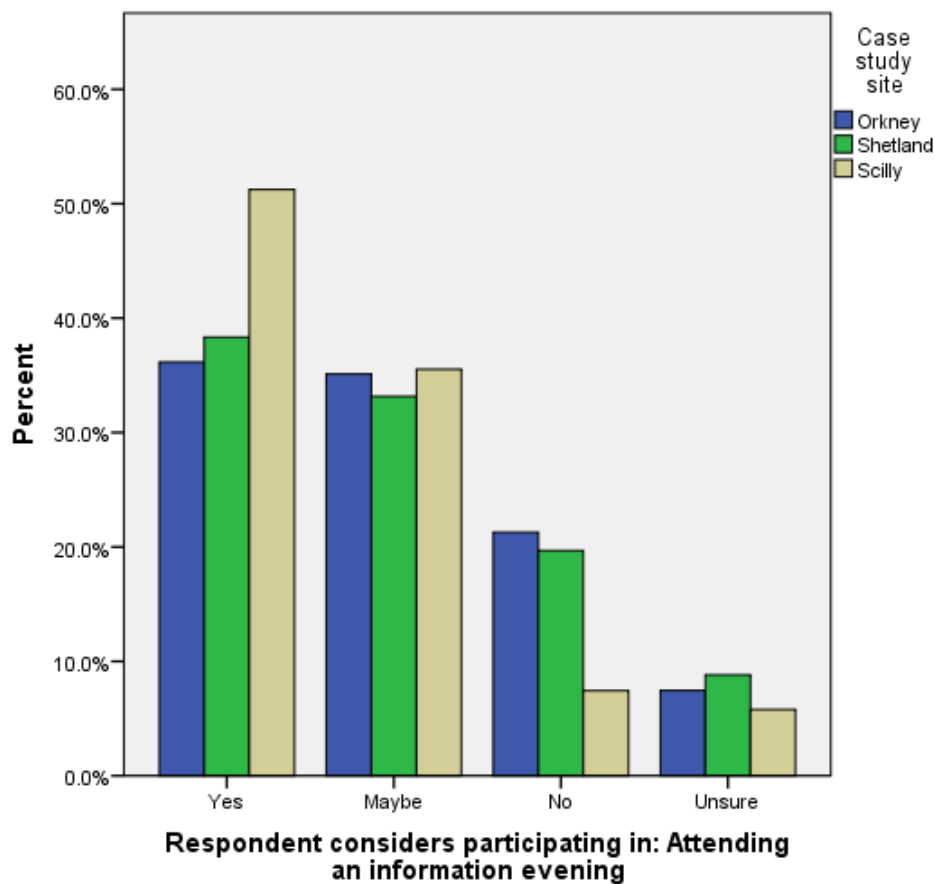


Figure 6.1 Percentage of respondents that would consider participating in attending an information evening (n=497)

For information gathering, community surveys were perceived more positively than small unofficial discussion groups. Similar trends emerged for consultation, and respondents identified a greater intention to participate in public meetings than to provide written or oral contributions during official consultations. Furthermore, only 17.2%

of respondents said that they would consider participating in workshops; 16.2% in partnerships and 18.6% in empowerment forms of engagement. The main trend established, therefore, remains that respondents were less inclined to participate in more intensive and (in theory) more empowering engagement processes. In addition to the lack of confidence, skills or resources identified previously, other possible explanations were found in the interview data.

Some interviewees thought that the apparent lack of interest among local communities in speaking in public resulted from local historical contexts:

In places like the Highlands, or the Western Isles, there's less of a notion that the community can be consulted. They feel threatened to be consulted, because they'll think: 'what is the Laird going to say' (OICM8)?

In Orkney and Shetland, several interviewees claimed that historical tensions in Scotland between local communities and the land owning aristocracy that dominated decision-making (Section 4.3.1), and the evolution of engagement in British society inhibited engagement:

In the past, we were told what was happening and we responded to it. A small group in government made decisions, which then shaped the whole world. Renewable energy is a devolving influence in our lives because instead of the centre controlling how we do things, it liberates the periphery. Now the people who have lived under central control for most of their lives probably 50 years or so, and have become conditioned to it, are asked to speak out. But you can't expect the public to suddenly wake up and say: now we are going to become engaged (OIRME1).

Thus, remnants of previous governance systems were seen still to influence engagement in decision-making. This contributes towards explaining the trend of more positive attitudes towards engagement strategies in principle compared to intentions to participate in practice, and suggests a need for greater awareness of the political and historical contexts in which engagement is carried out.

Socio-cultural characteristics were also thought to influence participation and representation in engagement, which were generally ascribed as typical for small island

communities. Insensitivity to such factors could result in particular groups dominating processes and adversely affect representation. Community interviewees in all study sites felt that, often, the same people attended engagement activities, usually, usually those with strong opinions or those who were thought to enjoy imposing their opinions:

They are people that somehow believe they have an influence for the Orkney good. And they just turn up time and time again saying the same things and don't care what the rest of us say (OICM2).

As a consequence, concerns were expressed among all interviewees about the views of the silent majority who might not have strong views or were not comfortable expressing their views in public. In Orkney and Shetland, a reservation or shyness in interaction appeared characteristic of its 'traditional' local population and an inhibiting factor for engagement:

People don't tend to speak out or make strong statements in a public forum. That is one of the problems that happened: there are people that moved to Orkney that are much more accustomed to speak in public forums, and much happier to be heard. That makes public forums not too good (OIR1).

Instead, Orkney and Shetland interviewees indicated that people were often more outgoing in small groups or when addressed individually. Several interviewees related this inhibition to speak out during formal processes to people looking out for the well-being of the community versus personal interests. In-migration was identified as an important factor, and interviewees felt that people who had recently arrived were less likely to look out for the well-being of the wider community. A marine spatial planner in Shetland feared that, in RE siting, those that are inclined to consider the well-being of the community as a whole might be overpowered by those that look out for their own interests:

Some people would never object to a new aquaculture site, because they know somebody will have a job from it. The same would be true for renewables; because they might feel that it could bring a job to somebody they know. But then you do have the problem that those who speak the loudest will not end up with a renewables device in their view. But it won't necessarily end up in the best spot; it will end up in the spot where the quietest people are (SIR1).

In this example, the impacts of a new aquaculture site were evaluated against benefits for the wider community, possibly increasing the acceptance of developments because of its potential contribution to the long-term community viability. A vocal minority, however, was feared to misrepresent community opinions for the sake of personal interests. This highlights the importance of representation and the inclusion of those that are less likely to speak in public, to include those that would accept developments for their wider benefits versus those that look out primarily for their own interests. To achieve this in the study sites, interviewees again advocated approaches tailored to their local context, which, based on the characteristics of their community, would be more informal so more people feel comfortable voicing their opinions.

To improve engagement processes interviewees agreed that several practical issues must be considered that reflect the local historical and social contexts of their individual communities to ensure representativeness. In particular, demographic influences on responses, including age, gender and level of education were explored and further trends in respondents' willingness to participate in engagement activities were identified using chi-square tests (Table 6.3).

Table 6.3 Chi-square test results for demographic factors and willingness to participate in engagement strategies (n=496)

	Age	Gender	Education
Information giving	$\chi^2=32.235$ df18 p=0.021*	$\chi^2=0.507$ df3 p=0.917	$\chi^2=57.595$ df18 p=0.000*
Attending an information evening	$\chi^2=45.821$ df18 p=0.000*	$\chi^2=0.073$ df3 p=0.995	$\chi^2=40.517$ df18 p=0.002*
Information gathering	$\chi^2=31.620$ df18 p=0.024*	$\chi^2=0.339$ df3 p=0.953	$\chi^2=62.326$ df18 p=0.000*
Community survey	$\chi^2=46.781$ df18 p=0.000*	$\chi^2=0.888$ df3 p=0.828	$\chi^2=50.033$ df18 p=0.000*
Small (unofficial discussion group)	$\chi^2=30.631$ df18 p=0.032*	$\chi^2=1.726$ df3 p=0.631	$\chi^2=25.692$ df18 p=0.107
Consultation	$\chi^2=29.802$ df18 p=0.039*	$\chi^2=3.064$ df3 p=0.382	$\chi^2=45.003$ df18 p=0.000*
Public meeting	$\chi^2=57.516$ df18 p=0.000*	$\chi^2=3.651$ df3 p=0.302	$\chi^2=31.600$ df18 p=0.025*
Written or oral contribution during consultation phase	$\chi^2=40.399$ df18 p=0.002*	$\chi^2=2.651$ df3 p=0.449	$\chi^2=46.309$ df18 p=0.000*
Involvement	$\chi^2=18.527$ df18 p=0.421	$\chi^2=11.651$ df3 p=0.009*	$\chi^2=51.596$ df18 p=0.000*
Official working group for discussing a development	$\chi^2=20.188$ df8 p=0.322	$\chi^2=9.574$ df3 p=0.023*	$\chi^2=40.491$ df18 p=0.002*
Partnership	$\chi^2=15.489$ df18 p=0.628	$\chi^2=9.050$ df3 p=0.029*	$\chi^2=43.263$ df18 p=0.001*
Empowerment	$\chi^2=20.047$ df18 p=0.330	$\chi^2=3.805$ df3 p=0.283	$\chi^2=43.637$ df18 p=0.001*

* p-value = significant differences at 0.05 (95%)

Overall, the oldest age categories, aged 79-89 and 90+ were least likely to engage, but no significant differences were found between age and willingness to participate in involvement, official working groups, partnerships and empowerment activities. Differences were, however, found between age and the remaining engagement strategies. Speaking of these, the lowest two age categories, those below 40 years of age, were less likely to participate in more demanding engagement activities. These respondents, however, showed more interest in participating in information gatherings, including small unofficial discussion groups, even more so, community surveys (Figure

6.2). It is possible that these groups do not attend events because they have other commitments, such as family issues; completing a survey then is a way to participate whilst sacrificing minimal time. Wider changes in societal interactions could also contribute to explaining this trend, for example, the increase of social media and mobile phone communications, which may affect enthusiasm for more traditional communication techniques.

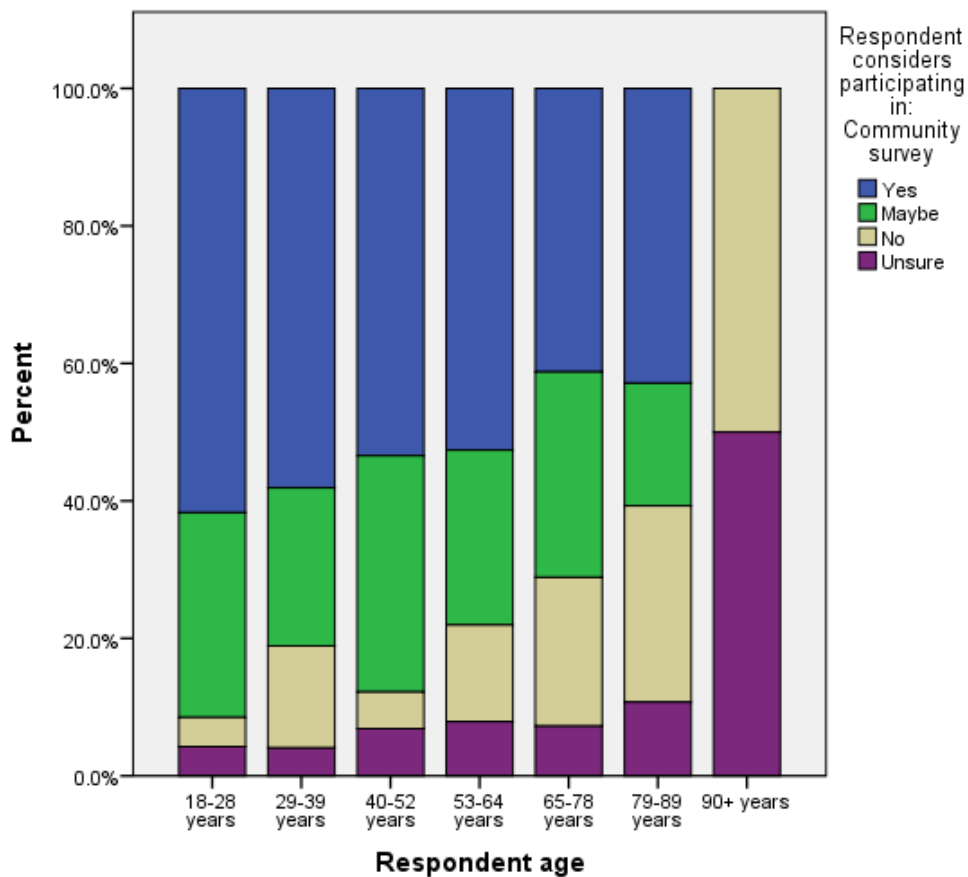


Figure 6.2 Indicated willingness to participate in a community survey and respondent's age (n=496)

Importantly, these age categories also largely comprise the local labour force. Interview data found that people employed in local industries, such as tourism, fisheries, oil and aquaculture, have little time during the day to attend consultation events (Gray *et al*, 2005). Although consultation events were often scheduled in the evenings, these

professions often do not have set working hours, making it more difficult for people in these sectors to attend consultations. The fishing sector was considered to be particularly challenging to engage because of its irregular hours. An interviewee involved in engagement with the sector argued that:

If a workshop is run during the day, they will have to choose not to go to work effectively for the day to attend the workshop. This is a cost for them, whereas for natural heritage and cultural heritage, they have people paid to attend these meetings. It is much easier for them to engage than for the fishermen (SIR1).

This statement highlights two points: firstly, that engagement can be costly to people that have to forfeit employment, and, secondly, that statutory consultees do not have this cost, and therefore will always be represented. This makes it even more difficult for local communities that are not defined in statute for MRE deployment to have their opinions heard. Additionally, although organisations exist that represent the sector, such as the Orkney Fisheries Association and the Shetland Fishermen's Group, a significant proportion of fishers are not associated with these groups. This could result in underrepresentation of those groups in decision-making. To ensure representation of these sectors, interviewees called for more flexible engagement processes. Flexible and tailored processes, such as providing surveys and informal discussions to particular stakeholder groups, previously identified as methods they most considered participating in, may increase representation and provide options for knowledge exchange with harder-to-reach sectors.

Another age-related trend was that the respondents aged 53-64 considered participating in activities all engagement activities except community surveys. It seems likely that this group is near retirement age, and do not have young families, so may have more time to engage than younger age categories. Importantly, respondents aged 53-64 were also most inclined to participate in formal consultations by providing written or oral contributions (Figure 6.3).

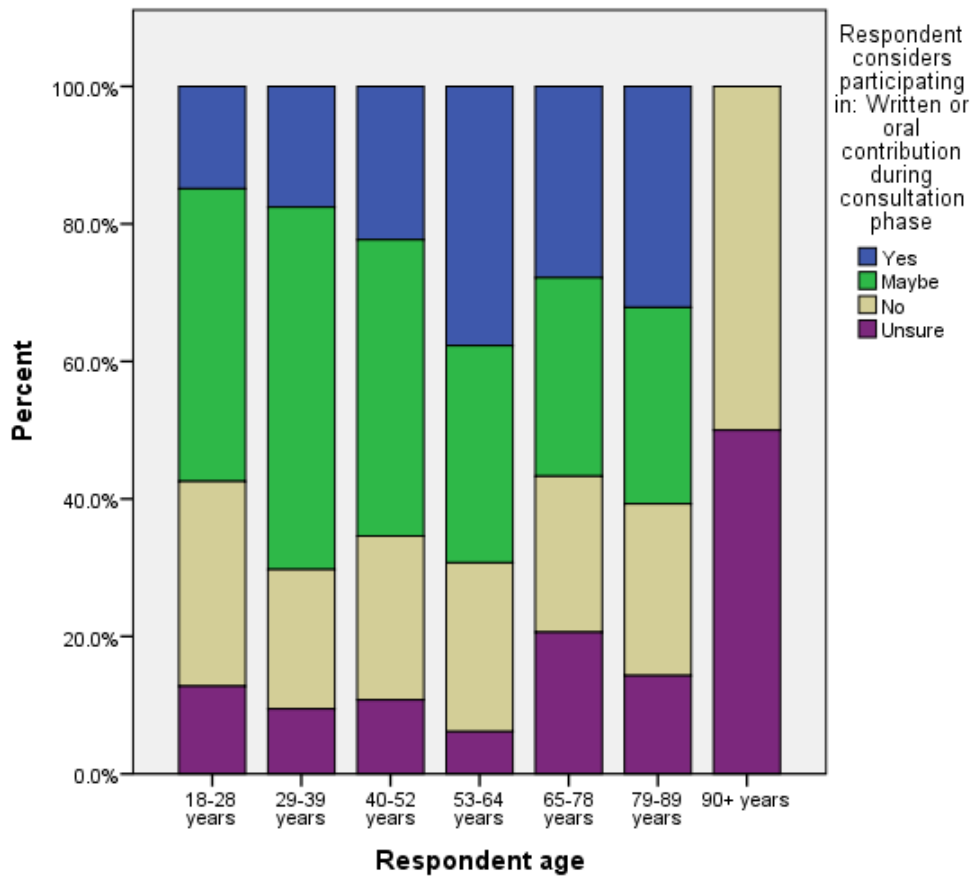


Figure 6.3 Indicated willingness to provide written or oral contributions to consultations and respondent age (n=496)

As discussed in Section 4.2, written or oral contributions to consultations are the dominant mode of interaction in current consultation procedures for MRE developments in the UK. If one age group is more likely to engage via this route, there is a danger of their overrepresentation in decision-making procedures. Furthermore, the same age group was also most inclined to join protest groups (Figure 6.4). If the issues advocated by this age group are not representative of those of the wider community, this could overstate their views, making them a vocal minority. Furthermore, respondents from other age categories indicated 'maybe' more often than the category 53-64. Their attendance at events may therefore be conditional on time, location, or other factors.

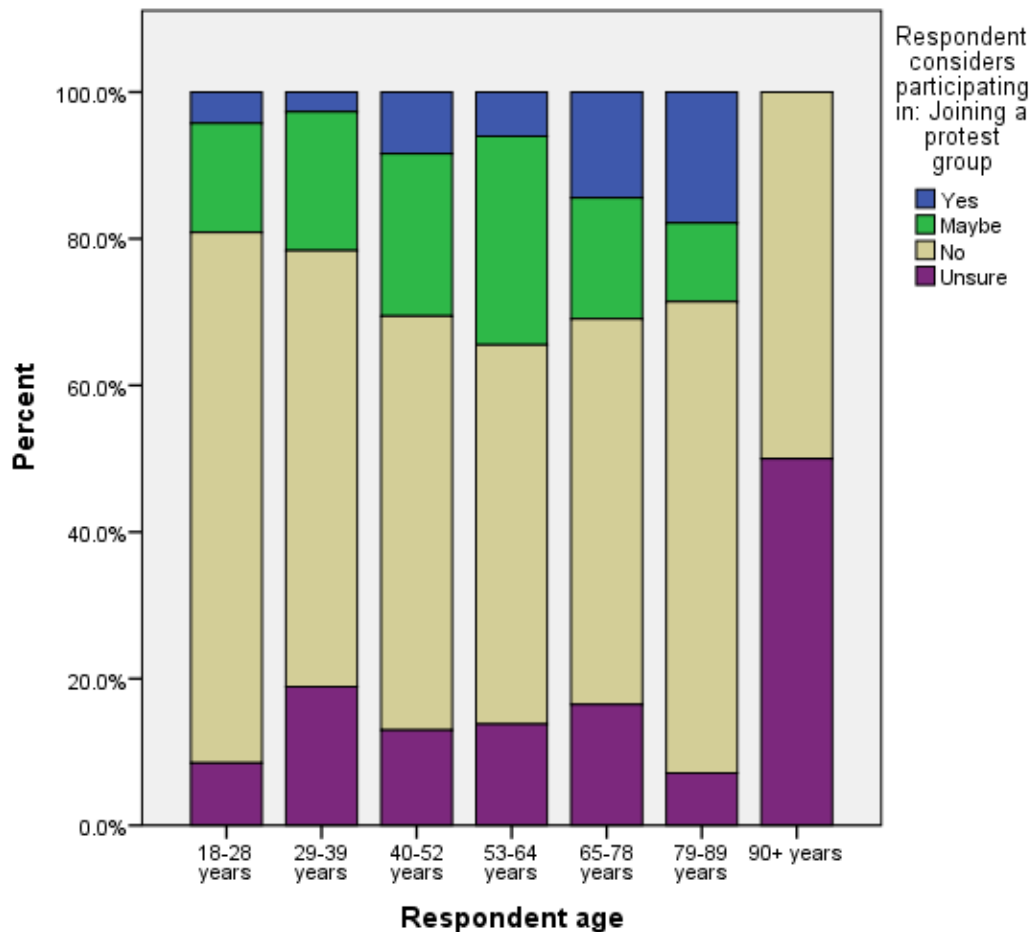


Figure 6.4 indicated consideration to join a protest group and respondent's age (n=490)

Accurate representation of younger age groups becomes particularly important when considered in relation to community weaknesses and threats. As discussed in Section 5.2.2, several threats to the long-term viability of the community were identified, including: out-migration of young people, limited career opportunities and employment, centralisation of authority, and depopulation of the outer islands. It is important that these threats are properly represented because MRE developments may have positive or negative impacts on these threats. If people that are potentially most affected by a proposal are less inclined to participate in engagement activities, this could result in adverse outcomes, exacerbate threats, and negatively affect the long-term viability of the islands and corresponding place values.

