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Investigating the co-existence of fisheries and offshore renewable energy in the UK: Identification of a mitigation agenda for fishing effort displacement

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ABSTRACT

The increased demand for sea space for renewable energy developments and marine conservation will have impacts on the fishing sector. As a consequence, it is imperative to understand the ways in which fisheries and renewable energy interact and explore the potential for co-existence. In this paper we investigate the challenges for co-existence between the two sectors, and explore a mitigation agenda for fishing effort displacement in the UK. Data were collected through stakeholder questionnaires and two stakeholder workshops. Thematic analysis was carried out to identify the key challenges faced by stakeholder groups. The research identifies as three key priority areas for this agenda: developing efficient and cost-effective mechanisms for overcoming data issues for assessment of fishing effort displacement; the development of appropriate methods of assessment; and the development of an acceptable consultation protocol between MRE and fishing sectors agreed on by all stakeholders.

1. Introduction

1.1. Increasing demand on sea space

Extensive fisheries management and policy has been developed responding to growing concerns about depletion of commercial fish stock due to overfishing. Management measures such as area closures and fishing quota, as a way to control fishing effort, have been implemented, which as has resulted in displaced effort (for example, Suuronen et al., 2010). In the UK, the Common Fisheries Policy (CFP) is the main mechanism to deliver sustainable fisheries and economic strength to the fishing sector. It consists of four interrelated policies addressing: markets, structures, external fishery relations and conservation. Originally created in 1983, the CFP was part of the Common Agricultural Policy (CAP) in the 1970s and used until the CFP was formally created in 1983. However, when part of the CAP, the CFP was used avoid conflict with other nations over competing claims on fish stocks (European Commission, 2009). However, the CFP has failed to deliver on these objectives due to lack of compliance; communication problems; lack of transparency; lack of integration of scientific evidence into decision making as well as weak integration of environmental concerns into the CFP (Khalilian et al., 2010; Österblom et al., 2011; Qui and Jones, 2013; Rodwell et al., 2013b). Several decades after the CFP was put in place, the issue now is not so much nations competing for access to the sea but competing activities and priorities such as conservation and renewable energy generation. This is the result of the growing concern about fossil fuel depletion, its supply and impacts on the environment, which has led governments around the world to introduce measures to increase the proportion of energy produced from renewable sources, and enter into agreements to deploy renewable energy (Sustainable Development Commission, 2007).

1.2. Fisheries in the UK

Current fisheries statistics, provided by the Marine Management Organisation (2013), place the over 10 m fleet vessel number at 1374, and the number of vessels 10 m and below active were 5 032. The composition of the approximately 12 450 vessels operating in

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the UK in 2012 consisted of: 5 950 in England; 4 700 in Scotland; 800 Northern Ireland; and 1 000 Wales. In 2012, vessels landed approximately 627, 000 tonnes of fish (including shellfish) into the UK and abroad with a market value of £770 million. Pelagic and shellfish landings increased from 2011 to 2012, with shellfish constituting the majority of landings, however average price of pelagic fish decreased from the previous year, hence the value landed is 7% less than 2011. Most of the Scottish and Northern Irish fleet landings consist of pelagic fish; Welsh catches consist of mainly shellfish; and the English fleet land predominantly pelagic fish. In 2012, more than half of all landings made by the UK fleet were caught in the Northern North Sea and West of Scotland. Falling catches of cod and haddock have contributed to the fall in demersal catches since the mid 1990's, however mackerel and herring catches have continued to rise. Since 2008, scallop landings have increased while both crab and Nephrops have shown some decline.

The UK has the 4th most powerful fleet in the EU (Marine Management Organisation, 2013), which underlines the need for careful consideration of MRE interaction with the fishing sector. The greatest share of larger vessels is based in Scotland whereas the higher number of smaller vessels, i.e. below 10 m are based in English waters. The reason for these differences; the Scottish fleet are responsible for the targeted catches of herring and mackerel and fish mainly in the North Sea and west of Scotland. The English fleet mainly target Channel fisheries for Sole and Plaice, but with a higher proportion of smaller vessels, these also target inshore areas.

