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Marine renewables and coastal communities—Experiences from the offshore oil industry in the 1970s and their relevance to marine renewables in the 2010s

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ABSTRACT

Ambition to create jobs and economic growth from the vast open spaces of the oceans and seas is made real by new and developing technologies. In the 2010s, renewable energy generated from wind, wave and tide is laying claim to large areas of marine space and driving the search to find new ways to manage ocean and coastal development. Many more activities are expected and precedents are currently being set for the future of marine governance. Several observers have drawn parallels with the development of offshore oil and gas in the 1970s, which also represented a step change in use of the seas and coasts. The change was particularly felt in the Orkney and Shetland archipelagos, at the centre of the North Sea oilfields. Special powers were granted to the county councils here to control development and share in its benefits. This paper compares the oil and renewables industries, separated in time by nearly 40 years, and their influence on adjacent communities. The similarities and differences are identified to test the hypothesis that the 1970s oil model of local participation could be repeated for the development of marine renewables in the 2010s. The conclusion is that the model could well be applied but that the political and policy drivers of today make it unlikely, at least for the time being. Most notably, the change in the role of the public and private sectors and the use of market instruments to achieve national objectives tend to favour a climate of central control.

1. Introduction

"…*Orkney is currently* [2012] *at the centre of Scotland's efforts to lead the world in marine renewables…The parallels with the 1970's and the arrival of oil in the North Sea are striking…* [Then] *both the oil industry and national Government needed Shetland for Sullom Voe's proximity to the oil fields and Orkney for the strategic importance of Scapa Flow…*[Now] *with the abundance of natural resources in terms of wave and tidal stream, the Northern Isles can be part of meeting exacting international climate change targets…*" Tavish Scott MSP and Liam McArthur MSP, March 2012 [1].

"*We find ourselves …* [with marine renewables in 2012]*… in a comparable position to that of the nascent UK oil and gas industry in the 1970s. Early work had begun and profits were emerging, but we had yet to gauge the full scale of the opportunity*." Offshore Valuation Group, 2010 [2].

Ambition to create jobs and economic growth from the vast open spaces of the oceans and seas is made real by new and developing technologies. Traditional uses such as shipping and fisheries were joined by offshore oil and gas production in the last half of the 20th century. Today it is renewable energy generated from wind, wave and tide which is laying claim to large areas of marine space and driving the search to find new ways to manage ocean and coastal development. Many more activities are expected in the future. The European Union foresees marine renewables, and more aquaculture, sub-sea minerals recovery and marine biotechnologies as key to Europe's economic well-being [3]. Precedents are being set for the future control and use of marine space, especially in the coastal zone. Decisions are yet to be made about how the economic benefits flowing from these activities should be distributed. Policy and legislation, and the institutions to implement them, are a work in progress. It is a critical moment in time for the development of marine governance.

The Orkney archipelago in Scotland has quickly become established as the world centre for the research and development of wave and tidal power [4]. Plans are well advanced for the first commercial arrays to be deployed just off the coast. However, in nearly all circumstances in Britain, the local powers of planning

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and control of development extend only to the low water mark. On the sea side of this boundary, such powers, as there are, transfer to central authority. These include statutory marine spatial planning; licensing of development; and the designation of marine protected areas [5]. The UK territorial seabed is designated as 'Crown Land', a form of public land, which is administered under statute by the Crown Estate Commissioners in London [6]. Coastal local authorities and communities will be consulted about development but they have few powers which can influence events offshore and secure local benefits. The seas may be as much a part of their lives as the land and local stakeholders express concern that national objectives, such as energy security, will take priority over their needs and wishes [7].

There are limited examples of previous practice to refer to Marine activity on the scale now envisaged is a new phenomenon. One example, unique in Britain, is the development related to offshore oil infrastructure in Orkney and Shetland in the 1970s. The Shetland Council, followed by Orkney, sought from parliament, and won, special powers to control their waters and share in the oil revenues. They established a principle, not so far applied elsewhere in the UK, that control and benefits should pass to the communities most affected. The Orkney and Zetland County Council Acts of 1974 have succeeded in giving local control to marine development and have brought huge benefits and legacies for the future of the Northern Isles. In this paper we examine the arguments and issues raised in the oil debate and compare them to marine renewables. The hypothesis posed is that

> "*The Orkney and Shetland response to offshore oil and gas development in the 1970s represents a model which could be repeated for the development of marine renewables in the 2010s.*"

The research approach involves a comparative literature and document review of the issues raised in each case searching for the similarities which may support the hypothesis and the differences which may negate it.