In addition to age-related factors, similar trends were established for level of education. Generally, respondents with higher educational achievements were more likely to consider participating in all engagement strategies. People with a degree were the most likely to signal a willingness to be active in information giving by developers, information gathering, community surveys, and providing written or oral contributions to official consultations (Figure 6.5)²⁴.

²⁴ Some of the above trends were also visible in the survey response profile. Section 5.2.1 identified that survey responses were somewhat skewed towards those with higher levels of education, which is expected because community surveys are information gathering strategies. The issue of self-selection of respondents was also discussed in Section 3.5.1.1. Although efforts were made to minimise these effects, the results show that this bias appeared to some extent. Additional information was sought through the interviews to achieve greater balance.

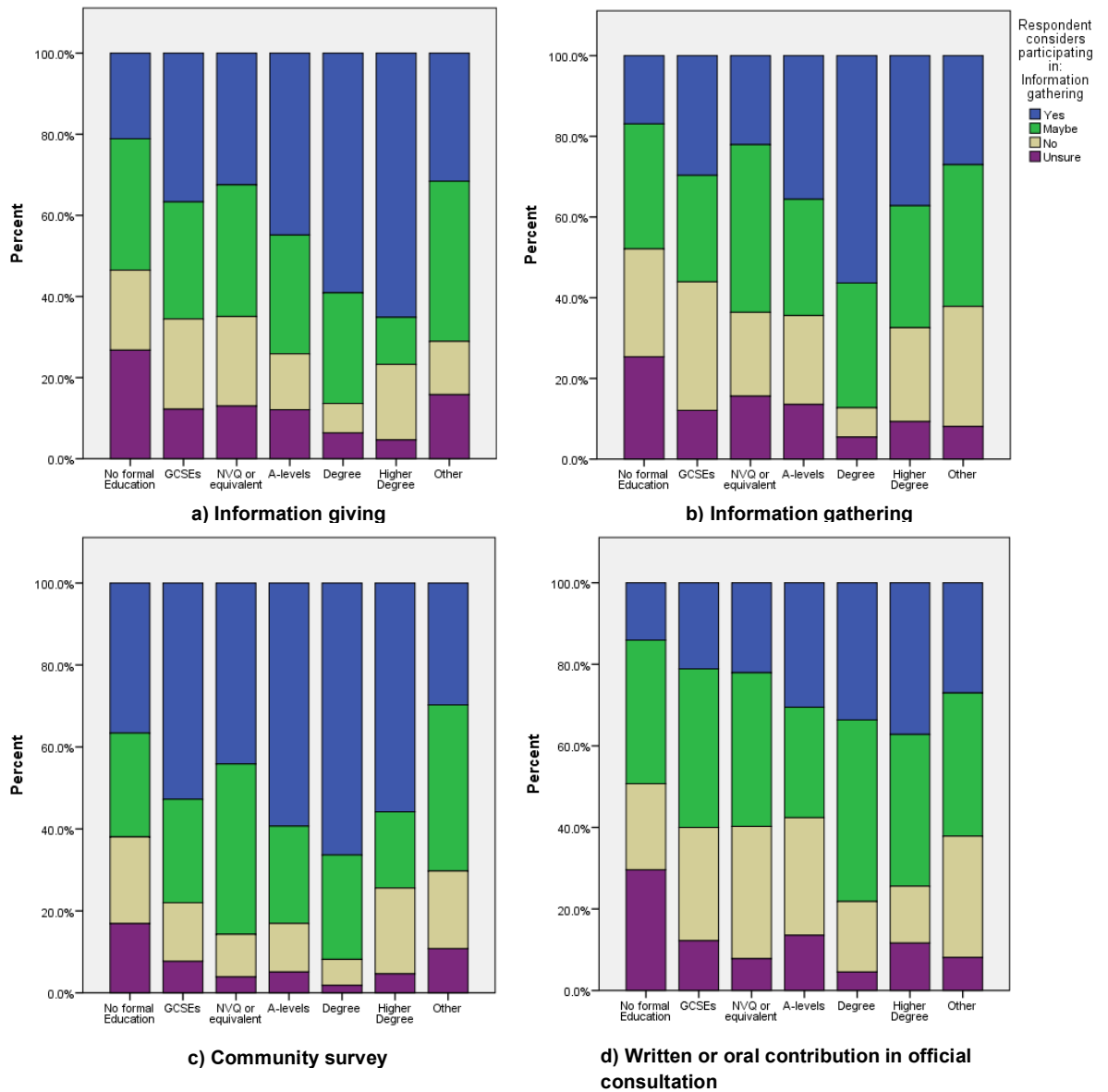


Figure 6.5 Indicated willingness to participate in information giving (a), information gathering (b), community surveys (c) and written or oral contribution in official consultation (d) and highest level of education (n=479)

It should, of course, be noted that the nature of the providing information to the public as an engagement strategy has limited potential to influence decision-making. However, representing community views in engagement could be affected if more highly educated respondents participate more often in the other engagement strategies, for example, current formal engagement procedures. Similar to the possible over-representation of older groups in communities discussed above, highly educated groups, whose preferences and priorities, for example related to employment, may disproportionately affect decisions. This issue has again been identified in the literature,

where Kaza (2006), for example, called for paying greater attention to who participates and who dominates engagement processes. However, as identified in Section 2.8, no clear best approach has been identified for engaging communities with RE.

Overall, if particular groups within communities are more inclined to voice opinions on developments, or are more likely to join protest groups against developments, whilst others refrain from doing so, this could result in distorted representation of existing attitudes in the study sites. Distorted representation could be even more so the case if the move towards localism and increased 'responsibility' of citizens is accompanied by a push for deeper and more demanding engagement activities, the strategies least preferred by the participants of this study. If this move is made without efforts to improve representativeness, this could increase the dominance of particular vocal minorities, because different groups within communities have different preferences for engagement based on demographic, social, and cultural factors, and are likely to engage differently with MRE. Accordingly, the next section explores the ways in which tailored procedures that are sensitive of local dynamics that may or may not be specific to small island communities, could contribute to overcoming the issues identified above.

6.5 Local dynamics and tailored procedures to fit local circumstances

Representing the attitudes and values of all groups within communities, implies the application of different engagement strategies depending on which section of the population is targeted. This was considered particularly to apply to small island communities:

Little local bits will make the difference. No one model, I'm afraid, fits all (SICM2).

This reflects findings from the literature that engagement must be practiced in ways that connect national policy-making with the places where projects will be developed (Devine-Wright, 2011b). Based on the data, two dominant local dynamics and suggestions for tailored procedures could be identified that were considered typical for the communities studied.

The first concerned the size of their communities and stakeholder base. Interviewees argued that, considering the small populations in their communities, over-consultation is a real danger because the same people are continuously asked for their input. Too much consultation in such contexts was thus thought to lead to apathy and skewed representation. This was acknowledged by an Isles of Scilly local authority representative:

We perhaps over-consult at times to the point where people became quite apathetic. That is obviously something we need to manage (IOSC1).

Interviewees also emphasised the importance of well-thought through consultations, in which the amount of information and input requested from each stakeholder group is carefully planned, because MRE is only one among many issues on which people are consulted. An interviewee experienced in conducting engagement argued that:

The fishermen only have so much time, and they might do the first survey. Survey number five, they might get sick of it, and returns would be lower each time. There are only 25 vessels anyway (SIR1).

Interviewees thus suggested that combining multiple consultations could address the problem of small stakeholder bases in small communities. This however, required communication with local actors and awareness among developers about other activities on the islands. To minimize consultation-fatigue among specific stakeholder groups, Marine Spatial Planning was seen by several interviewees as an opportunity to mitigate problems and gain important information about the areas used by particular

stakeholders without having to consult them at the initial stage of each development plan (See Section 6.3.1).

A second issue concerned the balance between accommodating the informality that characterised the study sites with maintaining sufficient rigour and formality to comply with regulatory requirements. Interviewees argued that on the islands, local governance was often characterised by informal interactions and that the authorities were generally easily accessible. This was most visible in the Isles of Scilly, where an interviewee noted that:

There are very few people on the islands that we don't know. We have an open door policy here (IOSR1).

Personal contact was an important aspect of this accessibility, and interviewees emphasised that:

Nothing really happens without personal contact. That is just the culture: people will not deal with nameless email accounts. That seems to just be the island way (SICS2).

This was thought to affect the balance between formal and less formal interaction during engagement. The example of local fisheries illustrates how this translated into engagement activities:

A pint and a pasty: that is the way we do things here. The best way for a meeting is a pub early in the evening, when people are still sober and they all turn up with the promise of a pint and a bite to eat (IOSMS1).

Although interviewees suggested that MRE engagement should adopt an informal approach whenever possible, it was also acknowledged that the appropriate format of the engagement is dependent on its goals:

Sometimes there is a place for informal discussion over a cup of tea, but you have to keep a record of what you discuss. Not every single word obviously, but the bigger picture (OIME4).

Procedures should thus be sensitive to the local dynamics of an area, including the amount of consultation and the types of interactions, to ensure compliance with regulatory requirements and also to ensure input into decisions.

6.5.1 Approaching communities

As part of a locally sensitive and tailored approach to engagement in the study sites, the ways in which communities could be approached was identified as a significant consideration where small (island) communities might differ from other communities. Interviewees discussed various local channels through which communities could be approached.

Community organisations were identified as the most promising local channel because of their prominent position in many study sites. Community councils, such as those in Orkney (See Section 4.3.2), were established to promote closer links between community and service providers, and aim to enhance local democracy by representing local views in planning decisions (Orkney Islands Council, 2014). Similarly, most island communities had local development organisations, partnerships or trust systems aimed at promoting socio-economic development. For example, one of the key aspects of the Shapinsay Development Trust is to maintain local ways of life (Orkney Communities, 2014) and the Unst Partnership in Shetland was established to promote job creation and to sustain and develop businesses (Development Trusts Association Scotland, 2010). In the Orkney and Shetland context, interviewees emphasised that their communities are characterised by strong community sectors:

The social and community sectors in the Highlands and Islands area have always been strong. It is a cultural thing here. The Development Trust Association Network has been built up in relation to community development (OIME3).

Although Orkney and Shetland had community organisations present in most local areas, the Isles of Scilly and other parts of the country do not necessarily have these. Other organisations, however, were thought to understand the community dynamics in a similar way, including parish councils, which were seen by some as having profound knowledge of the community. Local organisations were also seen by interviewees as possessing knowledge and expertise that could help developers to understand the physical and social contexts of their proposed locations. Dialogue with community organisations was thus considered as a way for developers to gain contextual knowledge in a relatively non-resource intensive way as part of consenting processes. This was considered particularly important because:

Each island has got its own identity: they are quite separate (IOCS1).

Island communities can, thus, not be assumed to be homogenous, but, instead, multiple identities and types of communities can coexist within island groups. More detailed assessment of the composition and socio-political dynamics of individual communities may provide deeper insights into community contexts and how these affect individual and collective attitudes towards MRE.

This accommodates concerns voiced previously by developers regarding compliance with regulations whilst maintaining economically viable projects (See Section 6.2.3). Furthermore, the dialogue could contribute to the uptake of contextual knowledge in decision-making, which was previously identified as often being afforded a secondary role in siting decisions in the RE industry (Barnett *et al.*, 2010; Haggett, 2011b).

The positioning of these organisations, between the local government and with strong mandates from local communities, was identified by many interviewees as crucial for facilitating community engagement with MRE. The competence of this type of organisation in the RE domain is demonstrated by the several community RE projects that have been established by these organisations in Orkney and Shetland (see for example the community wind and tidal projects described in Sections 4.3.3 and 4.4.3).

The Blue Mull Sound project even became the first community in the UK to produce tidal energy (BBC News, 2014), and an interviewee emphasised that:

You are dealing with an area in which proactive communities have set up whole plants and projects (SICS4).

In addition to being considered competent, such organisations were also generally seen as accountable and trustworthy by community interviewees. The example of the community RE developments in North Yell, discussed in Section 6.2.1, again illustrates how the organisation would not argue with a large part of the community over the development. When concerns were voiced, the judgment of the organisation was sufficiently trusted that this avoided opposition. It was generally agreed that organisations representing the community should:

Prove they have a mandate: it has to consult a membership and has to prove its membership is democratically representative of the area to then be allowed to engage (SICM4).

Most interviewees agreed that community organisations, if they are interested and have a community mandate, should have increased responsibility and have a real say in decision-making. A comment from a community representative illustrates this:

If there is a community group that has a mandate and is representing a community, you must consult them. It gives people a chance to get themselves together and get a proper seat around the table. This way they don't have to immediately be negative or start from such a low position because they are not even a statutory consultee (OIME3).

This is consistent with the findings of Wynne (1996) and Haggett (2011b), who called for engaging actors that have knowledge of the local context, local dynamics, and can therefore make important contribution to the decision-making process.

However, some caution was advised with this approach, and problems were identified if a group does not have a clear community mandate but nevertheless claims to represent the community. This is illustrated by the example of Sustainable Shetland,

the group that opposed the Viking onshore wind farm on the grounds of local sustainability (See Section 4.4.3). Several interviewees argued that:

They only act in their own interest, not in that of Shetland (SICM7).

This particular group declared that it represented local sustainability interests but did not limit its membership to local residents. This resulted in membership beyond Shetland (Sustainable Shetland, 2014), and in an effort to fund legal actions against the project through a crowd funding campaign, funds were pledged from across the UK. Community interviewees, in particular from Orkney and Shetland, considered it unfair that people from outside the islands could affect developments that might produce economic benefits and jobs for local communities. As a result, interviewees agreed that some organisations:

Do not necessarily have a right to derail project developments (SICS2).

Although no direct solution was identified to this problem, interviewees argued that they expected developers to take a common-sense approach, to establish which organisations might have a genuine mandate. Most organisations, however, were seen as generally representative of individual island communities, and understanding of local contexts. Further suggestions were made about contacting local councils for information, or simple internet searches to find out about local organisations.

Despite this caution, interviewees agreed that if there are organisations locally, they should be approached because they are generally embedded in the community. Based on their understanding of local actors, close connections to the community, and understanding of local dynamics, most community interviewees felt that they could provide important information for developers that would benefit engagement processes and could function as local champions and gatekeepers to the community. Personal contact, for instance through establishing contact with communities, was seen to engender trust in outsiders. The importance of increased understanding of the local interactions in the community has been identified in the literature as a possible

contributor to improved community consultation and decision-making processes (Gross, 2007). Based on these observations, community organisations have the potential to help MRE developers understand these local interactions and act accordingly. Importantly, this could also provide developers with insights into the local contexts in which developments will be placed, for example, the community assets, threats, and priorities for continuity and change that were identified in Chapter 5 as important factors in shaping attitudes.

Interviewees also agreed that, whenever possible, such organisations should be approached early during engagements to establish contacts with relevant stakeholders. Communication between these organisations and the MRE sector could improve joined-up consultation and dialogue with communities, whilst helping to avoid consultation-fatigue (Section 6.5). Furthermore, this could help the MRE sector to establish access to the community in a locally sensitive way because the organisations generally keep communities up to date through meetings, notice boards, or other means. Once access was gained, interviewees identified several local methods they felt would tailor engagement to their local circumstances.

6.5.2 Local methods

The key observation made about tailoring procedures to local circumstances emerging from the interviews was that the emphasis was not on finding new mechanisms for engagement, but on tailoring existing practices to circumstances of different study sites. This is somewhat in contrast to elements in the literature that stress more intensive and innovative engagement techniques, such as Giddens's (1998) 'Third Way' approaches that are based on increased responsibility and mobilisation of citizens which considers them to be active participants in decision-making processes, and the UK's idea of the

Big Society, which encourages people to take a more active role in the community (Cabinet Office, 2010).

As shown in the rest of the chapter, some understanding of the local context was considered crucial for tailoring procedures to local circumstances. Because developers' resources are not unlimited, interviewees argued that a balance must be found between developers' need to comply with regulatory requirements and tailoring engagement to local circumstances, for example by increasing the flexibility of processes, through timing, location and execution. Several key issues were identified with regard to this.

The first concerned the timing of engagement. Many interviewees indicated that some times of the year or parts of the day are unsuited to engagement in their communities. For example, the dominance of salmon farming for many Shetland communities meant that certain times in the salmon growing cycle were inconvenient for engagement. Similarly, in the Isles of Scilly, summer and early autumn coincided with summer holidays and bird watching tourism. Other periods to avoid, although of lesser importance, were lambing season and peat cutting season in Orkney and Shetland. Evaluation of communities in terms of locally significant sectors and peak seasons was thus considered a way to address consultation participation rates. Interviewees argued that the appropriate timing of consultations so that people could attend, could thus contribute to avoiding the overrepresentation of certain groups within the community (Section 6.4).

In addition, interviewees suggested a variety of methods and processes for local engagement. Across the sites, similar methods were identified as typical for small communities. These are shown in Table 6.4.

Table 6.4 Suggested methods and processes for engaging the community

Engagement technique	Explanation and reason
Periods of exhibition in public spaces	Exhibitions in public spaces provide an opportunity for people to engage with MRE at a time a convenient time, if set up for multiple days. Exhibitions could be combined with presentations and time for questions and answer, during which the developer is present.
Social media	Bringing together people with a similar interest in the topic and provide information, and using these technologies in an innovative way to remove barriers for people understanding issues. Communicating difficult concepts such as new technologies, computer simulations combined with a simple talk could communicate developments and accommodate different learning styles. Through videos and simulations people could visualise and therefore better evaluate possible effects.
Video conferencing	Providing opportunities in geographically dispersed communities to participate in community consultations where it is logistically difficult to attend.
Phone calls/chats to local stakeholders	Gaining opinions of the difficult-to reach stakeholder groups that often do not attend official consultations. Fishers, indicated that a phone call could be sufficient to gather their opinions, or a representative could come to the boat and have a chat there.
Pre-survey to inform public meeting	Community surveys distributed via community organisations could be combined with project information distributed before public meetings. This could prepare both community and developer for the official meeting. This was identified as particularly useful if added on to existing community surveys.

The main advantage of most of above approaches was that people can engage with MRE in their own time. Additionally, they provide developers with a way to share information with local communities to help them better evaluate possible local effects. With the help of local champions, communities could be engaged via those organisation’s websites, local publications, and community meetings. For example, as part of general community meetings, people could be updated on projects, whilst also using surveys to gauge opinions.

Interviewees argued for personal interaction with local communities, to engage them at multiple levels, either via people on the ground, or the use of newspapers, radio and notice boards to encourage attendance at events. To ensure awareness of engagement activities locally, interviewees suggested that the MRE sector, in liaison with those organisations, should apply similar outreach methods. In Orkney, for

example, interviewees argued that if a MRE developer held an open meeting, this should be widely advertised on the local radio. Suggested local outreach approaches are shown in Table 6.5.

Table 6.5 Suggested local outreach approaches considered effective in the island communities

Suggested outreach approach	Example and explanation
Local noticeboards	Notice boards are widely used in island communities for providing information: because there are few public spaces and shops, whenever people visit them, they look at the notice boards. Generally, anybody that wants or needs anything puts it on paper, makes a poster, and puts it on the notice board.
Local radio and newspapers	Local newspapers and radio were key approaches to announce plans to the community and promote engagement by creating awareness because everybody reads the paper and everybody listens to the radio in their community.
Social media	Social media could capture a younger audience, and was increasingly used by local organisations as an outreach method to complement notice boards and email lists.

This reflects the importance of local media and public places in communicating engagement, as prominent spaces of interaction in the study sites.

