



# Socio-economic impacts of community wind power projects in Northern Scotland



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## ARTICLE INFO

### Article history:

Received 13 June 2014  
Received in revised form  
25 May 2015  
Accepted 18 July 2015  
Available online xxx

### Keywords:

Socio-economic impacts  
Input–output modelling  
Community wind power  
Social enterprises  
Place-based development

## ABSTRACT

The production renewable energy is a promising sector for social enterprises located in the remote northern communities of Scotland. Community wind power offers a way to generate resources to be re-invested in local development purposes, such as community businesses, social services and infrastructure and communications. In this study, a regional input–output modelling is applied to the analysis of the socio-economic impacts of 11 wind farms of community-based social enterprises located in the Outer Hebrides, Shetland and Orkney. The results show significant socio-economic benefits of re-investing revenues for social purposes. For instance, strategic re-investments of revenues in local social services generate about tenfold additional employment and income impact compared with the impact of wind power production. Our socio-economic analyses find that community-based social enterprises are one promising solution for place-based regional development in the European northern periphery.

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## 1. Introduction

Rural communities across the Northern peripheries in Europe are struggling with economic challenges and urgently need new activities to retain population and to maintain basic services. The communities are often isolated, dependent from the success of local economy and they face social challenges due to an ageing population, unemployment and declining economies as a result of uneven regional development. Thus, their development requires place-based strategies that build on identified local assets and challenges [1]. Investments in the growing sector of renewable energy can provide a stimulus for the local economy and improve the efficiency of use of local resources, such as land, labour, infrastructure and machines ([2–6]). Renewable energy is also conceived as an opportunity for farmers to diversify their income and for the generally marginalised rural areas to foster their own development. Renewable energy appears also to have a high level of support from local communities [2]. Local socio-economic impacts of renewable energy are quite dependent on the attendance and ownership of local communities to which place-based development approaches can contribute.

In renewable energy projects, there is often a problem at the level of local communities because they are left with negative externalities while most of the revenues and benefits leak to non-local actors [7]. The expectations of the local populace and the local socio-economic impacts achieved by these projects of external investors do not always coincide [8]. This can hinder the social acceptance of these projects [9]. One way to increase the social acceptance and community benefits of renewable energy projects is to establish social enterprises, i.e., enterprises that are aimed at fulfilling social purposes and working toward the social good in local communities.

A significant proportion of Europe's economy is organised via the Social Economy, and the socio-economic significance of social-economy enterprises is also widely recognised in European and national policies.<sup>1</sup> One definition of the Social Economy is established by CIRIEC in the European Economic and Social Committee report “Social Economy in the European Union” [10]:

“The set of private, formally organised enterprises, with autonomy of decision and freedom of membership, created to meet

<sup>1</sup> For instance: EC programmes aimed at helping small and medium size enterprises, such as the Competitiveness and Innovation Programme; Social Economy Europe, which is the EU-level representative institution for the social economy; and the UK government strategy known as The Big Society.

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their members' needs through the market by producing goods and providing services, insurance and finance, where decision-making and any distribution of profits or surpluses among the members are not directly linked to the capital or fees contributed by each member, each of whom has one vote, or at all events take place through democratic and participatory decision-making processes. The social economy also includes private, formally organised organisations with autonomy of decision and freedom of membership that produce non-market services for households and whose surpluses, if any, cannot be appropriated by the economic agents that create, control or finance them."

Who then are social entrepreneurs, or entrepreneurs within the social economy? A classical definition by Gregory Dees [11] states that social entrepreneurs are agents that enact change in the social sector by creating and sustaining social value, not just private value. They recognise and pursue new opportunities to serve their social mission; engage in a process of continuous innovation, adaptation and learning; and act boldly with the resources at hand. In addition, Dees notes, they exhibit a heightened sense of accountability to the constituencies they serve and for the outcomes created. Social entrepreneurs often target underserved, neglected or highly disadvantaged populations, aiming for large-scale transformational benefits to a significant segment of society (or society at large) [12]. This system-changing aspect aligns with the Ashoka (Innovators for the Public, a citizen-sector organisation) definition presenting social entrepreneurs as creators of small changes in the prevailing system in the short term whose changes significantly affect the system in the longer term [13].