1. The oil and gas case is explored through the Shetland example because of the importance of the islands to the European offshore oil industry and the generic community issues which were raised. Here the local powers granted under the Zetland County Council Act 1974 apply to the whole of the Shetland part of the UK territorial sea. They apply to all developments in this marine area.
2. The marine renewables case is explored through the Orkney example because Orkney waters are at the centre of research, development and deployment of the first wave and tidal energy arrays in the world. The Orkney County Council Act 1974 extends local control to only a few marine areas specifically affected by oil and gas developments, principally Scapa Flow. The marine renewable developments in Orkney waters lie outside the designated areas of special powers under the Act.

After exploring the background, the respective issues in each case are examined under the headings of (i) Technology and markets; (ii) Social and environmental interactions; and (iii) Political backgrounds. Discussion leads to conclusions about the wider application of the Orkney/Shetland oil and gas model and its relevance to marine renewables.

2. Background

2.1. Offshore oil and gas in Shetland

The development of the 'North Sea Oil Industry' is set against the context of political instability in the Middle East producing areas and the oil price shocks of the 1970s. In Britain the problems were made worse by mounting economic and social instability in spite of two decades of sustained growth. Oil exploration started in the North Sea around 1965 and was quickly rewarded with small finds of recoverable reserves. Major finds followed including the Forties field (3bn barrels) in 1970 and the Brent field (2.5bn barrels) in 1971 [8]. The Brent discovery, 150 km north east of Shetland, was kept secret by Shell until an announcement in August 1972 when they revealed plans to pipe the oil to Sullom Voe in Shetland. They planned a "£20 million terminal" to handle 300,000 barrels per day. The Sullom Voe terminal, commissioned in 1976, eventually cost £1300 million and handled over 1.2 million bpd at its peak [9]. UK oil production increased rapidly to around 2.5 million bpd in 1986 and peaked at around 3 million bpd in 2002 [10]. It is currently in sharp decline but new discoveries and enhanced recovery, aided by new technology, could see at least some production continue until about 2050 [11]. The oil company TOTAL has recently invested in a new gas plant at Sullom Voe.

Shetland is the most northerly and remote county in the UK with a high proportion of UK oil under its waters (Fig. 1). It has historically strong links to Scandinavia. Despite a declining population it was, in 1970, a county of very low unemployment and a relatively successful economy based on fishing and knitwear. Sensing the long term consequences of oil operations for their islands, and fearing government inaction, the Shetland Islands Council (SIC) appealed directly to the Westminster parliament in 1972. They tabled a private bill requesting special powers to share in the development of the new industry and control some aspects of its working [9]. The subsequent Zetland County Council Act passed into law in April 1974. Similar principles were introduced to Orkney in the Orkney County Council Act 1974. However, the extent of expected oil related activity was less here and the powers were applied to a relatively small area around Scapa Flow. The Zetland County Council Act 1974 granted to the SIC:

1. Exceptional compulsory purchase powers for the advance purchase of the land for the Sullom Voe oil terminal and its subsequent lease to a consortium of oil producers;
2. Harbour Authority powers over the part of UK territorial sea around Shetland (then 3 nm but since extended to 12 nm) allowing the Council to control development of all activities in the marine area; and
3. Certain financial powers including a right to invest, a right to borrow and a right to retain oil related revenues to invest in the future of the county and mitigate the effects of disturbance.

The SIC was able to use these powers to purchase the land for the oil terminal and lease it to a consortium of oil producers, imposing conditions and earning rents. They also negotiated disturbance fees and royalties on oil landed in Shetland. In addition, they raised revenues from council tax and income from selling services such as port operations. These resulted in substantial earnings some of which were channelled into a Council 'Oil Reserve Fund' and others into the Shetland Charitable Trust (SCT). The value of the Oil Reserve Fund in 2012 is close to £200 million [12]. The SCT is set up for the purpose of making grants or loans to infrastructure, goods or services for the benefit of the community of Shetland. In March 2011 the SCT reserves stood at £217 million [13]. These funds have allowed the council to plan for a future without oil and to invest in new long term businesses including aquaculture, oilrig decommissioning facilities, fisheries and renewable energy.

It is hard to gauge the whole scale of the socio-economic and infrastructure benefit of oil to Shetland. A key measure is the