Importantly, interviewees felt that the suggested methods were not intended to replace existing engagement strategies, but merely to improve ways of communication, as one interviewee indicated:

Let's be clear about one thing: this is in addition to all the box standard stuff. Don't knock anything out just yet, but keep adding to it, because all this technology offers us more ways of doing that (OICM8).

Several benefits of these approaches could be identified for communities and developers; concerns could be better communicated, communities could be better provided with local information, and developers could mitigate problems and benefit from local knowledge. In addition, it was thought to decrease the burden on developers, as information about plans and technologies could be more easily communicated.

Importantly, the need for developers to engage personally in the community remained,

and from the results discussed above, dialogue and engagement between the MRE sector and the community is context dependent.

6.6 Conclusions

This chapter has explored the dynamics of community engagement and incorporating attitudes into MRE decision-making. Key considerations for engaging small island communities with MRE were identified based on existing experiences with MRE and as a result of engagement and interaction processes in other areas. As a result of the relative immaturity of the MRE industry, regulators, technology developers and communities are at various, but nevertheless still early, stages of learning about MRE deployment and how to develop effective and appropriate community engagement practices. The analysis has consequently shown that incompatible regulations for public participation and energy have often resulted in tensions between regulatory, development and community levels regarding community input into decisions. Based on the results, a need for reforms to engagement processes at all stages of policy and consenting was identified to promote the deployment of locally acceptable developments.

In discussing how to improve the incorporation of stakeholder views in decision-making, two general positions were identified. The first suggests improvements in engagement processes to promote the application of local knowledge and expertise, give people a genuine voice, increase accountability of engagers, encourage collaboration and the generation of local benefits, and to create a sense of local ownership. The second position advocated increased local authority and a move towards energy independence as ways to ensure local influence on MRE decisions for the benefit of the community, and to overcome threats to communities such as high energy prices and the centralisation of authority. However, it was identified that despite an interest in

achieving greater decision-making autonomy, small communities often lack the confidence, skills or resources to achieve this.

Opinions on different strategies to enhance community involvement in MRE decision-making was explored through survey questions on willingness to participate in a range of engagement activities. Although generally positive attitudes were found towards most engagement strategies, the dominant trend was that less intensive forms of engagement were received more positively than more intensive forms. Local historical, social, cultural and demographic factors were identified as possible explanations for this. The further danger identified was that of overrepresentation by groups that are more inclined to engage, based on age, education, or socio-cultural background. It was argued that this could result in distorted views of existing attitudes and the possible effects of MRE developments on communities, because these groups may have different priorities or preferences. Localism approaches could exacerbate these issues, because moves to promote greater citizen involvement are often accompanied by a push for deeper and more demanding engagement activities, the strategies that were least preferred by many respondents. If this move is made without appropriate processes for ensuring balanced representation within communities, this could increase the dominance of certain vocal minorities and potential damage to long-term community well-being if they act in their own interests rather than reflecting wider community views.

Tailored procedures and consideration of local dynamics were suggested to help overcome these issues, whilst also taking into account the limited resources that developers have available for community engagement. A key observation was that the priority for many respondents was not to find new mechanisms for engagement, but instead tailor existing practices to local circumstances, including: (i) the size of the community and stakeholder base to avoid consultation fatigue; (ii) the timing of consultations to enable a variety of people to get involved in consultations; and (iii) finding an appropriate balance between formal and informal interactions through the

development of flexible outreach methods. Procedures that are sensitive to the local dynamics of areas were seen to contribute both to compliance with regulatory requirements and to the consideration of local views in decision-making.

Having discussed local attitudes towards MRE in the case study sites and the factors underlying these attitudes in Chapter 5, and having explored the dynamics of community engagement in MRE decision-making and the local issues to consider when engaging in small island communities in this chapter, the next chapter brings the findings from both chapters together and discusses these in relation to the literature. In so doing, Chapter 7 returns to address the research questions set out in Chapter 1 and highlights the new insights into public involvement in MRE gained from this research.

Chapter Seven: Towards understanding MRE attitudes and processes of place attachment

7.1 Introduction

The purpose of this chapter is to synthesise and analyse the findings from Chapter 5 and 6 in order to produce new theoretical perspectives on the processes through which individuals in small island communities negotiate their values and attitudes towards MRE with their contextually rooted place attachments during decision-making on MRE siting. It also explores avenues for ensuring that local values and attitudes are incorporated more effectively into consultation procedures associated with MRE developments. In doing so, the chapter addresses the following research objectives set out at the beginning of this thesis: (i) examining attitudes towards MRE in small island communities; (ii) the factors that shaped these attitudes; (iii) how communities viewed MRE with regard to their place attachments; (iv) the incorporation of community attitudes into MRE decision-making; and (v) contributions to the practice of policy and planning for MRE in the UK.

Based on the study results, this chapter provides insight not only into attitudes towards MRE and the values ascribed to the local areas, but also how people's place attachments become established and how place attachment can deepen understandings of the reasons for the acceptance, or otherwise, of changes. First steps are made towards eliciting how place attachment processes operate as evaluations of distinctive place characteristics alongside possible threats and assets and how these can be neutralised or enhanced in the light of maintaining the long-term continuity of local areas and their place meanings. These evaluations allows for changing attachments over time and maintaining components that are of value and altering those that detract from what is valued most. The contributions to knowledge from this study include: (i) new insights into the RE siting literature on how the effects of MRE

developments and its potential effects are perceived in small island communities, the local values affected, and why some projects may be supported or opposed; (ii) insights into the processes that shape place attachment; and (iii) how inclusion of community attitudes can contribute to MRE decision-making processes.

This chapter establishes that attitudes towards MRE were generally positive and that several factors were found to influence attitudes, including overarching local references and influences such as socio-historical context and relational influences, and objective assessments of whether areas were considered suitable based on available resources and impacts. Further factors included the characteristics of the local context, which enabled identification of community assets and threats based on valued community characteristics. These resulted in strategies for long-term community viability and the identification of priorities for continuity and change. Together, these factors form the components of a heuristic model for visualising the processes involved when people evaluate MRE in their local area that demonstrates the importance of the local context for understanding attitudes towards MRE. The model is then further applied to explain processes of place attachment, based on people, place, and process components. A key finding from this is that people form attachments to places based on evaluative processes in which several functions of place attachment manifest, such as survival advantages, goal pursuit and self-regulation, and in which feelings and preferences provoke opposition or support of MRE developments.

The final part of the chapter proposes a place-based focus rather than a technology-based focus within consultation processes, wherein community factors become vital to a site. In addition, the perceived legitimacy of engagement processes is stressed as critical in how MRE developments are received locally. The place-based focus further facilitates the use of local knowledge to understand local contexts and enhance stakeholder engagement. Factors to consider when engaging small island communities with MRE include: representation and the influence of external and internal factors; and appropriate techniques for engagement, including local contextual factors, capacity and

preferences. A key observation emerging from the analysis is that balancing regulatory requirements and community concerns is not necessarily about finding new engagement mechanisms, but, instead, tailoring current practices to local circumstances.

The remainder of the chapter is structured as follows: Section 7.2 presents the attitudes towards MRE found in this study, and Section 7.3 reviews the main factors that shaped these attitudes, stressing local values and the dynamics of the local contexts through which MRE is viewed. In Section 7.4, the Attitudes Model is introduced to represent the evaluation processes that take place when developing attitudes to MRE. The model is then discussed in relation to the place attachment literature, where particular emphasis is placed on the functioning of place attachment processes and how its components interrelate. Section 7.5 then discusses engagement with MRE to include community attitudes in decision-making. Section 7.6 concludes and draws out the study's main findings.

7.2 Attitudes towards MRE

Although the attitudes towards RE reported in the study sites were slightly more positive (82.1%) than those found nationally (79%)²⁵, these differences were minimal considering fluctuations over time (DECC, 2014a). Levels of opposition were also similar, with 4.7% opposition in the study sites versus 4% nationally (DECC, 2012). These minimal differences contrast with attitudes towards local MRE deployment, which found 80% support for deployment of wave and 81.1% for tidal technologies, higher than the UK level of 73% for wave and tidal combined (DECC, 2014a). Similarly, offshore wind was supported by 72% of respondents at the UK level, compared to 58.9% in the study sites. Thus, depending on the type of technology, noteworthy differences

²⁵ This attitude tracker is conducted on a regular basis and percentages of support have fluctuated from 79% support in March 2012 to 82% in March 2013.

existed between MRE attitudes at a national level and their development locally, with higher levels of support for wave and tidal technologies, and lower support for offshore wind. These findings contrast the few studies that have investigated attitudes towards national and local developments. Bailey *et al.* (2011), for example, identified 88.5% support for wave, 63.9% for tidal, and 78.8% for offshore wind in general, but lower support for the development of all technologies locally than elsewhere. Other studies, such as Devine-Wright (2011c) for tidal energy, Firestone *et al.* (2009) and Ladenburg (2010) for offshore wind, reported findings that are largely comparable to overall UK support.

Naturally, people's general worldviews influence their attitudes towards MRE. There are people, for example, who support MRE unconditionally based on its environmental benefits, but others will never support RE. A worldview interpretation was advocated amongst others by Meader *et al.* (2006), who argued that attitudes must be understood in the context of more general worldviews. Although worldviews are without doubt important for understanding overall attitudes towards RE, they do not explain why support for MRE developments locally was higher in the study sites than the national average, or the differences found between technologies. The main factors that shaped overall attitudes towards RE included: peoples' concern for the natural environment, and more place transcending issues such as climate change, energy security, overall sustainability and depletion of fossil fuels, and rising energy prices, all factors identified in the literature as factors affecting general attitudes towards RE (Bailey *et al.*, 2011; Demski, 2011; Devine-Wright, 2007; Whitmarsh *et al.*, 2011), these provide limited information people's attitudes to host a development in their local area.

Although a general worldview²⁶ approach is useful for explaining RE attitudes in general (Karlstrøm & Ryghaug, 2014; Spence *et al.*, 2010; West *et al.*, 2010), this was not seen as the most suitable way for understanding local attitudes because of the

²⁶ General worldviews here encompasses environmental, social, economic, and broader place-related ways of seeing things (See Meader *et al.* 2006)

comparable levels of support for RE in general between the study sites and national levels. This is reinforced by other studies (Bell *et al.*, 2005; Cass & Walker, 2009; Van der Horst, 2007). Additionally, inconsistencies between the global benefits of RE and their local effects, and concerns about local environmental damage were found to prevail over general environmental benefits (Bell *et al.*, 2005; Glaeser, 2004; Haggett, 2008), which made a worldview approach lack the depth needed to understand local attitudes.

7.3 What shaped local attitudes?

This study found two main contributing factors shaping attitudes towards MRE in the local context: (i) local references and influences through which people observe issues, and (ii) local values, against which MRE is evaluated. Although both are contextual factors, the primary difference between them is that whereas local values are based on evaluations of what is important to people at individual or community level and how people relate to a phenomenon in their local context, local references and influences are further removed from these 'everyday' experiences, and reflect the overarching setting in which MRE is evaluated. Furthermore, the local references extended beyond interactions with places towards pre-existing influences or influences that exist at a more abstract level, which do not continuously interact with local values but are nonetheless always there. They therefore more closely resemble intangible deeper local orientations rather than concrete characteristics that people can evaluate. Nevertheless, the intangible aspects of local areas provide a broad set of references that influences how places, and MRE developments in those places, are perceived. Importantly, the two are not mutually exclusive: although the historical and experiential references made with regard to places cannot be altered directly, they influenced local values and everyday interactions, and therefore shape future references. The two are

thus interconnected and are often deployed simultaneously. Local references and influences together with local values provide the basis for introducing a heuristic model for understanding local attitudes towards MRE. The remainder of this section presents and discusses the two without weighing the level of influence exerted by each factor.

7.3.1 Local references and influences

The study results suggest that people perceived MRE through several local references. These intangible references and influences, although both contributing to shaping local attitudes, did not involve direct evaluation of MRE against a set of qualities. The main local influences included: (i) pragmatic influences, which represent relatively objective assessment of the local resource; (ii) socio-historical influences that shaped local culture, traditions, socio-economics, and the existing skills and capacity in communities; and (iii) relational influences that enabled comparison between MRE and other relevant phenomena. Although these can be closely related to assets and threats, and can be interdependent, they characterise the underlying influences that affect views of MRE.

Pragmatic influences largely refer to evaluations of the local resource through the eyes of locals, including the perceived quantity of RE resources in the area and the location's suitability for MRE deployment. The practical assessment of the prospects of MRE in a particular location suggests that this element of the attitude-shaping process is the most evidence based rather than being based on cultural preconceptions and/or practical experiences. For example, in all study sites survey respondents identified the abundance of RE resources as a reason for support (see Section 5.3). The local appraisal was verified by the BERR (2008) Atlas for MRE, which identified the study sites as areas rich in MRE resources (Section 3.4.1). Respondents thus made a similar practical evaluation regarding the appropriateness of their area for MRE. Pragmatic reference points bear similarities to what Devine-Wright (2011b) identified as the 'siting perspective', in which potential locations for RE developments are evaluated based on

the characteristics of the sites, and more subjective features such as symbolic or emotional associations are downplayed.

Socio-historical influences and references place MRE development in the wider local socio-historical settings that contribute to each area's social, cultural, historical, and economic context. The above exemplifies how human interpretations of locations are constructed through experiences, turning spaces into places (Ryden, 1993; Tuan, 1974). Respondents often employed these references to establish the uniqueness of their socio-historical backgrounds and psyches compared to the UK mainland. The importance of such historic-cultural lenses is supported by various examples. In Chapter 5 (Section 5.4.2) socio-historical references were often made to explain people's opinions towards MRE, in particular illustrating flexibility and an open attitude towards new influences as a characteristic feature of their communities where these enhanced the long-term viability of the community. Socio-historical influences were most prominent in Orkney and Shetland, where interviewees referred to their islands' Viking heritage and sea-faring nature that they felt still had a strong presence in the community, as the following quotation illustrates:

Because it is a similar type of culture there, a sea-faring culture. So, there have always been periods, where Shetland has taken on board and embraced the changes, immigration and so on. One of Shetland's greatest exports has always been young people. And that is an unfortunate thing, because there simply aren't the jobs here to sustain them. I think it is in the Shetland psyche to be open to change (SICM7).

Thus, Shetland found ways to adapt to changes throughout history, which it claims to maintain to this day.

Socio-historical influences were also found to shape available local (human) resources. For example, the present local skill set was seen to emanate from the islands' seafaring histories and rich marine resources. This also suggests an important link between socio-historical influences and physical elements of the local environment. Throughout history, local resources have influenced historical development, which became manifested in local cultures, skills and expertise in the community (See

Section 5.4.2). Orkney's historical development was equally used to explain Orkney's success in MRE based on the establishment of a service industry:

If you wanted to go through the Pentland Firth, you had to wait for the right wind, and ships would come in and would come ashore to get fresh water, food or meat or whatever. So you get a service industry going: off course you were open to people in, because they were bringing new things. I think that is still to this day. Now we have got renewables people coming in with things and we say 'we will help you' and we will get something out of it (OIRME1).

When contrasted to the Western Isles, interviewees claimed that the Hebrides lacked this cultural openness. Furthermore, in both sites, the socio-historical backgrounds were suggested as an explanatory factor for RE projects driven by local communities (Section 6.5.1). Through historical references, current local cultures were rationalised and openness to change was demonstrated in Orkney and Shetland, which contributed to explaining support for MRE based on how it was seen to fit within the local context.

The results also demonstrated that MRE was not solely evaluated based on its own qualities and socio-historical fit, but also on how it compared to related issues. The literature review identified (Section 2.2.2) that both values and experiences influence attitudes and that attitudes can change to fit circumstances (Eagly & Chaiken, 1993). Based on this connection, relational influences were identified as a third local reference point shaping local attitudes. Support for relational influences and reference point as factor informing MRE attitudes was also found for a variety of issues. Two key relational influences that influenced attitudes towards MRE were: (i) locally significant experiences, wherein people related MRE to the wider development of the community; and (ii) technology experiences, which consisted of comparisons between various RE technologies and people's experiences to date.

MRE was also often related to locally significant experiences for the islands' development, which enabled people to relate to the topic. This unique combination of local contextual factors together with locally significant experiences, in turn, predisposed some communities in favour and some against MRE. In Shetland, for example, aquaculture developed as a response to a declining fishing industry, filling

employment and financial gaps (Section 4.4.2 and 5.4.3). Then, when oil was discovered, Shetland experienced decades of wealth. Similarly in Orkney, MRE was often compared to the development of the oil industry and its current contribution to local employment was emphasised:

Orkney's economy has taken advantage over the years of whatever was going on at the time. We used to be an anchorage for ships pulling in. during the war ships also came and then the oil industry. Orkney just takes advantage of what is going on at the time and then goes onto the next thing and that one dies a death and it moves on. It has to do the same thing with the renewables: grab it while it is there, get what you can out of it, and wait for the next one to come along (OIMS4).

Hosting MRE developments was frequently related to the histories of these industries and their local benefits, and was seen as providing comparable opportunities. Often, relational influences were employed alongside socio-historical references to describe local environments in which new industries are embraced to maintain community continuity.

In the Isles of Scilly, relational influences created a community context that was more resistant to change. Relational influences did not feature in the same way and comparisons with other industries and experiences was limited with the exception of a leading assumption about the dominance of the tourism industry and evaluation of MRE based on its potential to co-exist with this sector. This resulted in different relational reference points and influences compared to the other sites where MRE was considered as an industrial and employment opportunity. The second relational reference point was the evaluation of MRE technologies based on experiences with other, more familiar, RE technologies. All communities had some experience with MRE and RE more broadly. Where problems occurred in the past, relational influences seemed to affect MRE attitudes negatively, whereas positive experiences positively affected how MRE was viewed.

How interactions influenced attitudes was visible in three different ways. First, interactions with any RE technologies that involved community benefits in the past (or

were seen to bring benefits) appeared to foster positive attitudes. For example, the positive early interaction with wave energy and expected community benefits in the Scillies was accompanied by positive attitudes towards both wave and tidal technologies. Similarly in Orkney and Shetland, the potential benefits from MRE were often compared to the community benefits experienced from onshore wind, for example the community turbines in Orkney that provide income to the local community (Section 4.3.3). Based on these experiences, MRE was often expected to have similar potential, which seemed to affect attitudes positively.

Second, based on the undesirable impacts of other RE technologies, MRE became favoured by default. For example, the perceived impacts of MRE technologies were often compared to the (known) undesirable impacts of other technologies, primarily visual and environmental impacts. MRE technologies were often seen as relatively benign compared with these more familiar technologies, despite the fact that little is known about the impacts of MRE developments. Nevertheless, the visual impacts of onshore wind turbines, which seem to have fuelled opposition to onshore RE technologies, were often employed as a reference point against which MRE was evaluated. This is consistent with findings from the literature, which emphasised that a complex range of factors, including the ways in which technologies are understood, influence attitudes to RE siting (McLachlan, 2009). Based on the perceived absence of the above impacts, MRE became almost automatically favoured over onshore technologies.

Although critiqued in the literature (Haggett, 2011a), at first sight, these findings would suggest an 'out of sight out of mind' perspective, wherein offshore technologies were preferred over onshore technologies (Ladenburg, 2010; Soderholm *et al.*, 2007). More likely in this study, the preference for offshore over onshore technologies appeared to a degree to be based on 'naïve optimism', where it was assumed that MRE will be sufficiently hidden away to cause few noticeable impacts. MRE technologies, however, may eventually have different characteristics than people expect. Some wave devices,

for example, may take up large areas and exclude fishing, whilst others might be more (or less) visible than expected. Although investigated in this study and identified in Section 5.4, these possible impacts were not expected to be significant, and all MRE technologies were perceived as having limited aesthetic impacts compared to onshore wind, enhancing support.

Third, local experiences with MRE provided reference points through which MRE was perceived. In Orkney, the only site with extensive MRE experience, the slow pace of development led people to be more cautious. People recalled, having seen devices fail, and started to question MRE’s potential contribution to the community. The lack of experience in the Isles of Scilly appeared to increase support based on the unfamiliarity with the technology (Section 5.4). The local influences and reference points discussed in this section, together with worldviews as more general reference points, form the first part of the model for understanding local attitudes towards MRE and are visualised in Figure 7.1.



Figure 7.1 Local influences and reference points employed to evaluate MRE

The next section discusses the local values that influenced attitudes in the study sites.

7.3.2 Local values and maintaining the long-term viability of communities

To provide insight into the local values that interact when people form attitudes towards MRE, a range of distinctive features of the community were identified (Section 5.2.2).