1.3. Offshore renewable energy development and effort displacement

The UK has made commitments to ensure that an overall 15% of energy demand is met from renewable sources by 2020 (DECC, 2011), with more ambitious targets set by the devolved administrations. Since 1998, increased powers were given to the governments in Northern Ireland, Scotland and Wales, within the UK as a whole. As a result, many of the administrative, executive and legislative authorities operate only within these administrations. There areas have their own ministers, priorities and mandates to different degrees, resulting in a variety in policies and procedures in each administration, for issues such as energy, fisheries, and marine planning. Energy policy, for example, is fully devolved in Northern Ireland; in Scotland, it is executively devolved, which provides Scottish Minsters with full control over major consents and planning as well as operational control over market and support systems; and Wales, which as the least devolved power, oversees planning and consents for smaller renewable emerging facilities. Regarding renewable energy, this has resulted in different targets: 100% of demand for electricity from renewable energy by 2020 in Scotland (Scottish Government, 2011); 40% in Northern Ireland (DECC, 2011); and 22.5 Gigawatts of installed capacity from different renewable energy technologies in Wales by 2020–2025 (Welsh Assembly Government, 2010).

To achieve targets, the UK must strongly increase its renewable energy deployment and comprehensive energy policies, and strategies were established to abate to increase the use of energy from renewable sources. As a consequence, the marine area around the British Isles increasingly functions as a location for energy generation, because offshore there are better resources (Pelc and Fujita, 2002), the possibility of larger scale developments, as well as perceived increased acceptance and higher consenting rates (Haggett, 2008; Jay, 2010).

Large, high capacity wind farms are being planned, whilst other more nascent technologies, such as wave and tidal technologies, are on the rise, increasing the competition for ocean space. Since 2000, the owner of the seabed, the Crown Estate, has leased large areas of the UK seabed for development with a generating capacity of up to 40 GW (Crown Estate, 2013a). Six rounds have been announced for offshore wind, increasing in scale and technical complexity as the industry developed. In September 2008, the first leasing round took place in the Pentland Firth in Scotland for wave and tidal energy, which resulted in six wave project development sites and four tidal stream sites to be leased with a potential up to several 100 MWs (Crown Estate, 2013b).

Marine renewable energy (MRE) development may lead to large impacts on the fisheries sector. If the developments proposed around the country go ahead, it is expected that exclusion zones will be established around the developments, resulting in displaced effort of fishers (Alexander et al., 2013; Mackinson et al., 2006), and together with the planned suite of marine conservation zones (MCZs), the problem of displacement is compounded even further (Campbell et al., 2014). Although area closures and controls of fishing effort have been widely used as fisheries management tools, and it is known that they affect the distribution of fishing effort (Hiddink et al., 2006), the scale and extent of the offshore renewables industry as well as other area closures (e.g. as a result of marine protection) is unprecedented. This increased pressure on the marine space is recognised in both the UK and beyond, and in order to improve the stewardship of our seascapes and reduce conflict, a forward-looking, ecosystem-based and transparent process known as Marine Spatial Planning (MSP) is being promoted; frameworks being developed; experiences documented; criteria tested; and future priorities envisioned (Douvere and Ehler, 2009; Foley et al., 2010; Halpern et al., 2012; Stelzenmüller et al., 2013). In the UK, the Marine and Coastal Access Act (MCAA) (hereafter the Marine Act), a system for MSP gaining Royal Assent in 2009 and now enacted into law, was established, which aims to rationalise the use of the marine area. However, little is known about offshore renewable energy generation and its interaction with fishing effort. Even less is known about the social, economic and environmental impacts of effort displacement or the cumulative impacts that multiple area closures will have (Hilborn et al., 2004; Mangi et al., 2011; Punt et al., 2009; Sale et al., 2005). As a result of increased development in the sea space it is imperative to understand the ways in which fisheries and renewable energy interact and explore potential for co-existence.

In this research we investigate the challenges in resolving interactions between fisheries and marine renewable energy. We focus on the improved co-existence between the two sectors and developing a mitigation agenda for fishing effort displacement in the UK. This research was carried out as part of the work of the Fisheries and Marine Renewable Energy Working Group (FMREWG), and consists of a scoping survey and two workshops, funded by the Marine Renewable Energy Knowledge Exchange Programme (MREKEP), a Natural Environment Research Council (NERC) project and co-ordinated by Plymouth University.

2. Methods

The primary focus of the research was the interaction of fisheries and the MRE sector in the UK context. Focussing on the UK as a case study enabled an in-depth investigation of the issues around fishing effort displacement and renewable interactions in this specific area. Robson (2002) described this approach “as a strategy of research which involves an empirical investigation of a contemporary phenomenon in its real life context using multiple sources of evidence”. This focus also allowed for the application of multiple methods, including a questionnaire survey and two workshops based on the Delphi-method.