The communities in the Scottish Isles are typically small and their economic structure is vulnerable from economic shocks. Therefore, projects that can impact the whole community are very valuable and a significant part keeping these communities populated. Communities in the harsh climate of Europe's northern peripheries are energy consuming, but they also have abundant significant resources available (e.g., wind, hydro, biomass, or geothermal). Social enterprises operating in close connection with communities can often build on the reliable local demand for renewable energy and decrease the dependence of imported energy. It is also noted that local ownership and involvement usually smooths the implementation of renewable energy projects [14]. Community renewable energy projects can also address domestic energy poverty, i.e., a situation in which a community cannot afford or does not have access to energy.

In the context of renewable energy development, social enterprises typically follow the models of distributed economics [15] in which "the production is distributed to the regions where a diverse range of activities are organised in the form of small-scale flexible units that are synergistically connected with each other and prioritise quality in their production." The current arguments for community-based projects are similar to ideas of "soft energy paths" [16], "appropriate technologies" and "small-scale development" [17,18], for which the preferred technological choice and application was small scale, labour intensive, energy efficient, decentralised (or distributed), environmentally sound and locally controlled or owned. Certainly the prospect of moving from centralized power generation to the decentralized use of diffuse renewable sources raises new and challenging issues of planning, land use and social engagement in energy questions [19].

The UK government has promoted community renewable energy since 2000 through funding programmes and support schemes [20]. The Government has raised attention to the beneficial impacts of community renewables, such as contribution to

economic regeneration, achieving the goal of low carbon economies, social cohesion and social acceptance [21–23]. This development aligns with the paradigm of the Social Economy. Community renewable energy projects are suitable for social enterprise activities, as many of them do embrace both environmental and social values and express those values through good practices in management, energy use and production, and recycling [24].

Community inclusion in the renewable energy projects of external investors is often motivated by averting local opposition – most often toward wind farms [20,9]. The concept of community energy can include communities in many roles, as owners, co-owners or partners/stakeholders [23]. Communities can also be categorised as communities of localities and communities of interest [21]. The models of social enterprises in community renewable energy include many legal and financial models, such as cooperatives, community charities, development trusts (representing communities' interests) and shares owned by a community-based organisation [23]. Therefore, it is always case specific how well community-based social enterprise represents the locality. The wind-power farms investigated in this study represent community development trusts, with local ownership and control.

Earlier research has provided a better understanding of diverse community benefits and also of the local economic aspects of community wind power in the UK [25,26]. In addition, consultants in wind-power development have provided in-depth analyses of the impacts of single schemes in Northern Scotland [27–29]. Our objective is to establish a better understanding of the role of community-based social enterprises in generating place-based socio-economic (income and employment) impacts. This study develops a regional-level socio-economic input–output model for analysing the impacts in the Scottish Isles. The contribution also rises from the investigation of re-investments of revenues: how do the strategic re-investments of the social enterprises in local defined purposes (businesses, social services, infrastructure and communications) affect the level of income and employment. The assumptions behind the study are that community ownership and control is essential for ensuring the place-based impacts, as the local impacts result from the use of local resources in the investment and operation phase (land, infrastructure, labour, machines, supplies, services), and also in decisions about re-investing the revenues. When operating in an inclusive manner, they can also increase the coherence of the local community. By strategic re-investments of revenues for defined social purposes, social enterprises can potentially increase social sustainability and generate socio-economic benefits for the community.

## 2. Study region of the Scottish Orkney, Shetland and Outer Hebrides

### 2.1. Profile of the regional economy

The study region consists of the Scottish Orkney, Shetland and Outer Hebrides (Western Isles). The region comprises archipelagos characterised by dispersed population and long distances. Much of the economic activity is generated from within in these islands (such as public sector services, tourism and cultural attractions, agriculture, crofting, fishing and aquaculture, and energy production), but there is also strong dependency on connections with the mainland of Scotland for supplies and export [30–33,35]. Growth is expected in tourism and renewable energy (wind and marine), but the petroleum industry also remains economically vital, especially in Shetland. Tourism benefits from the region's rich cultural heritage, as well as the landscape and other natural amenities.

The distance, both time and physical, places the region at a

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