The majority of local attributes identified by respondents portrayed the strengths of their communities, including natural beauty, scenery, landscape, wildlife, friendliness, safety,

community spirit, tranquillity and peacefulness. In addition to inventories of characteristics, the most valued local assets in each community were also identified for each study area. A pattern emerged in which dominant place attributes were largely identical to the local characteristics that people most wanted to protect. As a result, these local features are classified as community assets. Although prioritised differently in different study sites, the most valued assets were community spirit and the natural environment.

Although respondents predominantly identified positive local characteristics, several negative characteristics were also identified, including: the narrow economic base that characterises islands in general (Briguglio, 1995), limited career and educational opportunities, diseconomies of scale (McClanahan, 2004), tight labour markets (Orkney Strategic Economic Forum, 2012), skill shortages (Council of the Isles of Scilly, 2007b), high cost of living, population instability, young people leaving the islands, and weak service provision (HallAitken, 2009). These issues are all typical for peripheral communities. Particularly in Shetland and Orkney, respondents also saw current income as ‘unsustainable’ in the sense that oil revenues to the islands may run out. The Isles of Scilly, however, felt that tourism was a sustainable income source as long as environmental quality remained high. Table 7.1 shows the main community assets and threats identified across the study sites.

Table 7.1 The community assets and threats identified across the case study sites

Community assets	Community threats
Area’s natural beauty	Population stability (including outmigration of outer islands and young people leaving the islands)
Scenery	Narrow economic base
Landscape	Diseconomies of scale
Wildlife	Service provision, including transport links
Friendliness	Tight labour market and skill shortages
Safety	Limited career and educational opportunities,
Community spirit	High cost of living (including travel costs)
Tranquillity and peacefulness	

Based on the assets and threats identified above, strategies could be identified through which people sought to maintain the long-term viability of their communities. These strategies were again highly context dependent but nevertheless enabled the identification of change and continuity priorities.

How the strategies for long-term viability and the community assets and threats operate in practice, in relation to the formation of attitudes, is illustrated in the following two examples. The scenic natural environment, the main asset identified in the Scillies, was highly valued for residential and quality of life reasons, but also economic reasons. Because the Isles' local economy is primarily driven by nature and landscape tourism, anything producing detrimental environmental effects could threaten the Isles' long-term viability. Based on this situation, a priority for the Isles of Scilly is maintaining environmental quality and anything that might threaten this was viewed sceptically. In contrast, Shetland's most valued asset was its community spirit. The main threats to the islands included depopulation of the area, in part the result of young people leaving because of limited career and educational opportunities. Increased employment opportunities were deemed necessary to halt the erosion of community spirit. Thus, changes that enhanced employment and protected community cohesion were embraced.

Overall, the study sites were characterised by strong senses of identity from their unique, highly valued landscapes. Based on this factor, lower levels of support would be expected because MRE could impact on this important local value, or perhaps signs of Devine-Wright's (2009b) 'place protective action' could be observed. Instead, in contrast with place protective action that results in opposing a development, the findings of this study suggest that place protection can also result in supporting new developments, depending on which aspects of place people most wanted to protect. For example, if people value community spirit deeply, and this is an important factor determining their place attachment, they may support and encourage the changes RE developments can bring based on their potential to protect the object of their

attachment through job creation, halting depopulation, and other factors that can erode community spirit. This highlights the importance of understanding the broader local context and understanding the meanings and connections that those who live in those places have, and supports the existing research in this field (Devine-Wright, 2011a; Devine-Wright, 2011b; Haggett, 2011a; Van der Horst, 2007).

As noted above, different combinations of assets and threats in each local context resulted in different strategies for maintaining long-term community viability, depending on whether continuity or change was believed to protect valued local assets. Attitudes were, therefore, not solely based on the characteristics of MRE technologies itself, but in relation to a host of local factors and their local evaluation. Furthermore, MRE is evaluated based on its perceived asset enhancing and threat neutralising qualities, together with its compatibility with local values and priorities for continuity and change. This contributes to the explanation of why different attitudes towards MRE emerge in different communities despite relatively uniform support for RE in general. Ultimately, how MRE is evaluated depends on its compatibility with strategies for the long-term viability of the community, together with the local influences and reference points identified in the previous section. MRE is thus either perceived as a threat or as an opportunity, depending on local values. Logically, if MRE is congruent with local values, it is seen as an opportunity. If it clashes, it is more likely to be seen as a treat. The relationships between characteristics of the local context, strategies for long-term community viability and the perceived effects of MRE are shown in Figure 7.2.

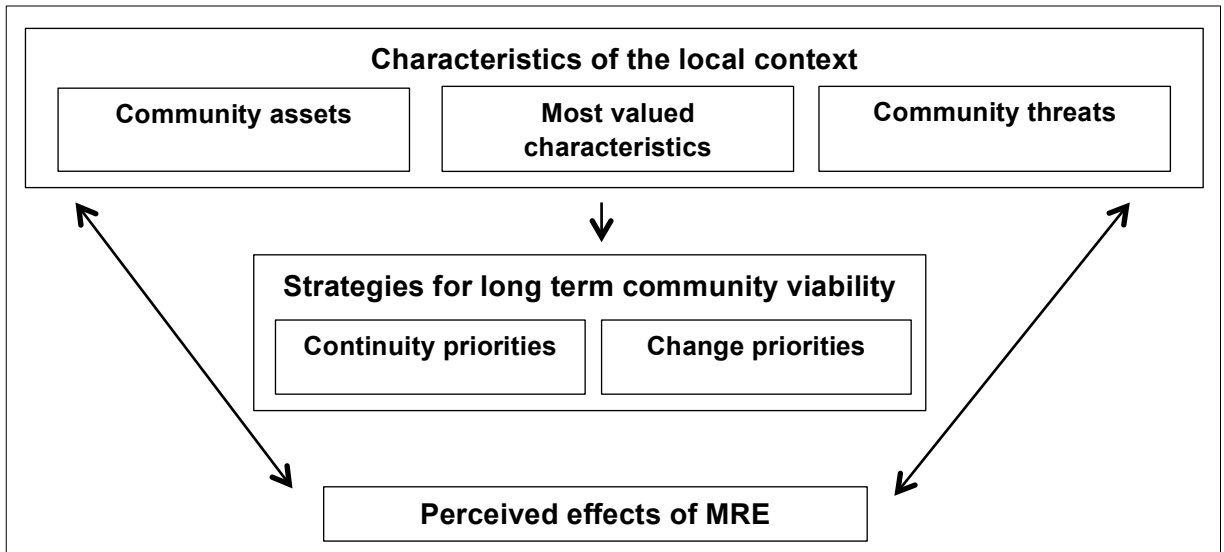


Figure 7.2 Visualisation of how the characteristics of the local context, strategies for long-term community viability and perceived effects of MRE influence attitudes

Socio-economic effects were found to be an explanatory factor for MRE attitudes, because of its ability to tackle threats and weaknesses across the sites. MRE was seen to add to continuity priorities by creating jobs and business opportunities, and positive attitudes were, in part, based on assumed community benefits through jobs and business opportunities, which were expected to help overcome threats to long-term community viability. This was identified, in particular, in Shetland and Orkney, where long-term job creation and skills development was expected to address outmigration, previously identified as a major threat to the Isles. The benefits were also perceived as a means to overcome the high cost of living and the financial gap of expired oil revenues in Shetland (See Section 4.3.2 and 4.4.2). The positive perceived socio-economic effects were further enhanced by the fact that currently, few incompatibilities between the different sectors were expected. A key issue identified was that MRE should not affect existing local industries upon which the area is dependent, and MRE was thus not supported without conditions to safeguard important industries that currently drive the Isles economy. Although it is not unlikely that the expected impacts might change once more details about locations and exclusion zones become available,

thus far interactions with other industries were perceived as largely positive and producing local benefits, and collaboration between various sectors, which contribute to maintaining long-term community viability.

These findings partly echo Van Der Horst's findings (2007), who described that residents of 'stigmatised' places are more likely to welcome facilities that are relatively green whilst people that derive a positive sense of identity from particular landscapes are likely to resist such potential developments, especially if they also live there.

Although the study sites should by no means be called stigmatised, they undoubtedly face struggles to maintain long-term community viability. Based on Van der Horst's (2007) claims, one would expect a welcoming attitude towards MRE in all study sites, which was confirmed by this study.

In addition, the natural environment and local scenery were highly valued in all study sites, suggesting that people might resist potential developments following Van der Horst claims. Yet, respondents admitted that they were unsure about the potential impacts of MRE on the natural environment, such as wildlife and seascape impacts. The survey results thus suggest that there is a potential that people made up their minds even though they admitted that they were unsure about its possible effects on local assets. They stressed the importance of research and monitoring of environmental impacts, and more detailed information about the proposed technology and its environmental impacts is necessary to enable full evaluation of MRE in relation to local assets and threats. In contrast with Van der Horst's findings, the lack of clarity about possible impacts on the natural environment and people's acknowledged lack of knowledge did not seem to have impacted support for MRE at this moment. This suggests two things: (i) attitudes might change significantly once people gain more understanding of the potential environmental impacts of a development, as suggested by Bailey *et al.* (2011); and (ii) people's evaluation of other possible effects of MRE, such as its perceived socio-economic benefits carried more weight because of its

community spirit preserving qualities, causing them to support MRE despite possible impacts on their highly valued local environment.

7.4 A heuristic model for understanding attitudes towards MRE and processes of place attachment

Taking the above findings, the purpose of this section is to explore how components of place attachment manifest when people evaluate proposals for developments, such as MRE, in their local area. Although a rich literature exists that discusses types and predictors of place attachment, a knowledge gap was identified in the literature review because little is known about the processes through which the components of place attachment interact (Section 2.9). Change has been identified in the literature as a vehicle through which people's place attachments can be made visible, because how people respond to change to places depends on the place in question, but also on perceptions of these places and people's bonds with them (Bonaiuto *et al.*, 2002; Brown & Perkins, 1992; Devine-Wright, 2009b; Devine-Wright & Howes, 2010). As a result, how people evaluate the possible changes that MRE deployment in their local area brings about offers an opportunity also to investigate processes of place attachment.

In order to do this, a heuristic model (hereafter the Attitudes Model) is used to explore and illustrate the types of process that individuals and groups undergo in attempts to evaluate the impacts of MRE on their local area. The factors discussed in the previous section described the process through which people evaluated MRE. The model and its components are shown in Figure 7.3.

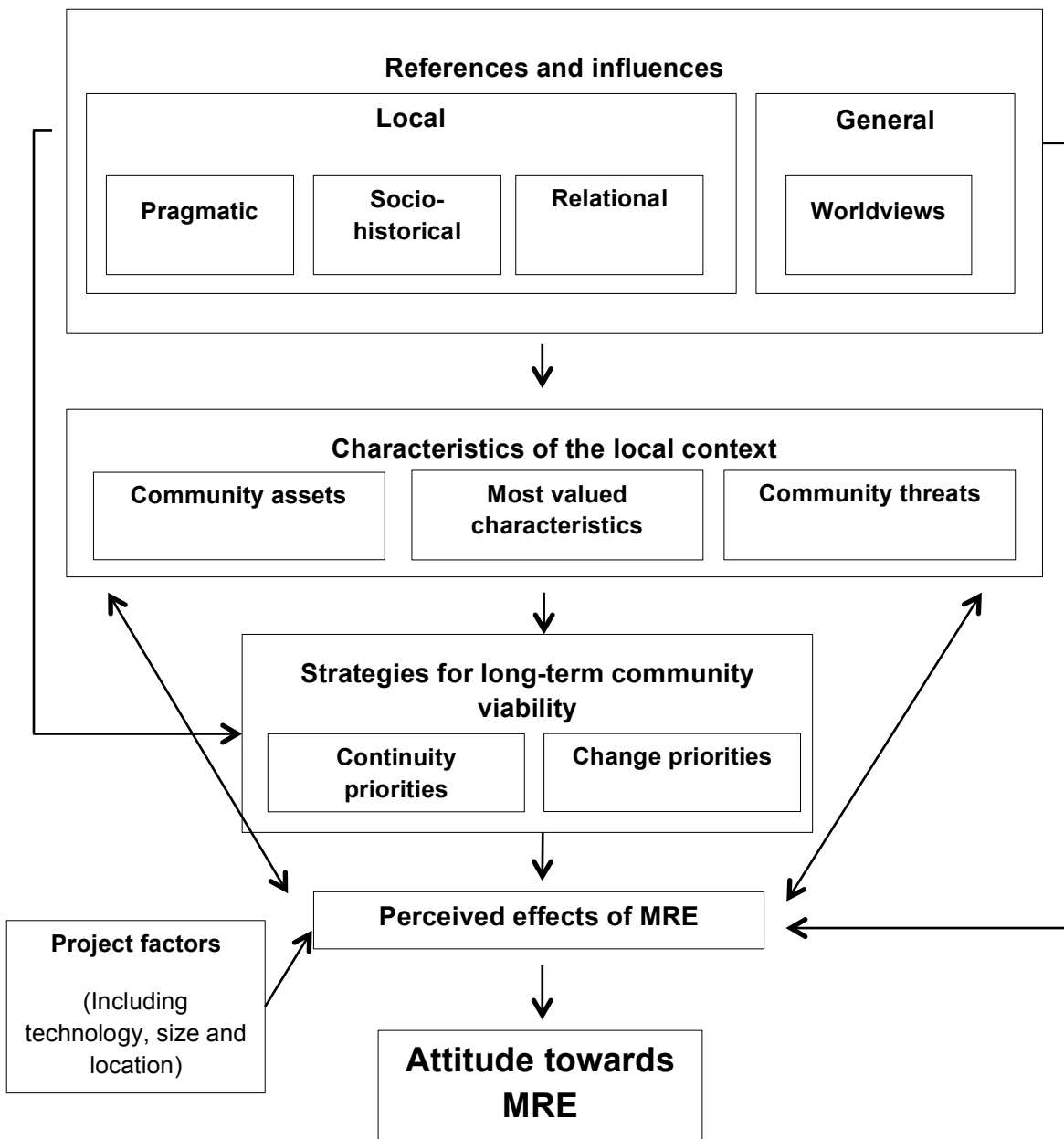


Figure 7.3 Representation of how the characteristics of the local context contribute to shape MRE attitudes

The literature review established that people’s relationships with places are comprised of locations, people and the processes or experiences within locations (see Section 2.4.1). Yet, how these are connected or how these interact in place attachment processes are poorly understood, leading Lewicka (2011a) to call for greater research that elucidates the processes through which people form meaningful relations with places. Before commencing discussion of these place attachment processes, the key components of place attachment recognised in the literature are briefly restated based

on Scannell and Gifford's (2010a) organising framework (Section 2.4.2). The framework's components included: (i) place, referring to the physical and social attachments people have to locations; (ii) person, describing people's personal connections to places, including memories in a place and issues of historical significance; and (iii) process, consisting of the psychological interactions that occur with a place, based on affect, cognition, and behaviour.

Application of the results enabled demonstration of place attachment processes, utilising Gustavson's (2001) conception of place meaning, which included:

1. place distinction, in which place is established as an identifiable unit, places are categorised, and place attributes are described and portrayed (Feldman, 1990);
2. valuation, in which the distinctive physical and social features of a place are evaluated, resulting in establishment of place factors of personal or communal importance;
3. continuity, which is the temporal factor that connects places to individual life paths, but also where place-bound social relations contribute to the attribution of place meaning, such as local historical development and local traditions;
4. and change, which establishes that place and place meanings are an ongoing process in which there is a possibility of change (Gustavson, 2001).

Section 7.4.1 discusses the place and person components of Scannell and Gifford's (2010a) framework in relation to the findings of this study, together with Gustavson's elements of place meaning, and further explores the interactions between people and places. Section 7.4.2 then explains the processes of place attachment in a MRE context by applying the Attitudes Model.

7.4.1 The interactions between people, places and processes

The most appropriate starting point for a discussion on place attachment processes is the place component. As defined in the literature review, place comprises a location itself and the physical and social aspects of the location to which people connect (Scannell & Gifford, 2010a). Place attachment thus reflects a range of social and physical aspects to which people feel attached (Hidalgo & Hernandez, 2001). Logically, this corresponds with the component of the Attitudes Model that identifies the dominant characteristics of the local context together with community assets and threats.

The physical and social nature of attachments were clearly visible in the data, which found that the attractiveness of the physical environment, including landscape and wildlife factors, and the community spirit of the social environment were key local features for people as a first step in the attachment process. To discuss this in relation to Gustavson's place meanings, people classified the distinctive characteristics of the local context without making value judgments at that point. This is similar to the pragmatic reference point discussed in Section 7.3.1. However, apart from establishing that value is ascribed to places based on physical and social characteristics, an inventory of distinctive local features does not provide insight into how characteristics are valued, and why some were valued higher than others.

The local characteristics to which people became attached also depended on the interactions between people and those places. These are largely located in Scannell and Gifford's (2010a) person component. As described in the literature, interactions between people and places result in emotional connections such as personal memories (Lewicka, 2008; Rubinstein & Parmelee, 1992), but also link people to places through shared historical experiences, values and symbols (Scannell & Gifford, 2010a). These interactions bring about different place meanings, which are affected by age, length of residence and rootedness (Hidalgo & Hernandez, 2001; Lewicka, 2011b) and which are (at least partly) transmitted to future generations (Virden & Walker,

1999). Although no significant differences were found between these factors in the survey results, because most people were raised locally and deeply rooted in the islands, length of residence and rootedness was an important issue. Whereas islanders who were deeply rooted in the social networks of the community were concerned about the wider community when new developments were proposed locally, Chapter 6 demonstrated that newcomers did not always have the same priorities, and were accused of opposing or supporting MRE more for their own interests than for the benefit of the community, because they may have different attachments.

An example of the social nature of attachments are the Viking and sea-faring histories in Orkney and Shetland, which illustrate how shared historical experiences can remain, or become, significant place characteristics over time. Islanders felt that the enduring sea faring traditions in Orkney and Shetland brought about unique place meanings and influenced the local (human) resources within the area, including the available skills and expertise of the local work force that developed from the maritime heritage, and flexibility and openness to change that characterises such communities. To date, these remained reference points for evaluating present day changes to places, and were included in the Attitudes Model as socio-historical reference points (See Figure 7.1). In this example, consistent with Scannell and Gifford's (2010a) observations, cultural place meanings influenced peoples' personal relationships with their local areas whilst simultaneously contributing to broader social place characteristics.

Similarly, physical place components influenced human place characteristics, and the physical characteristics and geography of areas influenced the evolution of cultural place characteristics and social interactions. The peripheral locations of the study sites, for example, created strong social bonds and community cohesion. Additionally, they created self-reliant communities which, in turn, reinforced existing social bonds. This connection was strongest in Shetland and Orkney, the two most peripheral locations, which demonstrated a visible cultural distinction and somewhat more self-reliant attitude than the Isles of Scilly. Most importantly, where Orkney and Shetland identified

social characteristics as paramount, the Isles of Scilly respondents of the survey identified characteristics of the physical environment as prominent to their area and most valued.

Place and person components are thus closely connected. This is similar to Gee and Burkhard's (2010) claim that place meaning emerges in abstract layers, such as peoples' attachment to places, that does not necessarily relate to the natural environment, but instead is based on people's linkages through beliefs and convictions which occur in special social contexts. Thus far, the literature has largely focused on the person dimension. The findings discussed above suggest that understanding people's relationships with places calls for equal consideration of place and person components. This observation is reinforced by Drosteltis and Vignoles (2010), who argue that the person component is overemphasised in Scannell and Gifford's model and suggest the need for a stronger focus on the place component of place attachment based on evaluative factors such as: continuity (the place through time); distinctiveness (the distinct features of a place); aesthetics (the beauty of a place); control (the degree in which one can affect what happens in the place); socio-symbolic (the social and symbolic meanings that a place has for a person); and economic factors (how the place contributes to, for example, a person's livelihood). Based on this study, however, place and person components are nested in the process component of place attachment, in which peoples' psychological interactions with places determine people-place relationships. This is visualised in Figure 7.4.

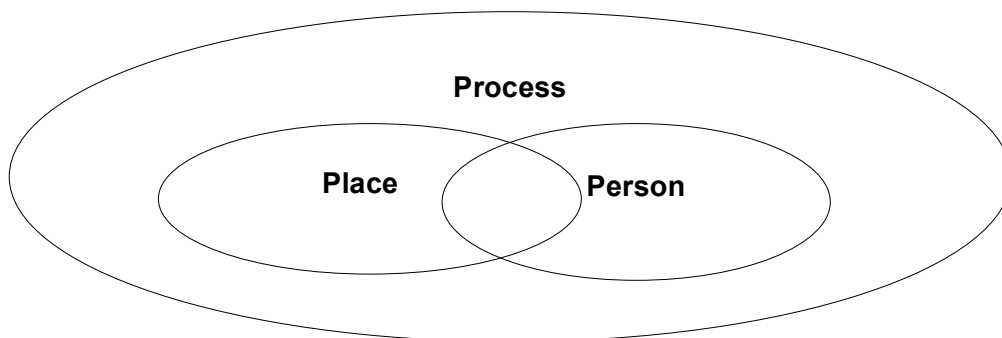


Figure 7.4 Visualisation of the nesting of place and person within the process components of Scannell and Gifford's (2010a) place attachment organising framework

As defined in the literature review, places are evaluated and behaviour results from the psychological processes through which people attribute meaning to places. These are located in the process component of Scannell and Gifford's (2010a) place attachment organising framework. This study found that the majority of people's relationships with places develop in the process component. These findings are supported by Gustavson (2001), who claimed that meaningful places appear as a process, in which individual (and collective) projects converge and/or compete with other projects, external events, and with the course of time (p. 13). The process component developed by Scannell and Gifford (2010a) has considerable overlap with Gustavson's (2001) attribution of place meaning elements, and includes elements of valuation, continuity and change. The next section will further explore the processes through which people form meaningful relationships with places by applying the MRE attitude research findings.

7.4.2 Processes of place attachment: how do people form meaningful relations with places?

The next step in understanding processes of place attachment is to identify how the three components discussed in the previous section interrelate in the context of forming attitudes towards MRE, utilising the Attitudes Model, Gustavson's (2001) elements of meaning and the functions of place attachment identified by Scannell and Gifford (2010a).

How do people form meaningful relations with places? The main explanation was found in the interactions between the different elements of the place attachment process (Section 2.4.2). Scannell and Gifford's (2010a) process component helps to understand how people form meaningful relations with places based on affect, cognition, and behaviour. The literature review highlighted that these components were shared between place attachment and attitudes. Further commonalities were found between their work and Gustavson's (2001) attribution of meaning, distinguishing elements of

valuation, continuity and change. Importantly, these factors also feature in the Attitudes Model, which although designed to understand local attitudes towards MRE, resembles Gustavson's elements of attributing place meaning, as well as Scannell and Gifford's place attachment process component. The process that shaped peoples' relationships with places was also evident in the study results. Because MRE causes possible changes to the distinct characteristics of local areas, and can affect assets, threats, and potentially the long-term continuity of places, place attachment processes become much more conscious and observable. This happens based on people's feelings and beliefs, but also whether a proposed change is congruent with people's processes of thinking and prioritising. As demonstrated in Section 7.3.1, this evaluation also depended on specific local reference points employed, including socio-historical, pragmatic and relational reference points. This supports the proposition that the process of forming an attitude (but also the process of place attachment) consists of a continuous flow of interactions between people and places based on evaluation of what happens in that place and what that means for the people in it.

7.4.2.1 Cognition and evaluative processes of the local area

While the place and person components elicit the distinct characteristics of local areas, including main community assets and threats, evaluation occurs in the process component. This is where people's relationships with places take shape, informed by cognitive and affective elements leading to behaviour, in a MRE context, support or opposition of developments.

Cognition, Scannell and Gifford's (2010a) first process element, is based on people's evaluation of places, in which the cognitive elements, including memories, beliefs, meanings and knowledge, that make places personally important, establish the affective bonds people have with place and is based on either positive or negative feelings towards places (Manzo, 2005; Brown *et al.* 2003; Cuba & Hummon, 1993; and

Hidalgo & Hernandez, 2001). People thus form meaningful relations with places through evaluations of distinctive place characteristics and the values placed upon them. In Chapter 5 it was established that attitudes towards MRE were shaped through evaluation of real or perceived characteristics of MRE and how these affected the local context. Previously in this chapter, these were incorporated into the Attitudes Model, which acknowledged the social and physical aspects of the local context. These were prioritised and based on their perceived contribution to securing the most valued aspects of each local area. These evaluative factors correspond with Gustavson's (2001) work, whose dimensions of place meaning also included: distinctiveness; continuity; and evaluation. The Attitudes Model demonstrated that, in the attitude forming process, the positive and negative aspects of the local area are weighed against the aspects of their local area they value most. This raises the question of which factors the evaluation is based upon.

Indications for evaluative factors can be found in the functions of place attachment identified in the literature review (see Section 2.4.3), which included: survival advantages; goal pursuit; self-regulation; continuity; sense of belonging; and enhancing identity and self-esteem (Scannell & Gifford, 2010a). If the siting of RE development negatively affects any of these functions, RE development may significantly affect peoples' lives. As a consequence, it seems logical that MRE projects are evaluated based on how they relate to these functions. Evidence for the use of several evaluative factors was found in the study results, with survival advantages and goal pursuit being the most prominent, which are closely related to communities' strategies for long-term viability and directly linked to the function of self-regulation.

Survival advantages were the first evaluative factor for which evidence was found in the data. From this security perspective, places provide food, water, and other resources (Section 2.4.3). Scannell and Gifford related such factors to ideas of reduced risk (2010a), and Fried (2000) warned that threats to the continued integrity of communities may lead to protest or attempts to avoid separation from the community or

place. MRE was evaluated based on whether it positively or negatively affected the local resources needed for survival, in other words, for maintaining long-term viability of the community. This was previously described in Section 7.3.2, which demonstrated that MRE was evaluated based on its asset-enhancing and threat-neutralizing qualities. People thus evaluated MRE and, subconsciously, the characteristics of their places in relation to how changes would affect the long-term continuity of their local areas.

Two examples from Shetland illustrate this point. The first concerns the local significance of the aquaculture industry. The distinct local resources of Shetland provided those living there, and dependent on the local area, with the necessary resources to sustain their livelihoods. Although many distinctive local characteristics were identified, not all were equally valued; some were considered as assets and some as threats. This was dependent on how they affected people's survival advantages, for example through community benefits, job creation and business opportunities (See Section 5.4). Strong community cohesion was identified as an overarching influence contributing to local survival, and overall, livelihoods were enhanced by locally significant employment sectors, including oil, fisheries and aquaculture sectors, which also provide security for the islanders. Logically, people avoid risks to their sustaining assets, because this could affect their survival advantages and threaten their community. The fear of this emerged in the interviews, and respondents identified impacts on aquaculture as a red line when discussing the possible effects of MRE on existing industries (Section 5.4.3). Based on the survival importance of aquaculture, if MRE was perceived to negatively affect the sector, it seems likely that people oppose it because it threatened their place attachment. However, if a shift from aquaculture to MRE was seen to increase survival advantages, MRE would be supported. This was observed in the data, when after the effects of MRE on aquaculture were first identified as unacceptable because entire islands depended on the sector, they became acceptable if MRE created more jobs, and thus increased survival advantages (See Section 5.4.3). In contrast, in the Isles of Scilly, livelihoods are provided by the tourism

sector, which depends on the Island's natural beauty and wildlife. As a consequence, everything that impacts on the area's main resources potentially threatens the survival of the community. To achieve these survival advantages identified above, respondents from the Scillies prefer a situation with limited changes to preserve local assets.

Introducing change to the tourism asset could, and was expected to, cause opposition when a MRE development is proposed. The proposal is thus not just evaluated based on its merits, but also how it interacts with these survival advantages through asset enhancement or threat neutralisation.

The second example concerns depopulation. Over time, Orkney and Shetland's people-place interactions resulted in strong community spirit as an important asset. In these locations, MRE was evaluated based on its potential to neutralise important threats, those of limited career opportunities and depopulation of the outer islands which negatively affect survival advantages in Orkney and Shetland, by creating employment opportunities. Thus, survival advantages in Orkney and Shetland, together with their place attachments, predisposed people to support MRE. People's attachment to Orkney and Shetland could thus have caused its positive reception locally because MRE was seen to increase survival advantages, as demonstrated in the Attitudes Model (Figure 7.3). A key aspect of this is people's willingness to embrace the necessary changes to ensure the long-term viability, or survival, of their places. If a need is seen for change in order to ensure survival of the community at large, it is likely that these changes will be embraced by the community. If survival is perceived to depend on the absence of change, this predisposes people to oppose MRE.

Closely connected to this is the place attachment function of goal pursuit, which refers to the expectations of achieving goals based on past experiences. These experiences can be physical or social, depending on the goals individuals want to achieve (Kyle *et al.*, 2004), and may vary between individuals and groups. This can lead to place dependence, where a place is meaningful to people because of its supporting or facilitating qualities (Jorgensen & Stedman, 2001). Goal pursuit as an evaluative factor

is closely related to the socio-historical and relational reference points introduced previously to help understand attitudes towards MRE (See Section 7.3.1). The socio-historical backgrounds of places, together with individual or collective past experiences help determine goals. Whether MRE is seen to be in harmony with maintaining places then influences support or opposition balances.

The development of new industries in Shetland is a good example of how these two reference points contribute to goal pursuit as an evaluative factor. The important shifts on the islands from fisheries to aquaculture, and now MRE, show the expectation of achieving certain goals. Based on past experiences, people expected to achieve similar benefits in terms of maintaining the local community. Similar to the previous function of place attachment, goal pursuit is evaluated and balanced against priorities for change, continuity, and long-term community viability, each key components of the Attitudes Model.

The third function of place attachment is continuity, which is embedded in evaluations based on survival advantages and goal pursuit. The literature showed that people are often more attached to environments they feel match their personal values (Twigger-Ross & Uzzell, 1996). Places also provide continuity over time through symbolic meanings and connections to the past, and are physical representations of important events in the past and present that have become meaningful for groups. This was identified earlier as a local reference point or influence for evaluating MRE (See Section 7.3.1), but also as part of Gustavson's (2001) process of ascribing meaning to places. Creating continuity is then dependent on the ability to change and adapt to changing circumstances, but also on the strengths and weaknesses of each local context. Evaluations of how places provide continuity are thus very important, especially whether continuity depends on change or the absence of change. The capability to change then provides continuity to the local area. Although meanings may appear static, place attachments and meanings can be gradually altered or modified if changes introduced are successful (Gustavson, 2001).

The Attitudes Model brings together the above functions of place attachment in its overarching references and influences and evaluation of the local context. Importantly, different community strengths and weaknesses result in different strategies to protect the most valued aspects of communities including versus the absence of change. The results from this study demonstrate that although the communities share dominant characteristics, such as the importance of the natural environment and community spirit, the protection of place characteristics was prioritised differently, as were priorities for change. Furthermore, they might lead to different attitudes being developed in the communities or the same attitudes but for different reasons. The ability of communities to neutralise threats depended on their ability to adapt to changing circumstances. Providing continuity to a community, however, can consist of change but also of resisting change, depending on which strategy best matches local priorities. This is illustrated by the examples of outmigration in Orkney and Shetland discussed earlier in this chapter, which caused embracing change, and the Isles of Scilly's resistance to change to remain viable. Consequently, if people feel the continuation of the community is under threat from a MRE development, they opposed it, whereas if a MRE development is considered to provide change for the good, it is likely that a MRE is perceived favourably.

The above confirms Vorkin and Riese's (2001) argument that the importance of place attachment is context dependent, both in terms of direction of the attitude as well as size of effect. However, this crucial fact appears somewhat neglected in place attachment studies, which predominantly focus on predictors, typologies, functions, and strength of place attachment (Devine-Wright, 2011c; Droseltis & Vignoles, 2010; Kyle *et al.*, 2004; Lewicka, 2008; Lewicka, 2011b; Lewicka, 2011a). The exceptions included Devine-Wright and Howes (2010) who used place attachment to compare opposition to an offshore wind farm in two coastal towns in North Wales, and Jay (2010), who applied this to land-scape values and opposition to wind farms.

It is also important to note, however, the existence of conflicting views within communities. In Shetland, the Viking onshore wind farm divided the community because of different priorities among sections of the community (Section 5.4.1), and it was also established that people held different views and inclinations to participate in RE decision-making based on demographic and other factors. Although in-depth investigation into the politics of conflicting views within communities is outside the scope of this investigation, this must nevertheless be considered. Thus, although the term community is used here, this refers to aggregate opinions within communities and masks differences and nuances at the individual level, further reinforcing the imperative for the adequate representation of community views in decision-making processes, a topic discussed in Section 7.5.

7.4.2.2 Feelings, preferences and behaviour

Affect was identified as the second process element of place attachment (Scannell and Gifford 2010a), which represents the feelings people have towards their place as a result of place evaluations, and which can be observed in reported feelings (Fazio & Olson, 2003). Examples include people's strong feelings that their local areas, and in particular, the natural environment and community spirit as most valued characteristics, should be sustained.

Affect is thus also part of the evaluative process of place attachment in which some local characteristics are valued more than others, resulting in different preferences. Although the character of, and boundaries between, cognitive and affective components are often blurred, because of the close link between people's knowledge, beliefs and meanings and how these result in emotions towards places, the affective components are the product of people's evaluations of specific aspects of their local areas.

A fundamental issue observed in Chapter 5 was that participants generally wanted to protect the core of what the islands meant to them. If adopting a new industry

contributed to sustaining these affective connections (either by not negatively affecting the objects of attachment or by enhancing them), islanders appeared open to hosting a development. If, however MRE was considered to threaten this core, and therefore the people's emotional bonds with them, participants were less open because it could negatively affect their place attachments. This again echoes Vorkin and Riese's (2001) observation regarding the importance of context in understanding place attachments.

An important observation in this study was that, principally, respondents expressed strong positive feelings about their local areas. Irrespective of people's attitudes towards MRE, and an evaluation of it based on the local context, this predominantly originated from a positive relationship with the local area. This provided further understanding of the process component of place attachment. If the changes brought about by MRE damaged characteristics that people have affective bonds with, this could damage the meaning people ascribe to their local areas, leaving fewer positive sentiments. The link between cognition and affect is thus reflected in a somewhat more objective assessment of local characteristics as part of the cognitive aspects of place attachment, and the values and emotional feelings people ascribe to them.

The survey results demonstrated that respondents' local areas meant a lot to them, and community cohesion and the natural surroundings were identified as key aspects that people were attached to. Of the five types of attachment identified by Lewicka (2011b), only positive attachment was found linked to traditional attachment, based on age and education, or active attachment, based on high attachment and identity. None of the types of non-attachment, such as place alienation, relativation or placelessness were found. Because people generally ascribed positive values to their local areas, attitudes towards MRE in the study sites developed in a context in which places are highly valued and where people wanted to maintain their local areas. Although this somewhat reduces the applicability of these findings in other contexts, it enhances the visibility of the place attachment process because only positive attachments needed to be considered and explained based on these results. It also somewhat simplifies

explanations of how place attachment processes operated in this study, because any attitudes or behaviours that result from place attachment processes stem from people's positive bonds with their local areas, and makes important steps towards understanding place attachment processes.

The third and final process element of place attachment identified by Scannell and Gifford (2010a) is behaviour. Based on the evaluative processes that occur in relation to the place and person dimensions, place attachment processes can be observed in place-specific behaviour. In an MRE context, the evaluative process of how MRE will affect the local area together with people's feelings towards places based on personal or group preferences will result in a situation in which MRE is eventually supported or opposed.

7.5 Engaging with attitudes in the local context: the need for community evaluation

The previous sections discussed MRE attitudes with regard to people's place attachment and presented some first steps towards understanding how processes of place attachment function in an MRE context. However, although place attachment provides important insight into people's relationships with places and how they might respond to proposed changes to those places, place attachment is no panacea for understanding and addressing potential MRE siting issues because it does not move beyond explanations of opinions, to examine ways to address them. Accordingly, this section explores how inclusion of community attitudes in MRE can contribute to decision-making processes.

Although the study results demonstrated positive attitudes towards MRE, only when live projects are proposed will opposition-support balances become clear, based on the 'real' (perceived) effects of a project, which will also depend on project specific factors

such as technology, size and location. For example, although MRE may seem to be supported locally, possible effects and local trade-offs should still be discussed because assumptions by communities may be too optimistic or pessimistic. Engaging with communities may thus help to dispel myths (either perceived threats or opportunities), as developments may instinctively be seen as threats or because local aspirations may see MRE unrealistically as an opportunity.

Crucially, this illustrates the need for communication between developers and the people in locations where projects are proposed on how communities perceive MRE will affect their local area, and the local values that underlie these perceptions. This communication can establish more realistic views on the effects of MRE, whereas lack of communication may exacerbate myths. This is strongly supported in the literature, where Kempton *et al.* (2005) found that value questions and trade-offs underlie debates on attitudes, and argue that consultations would have a better chance of success if values and missing issues were aired and debated more explicitly. However, this study argues that only by asking people their attitudes and the factors underpinning those attitudes can true engagement and discussion of issues take place.

As pointed out in the Introduction, despite the acknowledged importance of public engagement in decision-making and corresponding engagement requirements, decision-making still often follows a 'decide-announce-defend' approach as a result of sometimes incompatible policy drivers of sustainability, energy and public participation in RE siting in the UK (See Section 4.2). In this approach there is limited scope for constructive contributions to the policy process by the public (Bell *et al.*, 2005; Haggett, 2011b; Wolsink, 2000). Such approaches can threaten the legitimacy of siting processes and their final outcomes.

Opponents of the 'decide-announce-defend' approach suggest that instead of allowing the public only to provide criticism on predetermined developments, dialogue and collaborative processes are needed to encourage both supporters and opponents to

participate in the engagement process to achieve balanced engagement (Bell *et al.*, 2005; Wolsink 2000). It was further suggested that rather than the 'decide-announce-defend' approach, a 'consult-consider-modify-proceed' model should be adopted, wherein parties are involved in siting processes from the beginning to encourage the ownership of decision, and reduce opposition (Halliday, 1993). The findings of this study support these viewpoints, and link them to the legitimacy of the decision-making process based on notions of fairness and justice. These issues have been discussed in the literature by (Gross, 2007), who indicated that perceptions of fairness influence how people perceive the legitimacy of the outcomes and that fairer processes will increase acceptance of outcomes. Different sections of the community, however, are likely to be influenced by justice objectives, including the fairness of outcomes, favourability of outcomes, and also process fairness. Furthermore, fair procedures were seen as producing fair outcomes (MacCoun, 2005), resulting in a clear imperative to ensure fair procedures.

The dominant 'decide-announce-defend' approach is not considered to be a fair procedure (See Bell *et al.*, 2005; Haggett, 2011b; Wolsink, 2000). The findings of this study identify that the approach appears to be applied the wrong way round because it does not start with the communities in which the developments will be placed. The study reaffirms the importance of understanding communities, including what is valued locally, and other local social, economic and environmental contextual factors including local assets and threats, livelihoods and skill bases to understand local attitudes. It also found that engaging with communities helps determine what acceptable MRE developments look like, based on local priorities for continuity and change, while also enabling developers to benefit from local knowledge and expertise regarding sites to be developed and affected communities. Sensitivity to the local context was also identified as an important contributor to legitimate decision-making processes.

To achieve legitimate decision-making processes, a place-based focus rather than a technology-based focus is advocated based on the results of this study. In Chapter 6, it

was established that the immaturity of the MRE industry meant that regulators, technology developers and communities are at various, but early, stages of learning about MRE deployment, with inconsistent and unclear regulations for public participation and energy resulting in tensions were between regulatory, development and community levels regarding the influence of communities on decisions. The study found that including community attitudes in MRE decision-making could contribute to minimising some tensions and contribute to deployment of developments that were acceptable locally. Failing to do so, conversely, would conflict with ideas of fairness in process and outcome, and potentially cause opposition in the future (Gross, 2007; Haggett, 2008; Ottinger *et al.*, 2014; Wolsink, 2007b). Greater community analysis to understand the context in which MRE technologies will be placed, together with greater community involvement in the decision-making process were therefore advocated to ensure fairer processes and outcomes.

First, appropriate regulation and guidance is needed to ensure that developers engage more adequately with communities and their concerns. Although under development, current guidance is predominantly concerned with process factors, and provides limited concrete suggestions for developers on how to engage with local communities in context-sensitive ways. This has been also identified in the literature, for example by Barnett *et al.* (2010), who identify the importance of the timing of engagement and preferred mechanisms; and Haggett (2009), who acknowledges the issue of power differences and conflict, different preferences and required forms for engagement (See also Gray *et al.*, 2005); a need to integrate flexibility with necessary procedural and strategic frameworks; and also the way in which engagement conclusions are incorporated into decision-making.

The Attitudes Model has the potential to assist developers with understanding communities by providing a framework and analytical schema for a community evaluation. The model as it stands, however, does not remove the tensions and risks associated with the MRE, which is about striking a balance between positive and

negative effects. It instead primarily enables improved understanding of MRE attitudes through a top to bottom process tracing exercise moving from the top of the model downwards. For the model to be of practical use to developers, the flow of the model could be reversed so that it influences consultation processes and how these processes are structured. By reversing the flow, this provides a framework for developers to follow which not only elicits attitudes towards a development, but also explores the underlying reasons for opinions. Thus, when first engaging for a MRE project, developers can find out what effects people perceive MRE will produce. The next level up in the model helps them to understand the priorities for continuity and change that exist in the community. Moving up further through the model elicits the local assets and threats on which these priorities are based. Mutual understanding of the factors that influence attitudes between those proposing the development and those that have to live with it could provide room for understanding, but also for negotiation, in which contributions are made to asset enhancement and threat neutralisation, for example through increasing local employment (Section 5.4.2). However, Tewdwr-Jones and Thomas (1998) argued that if people add their opinions to the decision-making process and are not listened to, this might cause disillusionment with the process as a whole. Reversing the model thus provides an opportunity to gain opinions on MRE first and then find out why they exist. The reversed flow is most appropriate as part of an engagement approach that is more based on traditional 'decide-announce-defend' approaches. In such an approach, some influence on the decision is possible but within certain parameters of a project that have already been decided upon, such as type of technology and area of deployment. The decision is thus not so much about whether a MRE development will be established, but rather about influencing the decision on the details of a development.

It is, nevertheless, also feasible and potentially desirable to start at the top and progress down towards MRE attitudes. Under this approach all options are open, and a development will be based on *a priori* investigation of local assets, threats and values

and then how the MRE development fits within the specific local area. This approach can ensure that any proposals tabled 'pre-reflect' the self-perceptions of the local community. In such an approach, possible developments will be tailored to the local area, in terms of technology type, size, location, or even whether there will be a MRE development. Thus, the most appropriate direction of flow for applying the Attitudes Model on decision-making is dependent on the type of engagement processes that is, or can be, adopted. However, such an approach also has drawbacks, i.e. people from outside the community hanging around in the local area, and perhaps asking unusual questions about the local area without declaring their intentions. In order to get around such issues, a preliminary proposal, even if it is just a general idea, needs to be tabled to begin with to be transparent and start to develop trust in the community.

From the study results, two general approaches were identified by research participants that facilitated the uptake of community attitudes in MRE decision-making. The first increases local authority of communities and advocates a move towards energy independence. This approach contributes to Wüstenhagen *et al.*'s (2007) and Nadaï's (2007) calls for a balance between territorial planning and room for open participation in RE issues. Based on the findings of this study, increased local authority of communities was expected to ensure local influence on in MRE decisions for the benefit of communities and overcome threats such as high prices and centralisation of authority. However, how to devise practical strategies for this to happen remains an issue. As Healey (1997) explains, despite an interest in autonomy, communities might be lacking the confidence, skills or resources to achieve this. Other challenges identified were capacity in the community, volunteer fatigue, and industry support.

The second approach advocates improvements in engagement processes to ensure real consideration of local concerns, by allowing for the application of local knowledge and giving people a voice. It is also seen to contribute to increasing the accountability of engagers, encouraging collaboration, local benefits, and creating a sense of ownership. Tailored procedures and consideration of local dynamics were suggested to

address skewed representation, an issue often identified as reducing the legitimacy of decision-making (Gross, 2007; Mcclymont & O'Hare, 2008). However, this is not unproblematic. Developers, for example, do not have unlimited resources and the in-depth engagement that the above processes demand could be lengthy and resource consuming. Furthermore, there are also financial imperatives for not doing it well and there is thus a temptation to skimp during the process.

To be sensitive to community needs and limited resources available to developers for engagement activities, a balance must thus be found between developers' need to comply with regulatory requirements and tailoring engagement to local circumstances. A key observation from this study was that the emphasis was not on finding new engagement mechanisms, but instead on tailoring existing practices to local circumstances, including: (i) considering the size of the community and stakeholder base to avoid consultation fatigue; (ii) timing of the consultation to enable a variety of people to represent the community; and (iii) execution, such as consideration of the balance between formal and informal interactions. Although these findings seem to contradict findings from the literature that advocate increased responsibility and involvement of citizens, such as the Big Society (Cabinet Office, 2010) and Giddens' (1998) 'Third Way' approaches, the latter supports findings from the literature (Berkowitz, 2000; Lewicka, 2005; Perkins & Long, 2002), who stress the importance of formal and informal actions for participation and community organisation.

Several suggestions were made for adapting engagement to local contexts.

Community organisations occupied a key position in the island communities studied, and were seen as able to help developers tailor engagement, because they have in-depth knowledge of their communities and communities generally trust these organisations. In the literature, close relationships were found between place attachment and neighbourhood ties, and, often, membership of organisations (Perkins & Long, 2002), and Lewicka (2005) claims that: 'It is not enough then to be fond of a place – a locally based social network is necessary to help convert emotion into action

(p. 392)'. This was also reflected in this study, and community organisations were identified as possible gatekeepers, because they serve important functions within the community, including keeping residents up to date and ensuring they are represented in local decision-making (Orkney Islands Council, 2014). Furthermore, these organisations were seen to possess important knowledge about the local area, including local assets and threats, and local values. Furthermore, they were seen to have access to people who could provide insight into the local context, and thus provided a relatively inexpensive and thorough way of communicating with the community.

Increased flexibility of process, such as through outreach and methods, were expected to increase sensitivity to local dynamics during engagement: Ladenburg's (2010) study found that people's views varied according to age, gender, income, education, and length of residence. More than this, different values, different roles, and different experiences are also brought to the fore when considering RE projects. The study found that there is a danger of over-representing groups that are more inclined to engage, based on age or education, or socio-cultural background. This may result in a skewed representation of community assets, threats, continuity and change processes. As shown in Chapter 6, skewed representation could be the result of both internal and external influences, for example, local protest groups that allow membership from beyond the community (Section 6.5.1) and distorted views based on age and education (Section 6.4). The study results identified, for example, a danger of over-representing older people, retirees, newcomers, highly educated people, and statutory consultees. This was considered to be a serious issue because it might cause underrepresentation of issues such as creating opportunities for new generations and job creation, all threats to long-term community viability and likely to be advocated by younger members of the community who were less inclined to engage in more demanding activities. For older or higher educated residents, environmental protection and effects on the natural environment may be more pressing because they are no longer

dependent on local employment or education. The literature on place attachment supports this point, and Lewicka (2005), for example found that place attachment was negatively related to education, and positively for residence time (Hummon, 1992; Kasarda & Janowitz, 1974). Thus, if certain groups are more likely to engage, this could become a serious issue in internal representation that might itself threaten the area's long-term viability.

Localism approaches could exacerbate these issues, because an increased emphasis on citizens is generally accompanied by deeper and more demanding engagement activities, the strategies least preferred by younger and lower educated respondents. If this is done without improving the ways in which local considerations are incorporated into decision-making or processes to ensure balanced representation, this could increase the dominance of vocal minorities, again threatening the long-term viability of communities. Procedures that are sensitive to the local dynamics of an area require the application of appropriate techniques in which local contextual factors, capacity and preferences are more fully incorporated. The study also demonstrated the different capabilities within communities and the difficulties in communities participating up to the levels required, not least, because population bases are small in many communities. Additionally, MRE is not the only aspect of their lives that people are consulted on, and in-depth approaches could add significantly to the engagement load. Although generally positive attitudes were found towards engagement strategies, the dominant trend was that less intensive forms of engagement were perceived more positively than more intensive forms.

People's capacity and interest to participate in more empowering engagement processes was again found to be influenced by historical, social, cultural and demographic factors. Overall, the preferred types of engagement technique were low-effort and low-expertise, yet, participation via these techniques was seen as the least capable of protecting assets and addressing threats. If such issues are not considered, they could limit community deliberation and therefore contribute to distorted views of

existing attitudes and possible community effects because different groups may have different priorities or preferences. Several ways to overcome some of these issues were identified, including locally sensitive timing, outreach via local channels and methods, and techniques that are sensitive to the different availability, inhibitions and capacity of individuals within the communities. Thus, procedures that are sensitive to the local dynamics of areas were identified as a key contributor to achieving compliance with regulatory requirements whilst ensuring consideration of local views in decision-making.

Based on the above findings, the perceived legitimacy of consultation processes will also significantly influence how MRE developments are viewed locally, including the fairness of processes and outcomes, and the favourability of outcomes (Gross, 2007). How this affects attitudes towards MRE is shown in Figure 7.5.

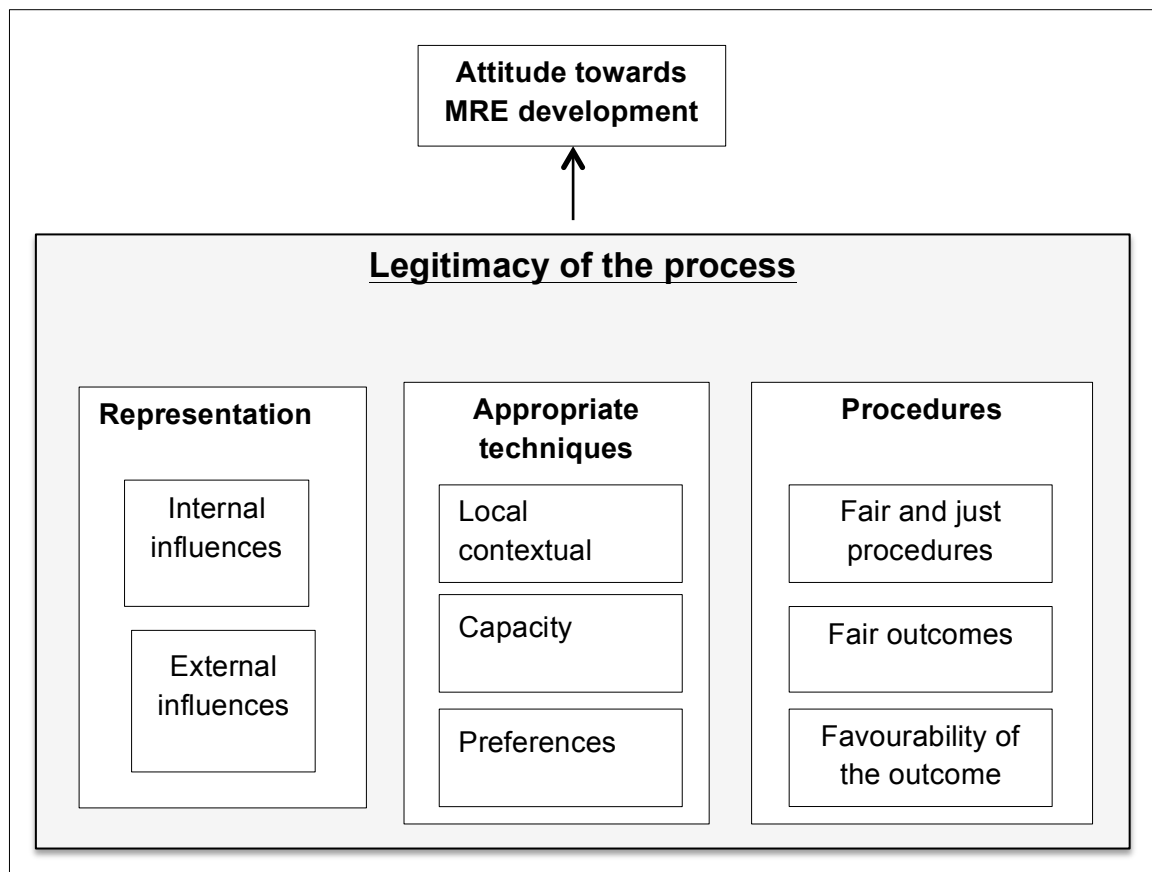


Figure 7.5 Visualisation of the factors found in the study related to the legitimacy of the process

Figure 7.5 identifies several factors that influenced the legitimacy of consultation processes. The first is representation, consisting of external influences, for example, when outsiders represent community interests in engagement processes, and internal influences, such as who participates and attends stakeholder engagement meetings, consultations or answers surveys. The second aspect concerns the application of appropriate techniques in which local contextual factors such as the timing of engagement, mechanism of contact, the capacity within communities to engage (Section 6.3.2), and community preferences (Section 6.4). The third concerns the legitimacy of the procedures, in which the perceived fairness of procedures and outcomes, as well as their favourability, affect engagement processes (Section 6.2). The conclusion from this final part of the discussion is that in addition to community evaluation of local assets, threats, and strategies for long-term viability of the community and how MRE is seen to affect these, community evaluation is also needed to ensure appropriate stakeholder engagement.

Because both elements ultimately influence how MRE developments are viewed by communities, the legitimacy of processes becomes part of the attitudes model. As identified by Wolsink (2007a), RE proposals start a process of thinking. This chapter has explored the nature of these processes in the context of developing MRE attitudes in small island communities. Using the Attitudes Model to integrate and visualise the various factors that influence MRE attitudes and how these are shaped by local contextual factors, reference points, and the perceived effects of projects. To acknowledge the influence of process-related factors in shaping attitudes towards MRE, a final version of the Attitudes Model is shown in Figure 7.6.

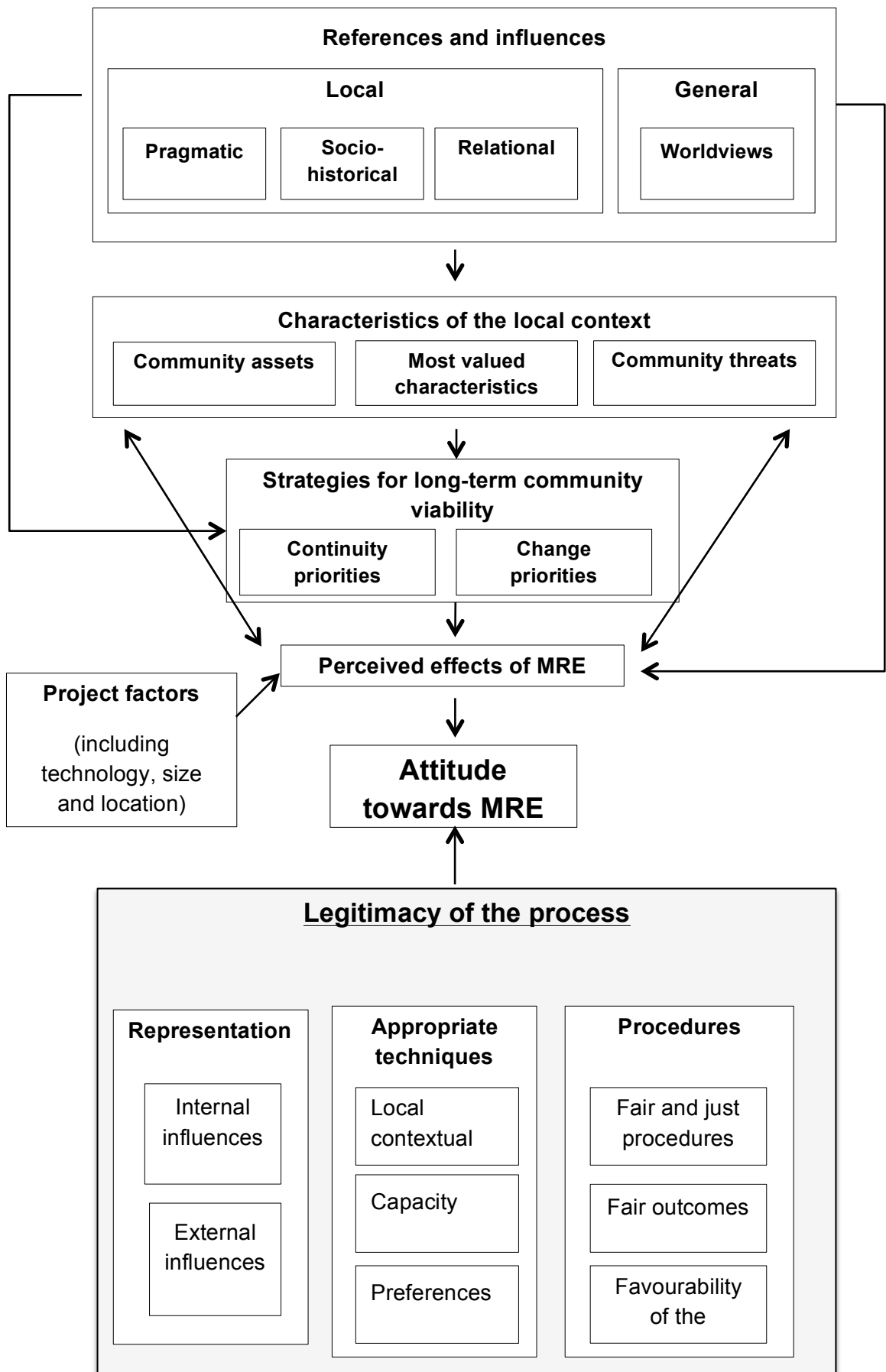


Figure 7.6 Visualisation of the complete Attitudes Model

The complete Attitudes Model presented above helps understand attitudes towards MRE development in two ways: (i) it facilitates understanding of community attitudes towards MRE in relation to local contextual factors, and, as a consequence, what acceptable projects might look like; and (ii) it provides insight into engagement processes, and how local context helps to determine the features of appropriate engagement processes. However, the process of community engagement suggested is not unproblematic, and several key points must be remembered when interpreting the suggestions made in this chapter and the Attitudes Model.

The first is that conflicting views also exist within communities, and can create divisive internal politics. As a result, several strategies for incorporating priorities for continuity and change might exist within individual communities. Although this complicates community evaluation, it also underlines its importance for balancing existing community views in order to negotiate acceptable outcomes. Further research could focus on this issue.

The second point is that stakeholder engagement is not an academic exercise, nor is it always reasonable to demand that developers undertake this depth of consultation. Rather, a balance is needed between complying with legal requirements in a streamlined manner and providing communities with opportunities for genuine input into decisions. The Attitudes Model nevertheless provides a systematic guide to the types of considerations that are likely to provide support for, or opposition to, MRE and a further guide to principles of designing consultations to promote the incorporation of local factors and justice principles into the decision-making processes. To achieve a balance, thorough community engagements and implementing projects on the ground is critical.

It is possible, of course, that the suggestions may still lead to lip service being paid to community attitudes in final decision-making. Addressing this is not a simple matter

and may require deeper changes in the way decisions are made about MRE developments. Despite moves towards localism and, supposedly, greater local influence on decision-making, the 'decide-announce-defend' model still dominates many planning decisions. Within such a system, even application of the model and in-depth consultation could leave communities with only a minor say in decisions. The Crown Estate, for example, based on their role owner of the seabed, has legal authority to decide development locations in the UK without in-depth consultation with communities in that area. This ultimately reverts to a 'decide-announce-defend' model. Questions can thus be raised about the role of the Crown Estate as the owner of the seabed. Should consultation requirements change, or should perhaps the constitution of the Crown Estate be changed to reflect some of the issues discussed above? These are all issues that, despite their importance, were beyond the scope of this research and should be addressed in further research. One suggestion to help overcome such problems was given by Upham and Shackley (2006) in the case of onshore bioenergy developments, where they argue for negotiated agreements between regional renewable energy agencies, local authorities and local people 'on the nature and limits of renewable energy within a locality' (p. 60). Based on the current findings, the community evaluation process proposed in this research could set the scene for such agreements aimed at ensuring that decision-making processes on MRE become more place focused and less technology focused.

7.6 Conclusion

The purpose of this chapter was to synthesise and analyse the findings from Chapter 5 and 6 in order to produce new theoretical perspectives on the processes through which individuals in small island communities negotiate their values and attitudes towards MRE with their contextually rooted place attachments during decision-making on MRE

siting. It also explored avenues for ensuring that local values and attitudes are incorporated more effectively into consultation procedures associated with MRE developments.

The chapter established that attitudes towards MRE were generally positive, and were influenced by several factors, including (i) local references and influences, consisting of relatively objective assessments of the location's suitability for MRE deployment; socio-historical contexts, and relational influences; and (ii) local values, which were predominantly connected to maintaining the long-term viability of communities. This led to the identification of community assets and threats, which, together with strategies to ensure the long-term viability of valued aspects of communities, and priorities for continuity and change formed the main components of the Attitudes Model for understanding community attitudes towards MRE. Based on these results, a context-based approach towards understanding MRE attitudes was advocated.

The Attitudes Model was further applied to enable understanding of place attachment processes and some important steps were made towards understanding how place attachment processes operate. This was based on an exploration of how people, place, and process components of place attachment interact when people are confronted with change in their local area. Of the place, person and process components identified, the majority of place attachments developed in the process component were based on cognition, affect and behaviour. A key finding was that people's evaluative processes contribute to shaping peoples' attachments based on the survival advantages, goal pursuit and self-regulation of areas, in which feelings and preferences shape attitudes towards introduced changes. Based on this study, processes of place attachment were explained as a subconscious assessment of distinctive place characteristics and their evaluation alongside possible threats and assets and how these can be neutralised or enhanced in the light of creating long-term continuity for places and place meanings. Furthermore, such an approach also allows for the alteration of place meanings over time, in the search to maintain communities over time.

The remainder of the chapter established that a place-based focus rather than just a technology-based focus is also important for engagement. Community evaluation, including attitudes, but also capacity, preferences, and other factors, that influence engagement, were found to be important in ensuring that community concerns are adequately incorporated into MRE. The perceived legitimacy of engagement processes were established as critical factors influencing how MRE developments are received locally. The place-based focus thus facilitated the use of local knowledge and expertise, which can also be applied to understanding local contexts and enhancing stakeholder engagement. Several factors were found to be especially important when engaging small island communities with MRE, including: representation and the influence of external and internal factors; and appropriate techniques for engagement that enabled the expression of local contextual factors, capacity and preferences; and appropriate procedures to promote justice and fairness. A key observation in this regard was that balancing regulatory requirement and community is not necessarily about finding new or more innovative engagement mechanisms, but instead the discussion emphasised tailoring current practices to local circumstances. The Attitudes Model could provide a framework for such evaluation procedures.

In exploring these issues, this chapter has brought together the findings from the previous two chapters and discussed them in relation to the existing literature, theory and practice of MRE development. By discussing attitudes towards small island communities, the factors underlying those attitudes, how MRE was viewed in relation to people's place attachments, and the uptake of community attitudes in decision-making, this chapter addresses the research objectives set out in the Introduction. The final chapter synthesises the empirical and theoretical findings of the research, addresses their implications for policy and practice, and reflects on the research process.

Chapter Eight: Conclusion

8.1 Introduction

In response to growing concerns about the depletion of fossil fuels and their environmental impacts, the UK and other countries have made various commitments to increase the share of RE in its overall energy mix (DECC, 2011a). For the UK to achieve its targets, a strong increase in RE deployment has been deemed necessary, and MRE is expected to make substantial contributions to achieving RE targets, particularly in the post 2020 era (European Commission, 2014). Public opposition to local RE siting, however, poses significant threats to increasing the deployment of RE technologies of all varieties, based on the possible impacts on local areas in which the technologies are likely to be deployed (Cass & Walker, 2009; Haggett & Vigar, 2004; Van der Horst, 2007).

Island communities were singled out for this research because they have been identified as likely host communities for MRE developments based on their rich MRE resources (MERiFIC, 2013). Additionally, their peripheral locations presents different threats and challenges to those experienced in more centrally located areas (European Commission, 2009a). Understanding community views of MRE and understanding the possible effects of MRE on these places was thus seen as vital to avoiding opposition previously experienced with onshore technologies (Cass & Walker, 2009; Haggett, 2011a; Upreti, 2004; Van Der Horst, 2007), whilst simultaneously contributing to establishing or maintaining local support during scaling up the MRE sector. Island communities were also of particular interest because the marine spaces around island groups are intensely used in ways that mirror but differ from the way people use terrestrial spaces (Hayward, 2012). Despite the expected increase in MRE deployment in the UK, few studies have investigated public attitudes towards MRE (Demski, 2011),

and no in-depth investigations have been conducted into local attitudes towards MRE in island communities.

More specifically, this study explored community attitudes towards MRE in small island communities in the UK, the factors and values shaping these attitudes, and how communities view MRE with relation to their place attachments, and has increased understanding of place attachment processes by explaining how the different components of place attachment operate and interact in practice. Furthermore, the study identified the contribution of community views can make to MRE decision-making.

The main research question addressed in this study was:

What are small island communities' attitudes towards MRE development, what values drive these attitudes, and how can these be incorporated into MRE decision-making processes?

The empirical foci for this study were: Orkney, Shetland and the Isles of Scilly, three sets of islands with varying experience with MRE and government administrations under which planning applications will be considered. A mixed-methods approach was adopted, utilising questionnaire surveys and interviews to gain in-depth views of local attitudes towards MRE, the factors underlying attitudes, and their uptake into decision-making processes. It should be noted, however, that the study was largely explorative, because no commercial MRE developments have been consented yet in the UK.

The purpose of this chapter is to: (i) synthesize the key findings of this study; (ii) identify the limitations of the study; and (iii) identify avenues for further research. The remainder of this chapter is structured as follows: Section 8.2 presents the empirical findings of this study; in Section 8.3 the theoretical implications of this study; Section 8.4 presents the contribution policy and practice and Section 8.5 concludes the thesis by discussing the study's limitations, suggestions for further research and some concluding remarks.

8.2 Empirical findings of the investigation

The first objective of the study was **to examine attitudes towards MRE in small island communities**. The study found predominantly positive attitudes towards hosting MRE developments in the island communities studied, which were higher than levels of support found at a national level for both RE in general and MRE specifically (DECC, 2014a). Differences were identified between individual technologies and study sites. Geographical differences were also identified, with highest levels of support for all MRE technologies found in Shetland, followed by the Isles of Scilly and with fewest positive attitudes in Orkney. Nevertheless, attitudes towards type of technology differed between study sites. Support for tidal energy was highest, followed by wave. Offshore wind was perceived least favourably, with levels of support falling below the national average of support (DECC 2014a).

The second objective was **to investigate factors and values shaping these attitudes**. The literature review identified that little is known about what informs people's evaluation of MRE developments and the value systems people employ to evaluate the diverse, uncertain and sometimes intangible local characteristics and livelihoods that MRE developments affect (Bailey *et al.* 2011). This study found that whereas reasons for support for RE in general included place-transcending issues, including climate change, fossil fuel depletion, energy security, and concern for the natural environment, none of these reasons explained support for local deployment. Explanations for this instead centred on local contextual factors including: the availability and abundance of MRE resources, perceived environmental benefits, low visual impacts, and benefits of MRE for the local area. Although this provided some insight into the high levels of support for local developments, they provided limited insight into the factors and values shaping these opinions.

Attention consequently focused on deeper probing of these local contextual factors and their interactions with more cognitive evaluations of MRE (Devine-Wright 2011b; Wolsink, 2007b). In doing so, the study found two important contributors shaping attitudes: (i) the local references and influences through which people observed issues, and (ii) local values, against which MRE was evaluated.

Local references and influences thus provided a key set of lenses through which people viewed MRE in relation to their local area. Although these did not directly affect attitudes, they provided an overarching mind-set through which people viewed issues. Three dominant lenses were identified as influencing how people viewed MRE in the island groups studied. The first was pragmatic influences, in which evaluations were made from local perspectives on the perceived quantity of the resource locally and the area's suitability for MRE deployment. The second was the socio-historical influences that individuals used to place MRE developments in the wider local socio-historical settings that shaped the unique context of each study site. For example, the Viking heritage in Shetland shaping local culture and the functioning of Orkney and Shetland as stopovers for ships, leading to communities with open attitudes to change. Third, MRE was evaluated based on how it related to other locally significant experiences, such as the aquaculture and the oil sector; and experiences with other technologies, including people's experiences with other RE technologies thus far. Naturally, these operate parallel to general worldviews, which have long been established as influencing people's attitudes towards RE (Devine-Wright 2011d; Haggett, 2008; Haggett, 2011b; Van der Horst, 2007).

Local values provided the other important factor influencing support for MRE deployments, where MRE was evaluated against a collection of local values and the goal of maintaining the long-term viability of communities. Local values, those things that are important to people locally, and the main strengths of the community included: the area's natural beauty, scenery, landscape, wildlife, friendliness, safety, community spirit, tranquillity and peacefulness. Although these were similar across the sites, the

most valued local factors differed substantially across the sites, with community factors being prioritised in some areas and the natural environment in others. The importance of some local characteristics caused them to be community assets. MRE was evaluated on the basis of how its perceived effects compared with these local assets. Similarly, MRE was evaluated against threats to the community, which included struggles to maintain a stable population, limited job opportunities, a narrow economic base; and high cost of living, all issues that are often faced by peripheral communities. These local assets and threats and their relative valuations resulted in the identification of local characteristics that people wanted to protect, but also aspects of the local context they wanted to change. This in turn led to the identification of priorities for continuity and change as ways to maintain the long-term viability of communities, something not taken for granted in this type of community. The study results further showed that the ability of communities to neutralise threats depended on their ability to adapt to changing circumstances. Depending on local priorities, achieving community continuity can consist of embracing change, but also resisting it. A key finding of the study was that underlying MRE support was the expectation that MRE would contribute to maintaining long-term community viability. MRE was evaluated based on its asset enhancing and threat neutralising potential, in relation to how it contributed to maintaining the long-term viability of the community.

The local reference points, together with the evaluation of local values formed the basis of the Attitudes Model, an heuristic device developed to facilitate understanding the local value-based processes through which people evaluated MRE. The Attitudes Model contributes to existing knowledge of these processes by providing a framework for identifying and analysing how different components of individuals' values and place attachments interact and inform attitudes to place change. A key finding from the study was that understanding these values and the characteristics of local communities is essential to understanding local attitudes towards MRE and how its possible effects are seen to influence local contexts. The results showed that the perceived effects of MRE

on the local area were largely positive or people were unsure about them. These perceived effects predominantly showed: indecision about possible environmental impacts; significant perceived economic benefits for host communities, including local employment and business; and the possibility of co-existence between MRE and other users of the marine environment. Support across the case study sites was predominantly based on the perceived economic benefits of MRE for the local area alongside low environmental effects. This confirms and extends existing studies in this field, which indicate that public support for MRE technologies is based on perceptions of MRE as an economically beneficial and relatively benign method of power generation (West *et al.* 2010).

The study also demonstrated how the development of attitudes towards MRE form through continuous flows of interactions and evaluations between people and places, based principally on evaluations of the characteristics of the local context, what they mean for local people, and the perceived effects of proposed changes. However, despite indicated support for local MRE developments as a result of such deliberations, another noteworthy phenomenon was a tendency to base evaluation on assumptions and limited knowledge among community members that may be too optimistic or pessimistic depending on the technology, size, and the location of the development. Crucially this illustrates the need for communication between developers and those in the locations where projects are proposed on how they perceive MRE will affect their local area, and to understand the local values underlying these perceptions. Strong engagement thus provides a crucial component of dispelling myths that may lead to ill-informed perceptions of threats or opportunities.

The third objective was to **investigate the inclusion of community attitudes to MRE decision-making**. The literature review established that gaining greater insight into the nature of, and reasons for, specific attitudes towards MRE is crucial in providing effective foundations for how to incorporate and represent attitudes in decision-making (Cass & Walker, 2009; Devine-Wright 2011d; Haggett 2011b; Tippett *et al.*, 2007). This

study has provided some of these insights by explaining the processes through which people evaluated MRE developments, and, furthermore, established that understanding local contexts was similarly key for incorporating attitudes into MRE decision-making.

Two general approaches were advocated. A first approach centred on increasing local authority and energy independence, to ensure community benefits from MRE are achieved and to promote local influence to overcome the potential threats to communities from MRE developments, for which support was found in the literature (Warren & McFadyen 2010; Patterson, 2007). However, it was also identified that local confidence, skills or resources might be lacking to achieve this, adding to the drawbacks of community development of RE. The second approach centred on improving engagement processes to ensure real consideration of local concerns by tailoring engagement processes to local circumstances. Such processes were also identified as important in an MRE context and were expected to allow greater consideration of local concerns, encourage representativeness, and increase the accountability of developers by encouraging the gathering and application of local knowledge and concerns. Tailored procedures and consideration of local dynamics in the planning and execution of engagement exercises were suggested to help overcome these issues. The Attitudes Model was thus further modified to provide a possible framework to assist developers with community evaluations.

The main finding from this study is that instead of the technology focus often adopted by developers when proposing developments, a more community focused approach in which 'all options are open' should be encouraged. The study demonstrated the importance of understanding communities, including what is valued locally, and the other local social, economic and environmental contextual factors that shape local assets, threats, livelihoods and skills bases. The study also found that engaging with communities helps to determine what acceptable MRE developments might look like, based on local priorities for continuity and change while also benefitting from local

knowledge and expertise. This shifts away from the decide-announce-defend approach, towards what Halliday (1993) called the consult-consider-modify-proceed model in which developers involve interested parties in siting processes from the beginning to promote the ownership of decisions and reduced opposition. This study supports such an approach as a way of encouraging appropriate siting based on representative engagement processes, the tailoring of processes to local circumstances, and the use of local knowledge to inform siting. In doing so, it reinforces and extends existing studies on public engagement with RE technologies that advocated just decision-making processes that actively seek to understand local contexts (Gross, 2007; Haggett, 2011a).

In such an approach, the local area in which a MRE technology is planned becomes the focal point of investigation, and detailed community evaluations provide an essential mechanism for identifying the opportunities and threats facing communities and how MRE may influence these. Importantly, this could also mean a 'no-technology' option, wherein community evaluations conclude that some sites are not suitable for MRE despite favourable of local marine energy resources and/or technical and environmental considerations. The Attitudes Model was proposed as a heuristic mechanism to aid such community evaluations. Reversing the flow of the model from that used to identify community values, assets, threats and priorities, it was argued, provides developers with a framework to understand attitudes towards MRE and their underlying reasons. The model provided further insight into increasing the legitimacy of decision-making processes through locally sensitive engagement. However, the study also found issues with these approaches caused by limited resources, competing issues, and the need for significant commitment from developers. Locally sensitive engagement nevertheless remains important because mutual understanding of the factors influencing attitudes to MRE projects between those proposing the development and those that will have to live with it provides greater scope for negotiation on how to neutralise threats and enhance existing or new community assets.

8.3 Theoretical implications

Place attachment was used to help understand how people might respond to the changes that MRE might bring to local areas. A key contribution of this study is that it provided new insights into the process of place attachment, fulfilling the objective to **ascertain how communities view MRE with regard to their place attachments**. A rich literature exists describing the types and predictors of place attachment (Hummon, 1992; Hay, 1998; Stedman, 2006; Savage *et al.* 2005; Lewicka 2010; Lewicka 2011b; Twigger-Ross & Uzzell 1996; Droseltis & Vignoles, 2010; Devine-Wright, 2012). However, gaps remain in the literature about how processes of place attachment and their components interact, prompting Lewicka (2011) to call for greater process-oriented research that clarifies how people form meaningful relations with places. This research has responded to this call, and made important steps towards understanding how place attachment processes operate when people evaluate MRE developments. Although the literature identified that expressions of place attachment vary between local contexts in terms of direction, size and effects (Vorkinn & Riese, 2001), work to explore this crucial connection appears largely absent in subsequent place attachment studies. Supporting Vorkinn and Riese's claim, this study has argued that processes of place attachment are based on a continuous flow of interactions between people and places based on evaluations of what happens in specific local contexts and how these are perceived by local residents.

Scannell and Gifford's (2010) components of place attachment were used as a starting point for explaining attachment processes in order to incorporate *place* (the physical and social attachments people have to places), *person* (personal connections to places), and *process* (the psychological interactions that occur within places, including affect, cognition and behaviour) influences and how these interact when people are confronted with change in their local area. The resulting Attitudes Model was primarily

developed to provide insight into attitudes towards MRE but could also be applied to explain other place attachment and change processes,

Thus far, the literature has largely focused on the person dimension. However, a key finding from the study was that understanding people's relationships with places requires equal consideration of its person, place and process components because the three closely interconnect and re-inforce each other. However, another major finding was that explanations for how and why people value some characteristics of their local areas more highly than others was rooted more firmly in the process domain, wherein people's psychological interactions with places determine their relationship with it based on cognition, affect, and behaviour, the same components identified in the literature as the main components of attitudes (Rosenberg & Hovland, 1960).

Congruent with the existing literature (Scannell & Gifford, 2010a; Cuba & Hummon, 1993; Hernandez & Hidalgo, 2001; Jorgensen & Stedman, 2001; Brown *et al.* 2003), people developed place attachment based on affect and cognition. Based on these findings, it was argued that the place and person dimensions of place attachment are largely nested in the process component.

The current findings further suggest that proposed changes were evaluated not only on whether proposed changes were congruent with people's processes of thinking, but were also grounded in how people prioritised issues in their local area. Crucially, such evaluations also depended on specific local reference points, including socio-historical, pragmatic and relational reference points. A key finding included that people evaluative processes contribute to shaping peoples' attachments, based on each area's survival advantages, goal pursuit and self-regulation (all factors identified as functions of place attachment), and in which feelings and preferences shaped attitudes towards introduced changes.

The evaluative process identified largely reflected Gustavson's (2001) conception of place meaning based on place distinction (which coincides with place attributes),

valuation (reflected in community assets and threats), continuity (the priorities for continuity and change strategies for long-term continuity within communities), and ongoing change priorities that may themselves be subject to changes over time (Fried, 2000; Sani, 2008; Droseltis & Vignoles, 2010; Twigger-Ross & Uzzell 1996). Such an approach also allows for alteration of place meanings in the search to maintain communities through the retention of valued components and the alteration of less central components. Based on this study, processes of place attachment were explained as a subconscious assessment of distinctive place characteristics and their evaluation alongside possible threats and assets and how these can be neutralised or enhanced to promote the long-term continuity of places and their associated meanings.

8.4 Contribution policy and practice

The final objective was to **assess the possible contributions to practice that incorporating community views could bring to policy and planning procedures for MRE in the UK**. This research established that the immaturity of the MRE industry meant that regulators, technology developers and communities are at varying but nevertheless early stages of learning about MRE deployment. Additionally, inconsistent regulations for public participation and energy has resulted in tensions between the regulatory, development and community levels over how much, in practice, communities can influence decisions (HM Government, 2011). This research demonstrated the need for a local context-based approach to MRE development instead of a technology-led approach. The findings further demonstrated that including community attitudes into MRE decision-making could contribute towards reducing some of these tensions and contribute to deployment of developments that are more widely acceptable locally, while failing to do so conflicts with ideas of fairness in

process and outcomes, and may fuel future opposition that might significantly damage the developing MRE industry.

To ensure fair processes and outcomes (Gross, 2007; Smith & McDonough, 2001), and contribute to appropriate siting informed by local contextual knowledge (Rydin & Pennington, 2000; Haggett, 2011b; Gross, 2007), the community evaluation was proposed. The specific setting of this study in small island communities, with their distinctive local assets and threats, highlighted the importance of understanding contexts and local values. Although still under development (HM Government, 2011), current guidance on consenting and consulting on MRE remains predominantly concerned with process factors and provides limited guidance for developers on how to develop context-sensitive community engagement (See Section 4.2). The key practical contribution of this study is again the Attitudes Model, which can be applied by developers to evaluate community characteristics, values and priorities before commencing siting processes. More detailed suggestions were also made, including locally sensitive engagement techniques such as approaching community organisations as gatekeepers, local outreach methods such as noticeboards and local radio, and sensitivity to local contexts, including locally convenient times and locations for consultation events.

For such a shift in approach to take place, it is highly likely that such issues will need to be reflected in regulatory frameworks for stakeholder engagement with MRE.

Appropriate regulation and guidance is needed to require developers to engage actively with communities and their concerns rather than resorting to 'decide-announce-defend' and technology-led models (Bell *et al.* 2005; Wolsink, 2000; Haggett, 2011b). This, however, may require further rethinking and restructuring of the wider energy-siting process. Although this is not easy if RE developments ultimately need to be built, it is nevertheless important that decisions are broadly accepted as legitimate, in the sense of taking due account of all major concerns. Based on the discussion of the study results, striking a balance between thorough community engagements and

implementing projects will be a critical part of encouraging local support for the burgeoning MRE sector.

8.5 Limitations and suggestions for further research

This final section of the thesis identifies some of the main limitations of the study, suggests avenues for further research and offers concluding remarks. Arguably, the greatest limitation of this study is that because MRE is still in infancy, the attitudes towards MRE discussed are based largely on hypothetical situations. Only when larger-scale projects are proposed (as opposed to the current prototypes and test centres) will a clearer impression of community support or opposition to MRE be revealed (Bailey *et al.* 2011). This is especially important given the current limited knowledge about the impacts of MRE projects (HM Government, 2011) and the considerable - but perhaps misplaced - optimism among communities about their impacts and benefits. As identified previously, community support may also depend on project-specific factors, such as the technologies used and the size and location of developments. The results from this investigation thus provide no guarantee that communities will respond positively when larger developments are proposed.

A further limitation is that this study investigated overall 'community' attitudes towards MRE and did not probe differences in opinions within the communities in question. As such, it should not be seen as an exhaustive account of how all people in the communities studied view this issue. The references to community were used primarily to maintain analytical clarity on attitudes towards MRE in small island communities but, as a consequence, debates on the nature and dynamics of 'community' as a concept have been largely put aside. Throughout the discussion, issues have been identified concerning conflicting views and representations within host communities that might create internal politics and result in competing and co-existing strategies for long-term

viability and continuity and change priorities within communities, but further research is needed to investigate these dynamics within MRE communities and how these affect decision-making processes.

Another key area for future research concerns the future development of RE policy-making and planning procedures in the UK. Several aspects of these issues have been discussed without being fully resolved. It was identified, for example, that a balance is needed between regulatory requirements on consultation and developer resources, but also that the danger existed that MRE could fall victim to community attitudes and engagement models that result in Nothing Will Ever Happen Anywhere (NWEHA). Yet, where are the tipping points? Where is the point where decisions have been made and engagement is merely tokenism? Where are the points where MRE developments might fall victim to consultation NWEHA-ism? Such issues are a clear imperative for further research. Should consenting procedures perhaps be altered to ensure that the NWEHA effect does not predominate to the extent it has with onshore technologies in some areas? Where is the balance, taking into account local justice factors and what factors affect this balance?

It is also important to recognise the persistence of the 'decide-announce-defend' model and conflicting policy drivers for RE in the UK. Additionally, despite requirements for in-depth engagement, the potential remains for lip service to be paid to community concerns. This raises questions about both current and planned regulatory arrangements for MRE deployment and stakeholder engagement. For example, how can regulatory frameworks ensure that community attitudes are incorporated into decision making? More practically, what is the role of key players in UK MRE decision-making in this process, for example, the Crown Estate, local authorities, and the UK's various marine management authorities? The Crown Estate, for instance, is the legal owner of the UK seabed and has the authority to decide development locations in the UK without in-depth consultation with local communities. Questions can be raised about these powers: should consultation requirements change, or should the

constitution of the Crown Estate perhaps change to reflect the issues discussed above? These are all issues that, despite their importance, were beyond the scope of this research.

Furthermore, with the emerging system of Marine Spatial Planning in the UK to rationalise the use of marine space (HM Government, 2011), how could the issues discussed in this research become integrated into planning in the marine area? What is needed to ensure that social concerns are fully acknowledged as part of EIA procedures without them becoming an insurmountable burden to developers? How should such a process be managed and how will this affect progress towards achieving RE targets? Although this research has made steps in eliciting attitudes towards MRE based on local contextual factors, and in examining how to incorporate attitudes into decision making, this is only the beginning. Some issues have been clarified but much remains to be done as the MRE sector approaches commercial deployment. These suggestions are thus important in a policy climate in which RE is taking an increasing role within wider attempts to promote sustainable development.

A further direction for research identified was inspired by Upham and Shackley's (2006) call for negotiated agreements between RE agencies, local authorities and local people on the nature and limits of RE in specific areas. The community evaluation proposed in this study provides an enabler for such agreements, to encourage MRE decision-making to become more place-focused and less technology-focused. Further research could focus on these negotiations.

The final suggestion for further research stems from a theoretical perspective. Although steps were made to explain how place attachment processes work in relation to MRE developments, this investigation only scratched the surface by explaining processes of place attachment when people evaluate MRE. Further research should investigate this process further, in part to validate and adapt the proposed processes, but also to examine place attachment processes in places where positive attachments cannot be

taken for granted. Because this investigation only found positive attachments, this was not possible in this study.

Above all, this study has shown that when seeking to understand attitudes towards MRE development in small island communities and, indeed, how broader change processes are perceived by communities, understanding local values and contexts is paramount. The social sciences can make vital contributions to this agenda through the continued use of concepts such as place attachment and the exploration of place- and issues-based values. More specifically, further investigations into the social aspects of RE siting and how these interlink with the wider policy and regulatory aspects of MRE consenting provides multiple opportunities for social science research into attitudes towards MRE and to make important contributions to achieving the RE targets adopted by the EU member states.

APPENDIX B: EXAMPLE SURVEY

Dear Isles of Scilly Community member,

Please would you help me filling in this survey about your community, engagement and your opinions on marine energy.

My name is Jiska de Groot and I am conducting this research as part of my research degree. I am aware that you might have been asked several times to participate in surveys. However, only with *your help* we can get a better understanding of communities' feelings towards marine energy.

Via this survey I hope to gather your thoughts on possible benefits and impacts of marine energy on the Isles of Scilly. I am interested in your *genuine* opinion, and how you think development of marine energy may affect the place you live.

Please note that this research is not industry related, and there is currently no development planned for the Isles of Scilly

**To collect the completed questionnaires, I will come by your house on October...
after ...**

Would you please leave the completed questionnaire in this return envelope near your front door for me to collect.

I greatly appreciate your help.

Warm regards,

Jiska de Groot

You can also return the questionnaire by post to:

Jiska de Groot, Plymouth University
School of Geography, Earth and Environmental Sciences
A504 Portland Square,
PL4 8AA Plymouth, Drake Circus



Introduction

Please would you help with a research project on public opinions towards marine renewable energy in small island communities by filling out this questionnaire. The survey is part of a PhD project at Plymouth University and is funded by the MERiFIC project, which investigates marine energy in rural and island communities.

The survey seeks to explore your opinions about marine energy (wave, tidal, offshore wind) in general, your views on marine energy on the Orkney Islands, and what informs your opinions. We also hope to gather your thoughts on the possible benefits and impacts of marine energy on the Orkney Islands. We are interested in your genuine hopes and concerns, and how you think marine energy might affect you. This research is not industry related. Your views are really important in helping us understand local communities' feelings towards marine energy and the wider context of renewable energy.

We appreciate your help with this survey. If you would like more information about the project, please contact Jiska de Groot by email: Jiska.degroot@plymouth.ac.uk.

ALL INFORMATION YOU PROVIDE IN THE QUESTIONNAIRE WILL BE CLASSIFIED AS ANONYMOUS AND CONFIDENTIAL

Section A: <i>This section explores your opinions on the Orkney Islands</i>
--

A1. Which of the following best describes your residential status on the Orkney Islands?

Full-time Resident (PLEASE GO TO A3) Part-time resident (PLEASE GO TO A2 AND A3) Visitor (PLEASE GO TO A2)

A2 If you are a part-time resident or a visitor, how much time do you spend each year on the Orkney Islands?

One-off visit	Less than a month	1-3 months	4-6 months	7-9 months
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A3 How long have you been lived/spent time on the Orkney Islands as a resident/part time-resident?

Less than a year	1-5 years	6-10 years	11-20 years	21-30 years	30+ years
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A4 Each statement on this page refers to the Orkney Islands. How important are each of these things to you? (FOR EACH STATEMENT PLEASE TICK THE BOX THAT BEST MATCHES YOUR PERSONAL RESPONSE)

	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
I come to/live on the Orkney Islands because of the natural surroundings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Orkney Islands have a strong sense of community togetherness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My employment ties me to the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am on the Orkney Islands because of family ties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
From time to time, I rediscover new things about the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Orkney Islands mean a lot to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel a strong connection with the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
I like to be involved in what is going on in the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am keen to leave the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The tranquillity of the Orkney Islands is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I approve of change on the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have never considered how I think of the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A5 What are the three main characteristics of the Orkney Islands? (PLEASE GIVE UP TO THREE DISTINCTIVE FEATURES OF THE ORKNEY ISLANDS, EITHER POSITIVE OR NEGATIVE)

1)	Positive <input type="checkbox"/>	Negative <input type="checkbox"/>	Is this:
2)	Positive <input type="checkbox"/>	Negative <input type="checkbox"/>	Is this:
3)	Positive <input type="checkbox"/>	Negative <input type="checkbox"/>	Is this:

A6 If you could protect one aspect of the Orkney Islands, what would it be (e.g. beaches, wildlife, community spirit, etc.), and why?

A7 Do you think there is anything that needs changing on the Orkney Islands, if so, do you have any suggestions?

Section B: This section explores your opinions on renewable energy in general

B1 Generally, do you support the idea of renewable energy?

Yes No Unsure

Why do you feel this way? (PLEASE EXPLAIN THE ANSWER GIVEN ABOVE)

B2 Which types of renewable energy do you think that the UK should develop? (FOR EACH STATEMENT PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Definitely	Maybe	Definitely not	Indifferent	Don't know
Solar/photovoltaic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Onshore wind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydro-electric power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biomass (e.g. crops grown for energy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Offshore wind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tidal power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wave power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please specify ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B3 How important do you think the following reasons are for developing renewable energy in the UK? (FOR EACH STATEMENT PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Very important	Important	Neutral	Unimportant	Very unimportant
A secure energy supply in the UK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Affordable energy for consumers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A competitive UK economy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tackling climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section C: This section explores your opinions on marine energy

C1 What is your overall attitude towards marine energy such as offshore wind, wave and tidal energy?

Very Positive Positive Neutral Negative Very Negative Don't know

Why do you feel this way? (PLEASE EXPLAIN THE ANSWER GIVEN ABOVE)

C2 What is your attitude towards developing different types of marine renewables around the Orkney Islands? (FOR EACH OPTION PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Very positive	Positive	Neutral	Negative	Very Negative	No opinion
Offshore wind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tidal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D: This section explores reasons for the opinions given in the previous sections

D1 How much do you agree with the following statements about the environment? (FOR EACH STATEMENT PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Strongly Agree	Agree	Un-decided	Dis-agree	Strongly Disagree
The Earth has plenty of natural resources if we just learn how to develop them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humans are seriously abusing the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We are approaching the limit of number of people the Earth can support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human ingenuity will ensure that we not make the Earth unliveable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humans were meant to rule over the rest of nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The so-called 'ecological crisis' facing humankind is greatly exaggerated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humans have the right to modify the natural environment to suit their needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The balance of nature is very delicate and easily upset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plants and animals have as much right as humans to exist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Agree	Agree	Un-decided	Dis-agree	Strongly Disagree
When humans interfere with nature it often produces disastrous consequences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humans will eventually learn enough about nature to be able to control it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Earth is like a spaceship with very limited room and resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If things continue on their present course, we will experience a major ecological catastrophe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Despite our special abilities, humans are still subject to the laws of nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nature is strong enough to cope with the impacts of modern industrial nations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D2 To what extent do you agree or disagree with the following statements? (FOR EACH STATEMENT PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
We can achieve environmental protection and economic growth at the same time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National energy choices should not only depend on economic factors but also on environmental factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting social and natural environments should be given top priority even at the risk of curbing economic growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The most important role for the marine area is providing economic benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that the UK invests in the most environmentally sound energy supply, even if it is more expensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We must relax environmental standards to achieve economic growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D3 To what extent do you agree or disagree that marine energy will... (FOR EACH STATEMENT PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Provide cheap energy in the future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide benefits for local communities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impact positively on fish and wildlife habitats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benefit the wider UK society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lead to large changes on the Orkney Islands for residents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negatively impact on local fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase business opportunities on the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negatively affect marine recreation (e.g. surfing, angling, boating)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lead to more jobs on the Orkney Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negatively impact on the tranquillity of the Islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positively impact the attractiveness of the Orkney Islands for tourists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negatively impact on the seascape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section E: This section explores community consultations on marine energy

E1 Below six forms of involving communities in decision making are described. How suitable do you think they could be for including the Orkney Islands community in discussions on marine energy projects?

(FOR EACH ACTIVITY PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR OPINION)

	Very good	Good	Neutral	Bad	Very bad
Information giving (<i>Information is provided to the public and other interested parties on relevant issues</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information gathering (<i>detailed information on attitudes, opinions and preferences is collected to aid decision making by gaining an understanding of issues that are important to the community</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultation (<i>detailed feedback is asked on evidence presented about marine energy and alternative options are proposed</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Involvement (<i>participants are involved in analysing and developing options</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partnership (<i>direct involvement in decision making, including the development of alternatives and choosing a preferred solution</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Empowerment (<i>Decisions, resources and control are given to local communities</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E2 If the ways of involving the community described above would be offered to you, which ones would you consider participating in? (FOR EACH ACTIVITY PLEASE TICK THE BOX THAT BEST DESCRIBES YOUR CONSIDERATION)

	Yes	Maybe	No	Unsure
Information giving (SEE QUESTION E1 FOR AN EXPLANATION OF THIS ACTIVITY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attending an information evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information gathering (SEE QUESTION E1 FOR AN EXPLANATION OF THIS ACTIVITY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small (unofficial) discussion group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultation (SEE QUESTION E1 FOR AN EXPLANATION OF THIS ACTIVITY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public meeting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written or oral contribution during official consultation phase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Involvement (SEE QUESTION E1 FOR AN EXPLANATION OF THIS ACTIVITY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Official workgroup for discussing the development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partnership (SEE QUESTION E1 FOR AN EXPLANATION OF THIS ACTIVITY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Empowerment (SEE QUESTION E1 FOR AN EXPLANATION OF THIS ACTIVITY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joining a protest group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<p>Section F: <i>This section asks you for some details to help analyse and interpret the data</i></p>

F1 What is your age?

18-28 29-39 40-52 53-64 65-78 78-89
 90+

F2 What is your gender?

Male Female

F3 What is your highest level of education or qualification?

GCSEs A 'levels Higher Degree (eg. MSc, PhD)
 Degree NVQ or equivalent No formal education
 Other, please indicate...

F4 Are you...?

Retired Housewife/husband Unemployed
 Self-employed/freelance Student Employee
 Other, please indicate...

F5 If you are employed, self-employed or student, what sector matches your situation most?

Manufacturing <input type="checkbox"/>	Tourism <input type="checkbox"/>	Finance/IT/other business activities <input type="checkbox"/>
Construction <input type="checkbox"/>	Transport <input type="checkbox"/>	Retail <input type="checkbox"/>
Public administration <input type="checkbox"/>	Fisheries <input type="checkbox"/>	Arts/culture <input type="checkbox"/>
Education <input type="checkbox"/>	Agriculture <input type="checkbox"/>	Oil and gas <input type="checkbox"/>
Other, please indicate <input type="checkbox"/>		

Thank you very much for your participation in this survey. Are there any other issues that you would like to raise? Please use the box below to describe there.

If you would like to be contacted with the feedback and results of this study or wish to be contacted for a small discussion group to discuss your views about marine energy please provide contact details below.

Would you be available to explain your opinions in more detail in a small discussion group?

Yes No

Email address:

Telephone:

PLEASE TEAR ALONG THE LINE ABOVE IF YOU WOULD LIKE TO KEEP THE REFERENCE NUMBER WITHDRAWAL INFORMATION

ALL THE INFORMATION YOU PROVIDE IN THIS QUESTIONNAIRE WILL BE CONFIDENTIAL, AND THAT BY COMPLETING THIS QUESTIONNAIRE YOU GIVE CONSENT FOR THE INFORMATION PROVIDED TO BE USED IN ANALYSIS OF THE SURVEY. IF YOU WANT TO WITHDRAW FROM THE RESEARCH PLEASE CONTACT JISKA.DEGROOT@PLYMOUTH.AC.UK, AND MENTION THE CODE BELOW

Code:

Appendix C LIST OF INTERVIEWEES

Stakeholder interviews

	Affiliation	Location	Code
1	Regulator	Isles of Scilly	IOSR1
2	Conservation	Isles of Scilly	IOSC1
3	Marine sector	Isles of Scilly	IOSMS1
4	Regulator	Orkney	OIR1
5	MRE sector	Orkney	OIRME1
6	Community sector	Orkney	OICS1
7	Marine sector	Orkney	OIMS2
9	MRE sector	Orkney	OIME2
10	MRE sector	Orkney	OIME3
11	MRE sector	Orkney	OIME4
13	Marine sector	Orkney	OIMS3
14	Marine sector	Orkney	OIMS4
18	MRE sector	Orkney	OIME5
21	Community sector	Shetland	SICS1
22	Marine sector	Shetland	SIMS1
28	Marine sector	Shetland	SIMS2
29	Community sector	Shetland	SICS2
30	Regulator	Shetland	SIR1
39	MRE sector	Shetland	SIME1
40	MRE sector	General	GME1
41	Regulator	General	GR1
42	Landowner	Isles of Scilly	IOSO1
43	Conservation	Isles of Scilly	IOSC1
44	Community sector	Shetland	SICS3
45	Community sector	Isles of Scilly	IOSCS2

Community interviewees

	Affiliation	Location	Code
12	Community member	Orkney	OICM1
15	Community member	Orkney	OICM2
19	Community member	Orkney	OICM3
20	Community member	Shetland	SICM1
23	Community member	Shetland	SICM2
25	Community member	Shetland	SICM3
24	Community member	Shetland	SICM4
27	Community member	Shetland	SICM5
31	Community member	Shetland	SICM6
32	Community member	Shetland	SICM7
33	Community member	Shetland	SICM8
34	Community member	Orkney	OICM4
35	Community member	Orkney	OICM5
36	Community member	Orkney	OICM6
37	Community member	Orkney	OICM7
38	Community member	Shetland	SICM9
46	Community member	Isles of Scilly	IOSCM1
17	Community member	Isles of Scilly	IOSCM2
8	Community member	Orkney	OICM8
16	Community member	Orkney	OICM9

Appendix D: Guidelines for semi-structured interviews

Topics covered during the stakeholder interviews:

These are the broad themes to be discussed during the interviews. The extent and detail of the discussion depended on the person's position and involvement in the industry.

1. **Decision-making processes**

- Role of organisation in the decision making process if any-how related? (*economic, social, environmental interest of organisation in marine energy*)

2. **Stakeholder engagement**

- engagement of the organisation with stakeholders-or how are they are engaged in ME development - role of community/stakeholder engagement in your organisation
- Experiences had so far with marine energy
- Marine energy specific issues that should be considered when engaging stakeholders with marine energy projects?
- What form of engagement works/what doesn't? (start with process, follow down to elements)
- Barriers to engaging with the community?
- Overcoming the barriers

3. **Reflection of stakeholder values and opinions**

- What do you think that stakeholders think what will happen to their communities if a ME development is proposed?
- How do you think stakeholders would like to be involved if this happens?
- Reflection on survey results
- Types of values
- Necessity-Feasibility
- Formats for you/your organisation to receive the outputs of community engagement exercises in to make them most useful for your organisation
 - Possible
 - Preferred
 - Barriers/opportunities
- Potential for uptake of the information of the community survey into a decision-making process for a future ME development

4. **Achieving this in the current regulatory- legislative frameworks**

- Regulatory-legislative frameworks that you work with/or know of that deal with stakeholder engagement and marine energy
- Your opinion of the regulatory-legislative frameworks that you work with/or know of that deal with stakeholder engagement and marine energy
- Uptake of information in:

- Impact assessments, The Planning process, sustainability frameworks, fisheries, conservation, etcetera
- Localism-place developments in government, and its consequences for engagement (for organisation & communities)

Topics covered during the community interviews:

These are the broad themes to be discussed during the interviews. The extent and detail of the discussion depended on the person's position and involvement in the industry.

1. Can you tell me a little bit about your place?

(to ease into the conversation and learn more about how people feel about their place)

- What does the place mean to you?
- What are its key characteristics
- What would you like to protect, why?
- What would you like to change/see changed, why?

2. MRE attitudes

- General perceptions of MRE
- Perceived impacts
- How do you think it will affect your community and the place where you live?
- Brief discussion about the community survey

5. Stakeholder engagement

- Have you been engaged with MRE before? Could you tell me about your experiences
with it or with engagement on your islands more broadly?
- Discuss the questionnaire results very broadly with the interviewee?
- Ways to engage your community.
- *If a marine energy development were to take place in your community, what do you think are good ways of engaging the community as a whole?*
- *And what are good ways of engaging specific stakeholder groups such as fishermen, aquaculture, and transportation?*
- *How can we make sure that relatively intangible things such as sense of community and sense of place are integrated in engagement activities?*
- What works, what doesn't (start with process, follow down to elements?)
- What are the barriers to engaging in your community? What can be done to overcome them?
- What are the opportunities?

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