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The economic and social impacts of local energy: project update

Project team

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1. Introduction

ClimateXChange[1] is analysing the economic and social impacts of local energy initiatives in Scotland, focusing in particular on the Local Energy Challenge Fund (LECF). The research will use information gathered from LECF projects - and in the case of our analysis of social impacts, also from long-standing community energy projects - to better understand, model and measure the regional, sub-regional and local economic and social impacts associated with the development of local energy systems.

2. Interim results

The research team is collecting LECF project specific data from a number of sources, including from application forms, in-person structured interviews with project representatives and wider stakeholder workshops.

2.1 Economic impacts

For the economic impacts analysis, data has been collected in three broad categories: (i) financial; (ii) employment; and (iii) energy. To date, the economic impacts research team has held structured interviews with four of the five Phase 1 LECF projects.

The structured interviews captured information across five areas. Below we detail findings so far under these categories:

i. The scope of the LECF project

Projects adopted varying definitions of "local", with project boundaries defined by groups (including project partners and/or community groups), or the boundary of an (in time) commercially viable project. Because of the diversity of projects represented, we found in several instances that it was impossible to have a pre-determined framework within which to place individual projects. We anticipate that one outcome from this study will be a recast and more rigorous definition of what constitutes a 'local energy project' and a 'local energy economy'.

All projects agreed that their precise geographical boundary was to address "an identified need in a previously identified geography", while two also cited reasons of "technical feasibility". Two of the projects identified the project as an "opportunity to explore a novel energy solution".

[1] Scotland's Centre of Expertise on Climate Change, funded by the Scottish Government to provide evidence to support policy making on the low carbon transition.

Project beneficiaries include domestic-, business-, and charitable entities as well as local authorities, with benefits primarily identified as "lower energy bills", "enhanced access to energy and energy storage", and "reduced energy demand" in the local area. Few if any of the projects studied thus far have an active 'knowledge transfer component' built into their design.

ii. Sources of finance

A number of projects benefitted from both in-kind and additional finance to undertake activities, including in-kind contributions from partner organisations, grants and loans.

All representatives reported unequivocally that it would not have been possible to take their particular project forward without financial support from the LECF. In many cases, representatives highlighted the specific targeting of LECF funding towards early-stage and demonstrator projects, with naturally greater project risk when compared to less novel or more mature projects, as a key feature. Several viewed the LECF as "allowing innovation to take place where it otherwise would not".

iii. Project expenditures

One link between LECF projects and economic benefits is through project-related expenditure in the local area and wider region. Such benefits are likely to be temporary in nature, but could be important in supporting development of local "supply chains".

Our survey identified two factors in particular as being important for the choice of suppliers to LECF projects: the firms with the ability to deliver on project timescales, and the appropriate skill sets.

The identification of appropriate suppliers was a common issue for many projects and indicates the crucial role of the project manager in securing an appropriate supplier. This reveals the importance of formal and informal support networks and the role of social capital in the local energy sector in supporting projects at the delivery stage.

For these reasons, we find that the proportion of expenditures made locally differed across different goods and services. Staff costs, for instance, were typically made locally to the project while legal costs were often sourced outside the local area, and in some cases outside Scotland, given the complexity of legal issues confronted in a number of projects.

In a majority of cases, project managers prioritised using local companies for goods and services, and only opted for national and otherwise international providers if no local supplier could be found. This is interesting, as to our knowledge no stipulation for local procurement (formal or informal) is made by the LECF programme.

iv. Employment and income

There were issues of recruitment of suitable staff across the LECF projects, which varied from mild to significant. Some posts were unfilled, in places due to the availability of prospective employees within travel distance of the project.

Most projects drew from local expertise where possible, in some cases including the partial use of volunteers taking roles on projects, while the use of in-house expertise, expertise within project partner organisations, and expertise in social networks was a vital source of knowledge for all projects. In some cases, representatives felt that the tight delivery timescales left them no choice but to rely on informal recommendations from trusted acquaintances, and reported that this likely saved both time and money relative for more formal (e.g., tender-based) procurement processes.

v. Project revenue

Of the projects identified only some have a revenue-raising intention (in later stages of the project), while others focus on energy provision with novel technology with a potential to reduce energy costs.

Revenue-raising projects had identified revenue disbursement would take place through community organisations and groups, including Charitable Trusts and Community Councils, with monies spent on community projects.

2.2 Social impacts

Aims and rationale

The overarching aim of this research is to provide a methodological basis for the ongoing assessment of social impacts of these local energy initiatives. To this end, the project had two specific objectives:

- To facilitate a deliberative dialogue between local energy stakeholders from policy, practice and academia to collaboratively identify the key social impacts of local energy projects.
- To establish an effective and implementable procedure for capturing evidence of the identified social impacts, which has been co-created and validated by a cross-section of stakeholders.

In meeting these aims, the research intends to improve the quality and quantity of evidence on which assumptions about the positive social effects of local and community energy are based. This evidence is currently fragmentary and largely anecdotal. Therefore, this research seeks to develop a framework which will provide i) a consistent definition of the potential social impacts of local energy projects, and ii) a replicable method by which to gather evidence of these impacts in practice.

Approach

A collaborative, iterative approach to data collection and analysis is being taken. The first phase of this was to bring together public, private, and third sector stakeholders through a series of four collaborative, multi-stakeholder workshops. These workshops were held in Kirkwall, Glasgow, Stornoway and Edinburgh in Spring 2016, and were attended by a total of 40 participants, including: i) practitioners from local and community energy initiatives; ii) representatives from funding and support organisations; iii) policy officials; and iv) local energy researchers. During the workshops, participants employed a 'participatory impact pathway analysis' approach to identify the outcomes and impacts of local and community energy projects, and shared perspectives and experiences of the ways in which these could, or should, be measured.

After all four workshops had been conducted, the researcher analysed the discussions to develop a working version of the social impact framework. In the current phase of the project, the framework is being evaluated and tested by current local energy projects to ensure it is fit for purpose. It is essential that the measurement approach and wider research outputs will be useful to, and used by, all stakeholders.

Interim findings

The primary outcome of the workshops was the formulation of a draft social 'impact pathway' map (Appendix III), which revealed the key community-level impacts of local energy projects in Scotland. This draws the work of the four workshops together with existing evidence in the literature. A key issue that emerged through this process was the impossibility – and undesirability – of decoupling 'social' or 'cultural' impacts from 'economic' or 'environmental' impacts, as these are all inherently interlinked and interdependent.

It was clear that it is not feasible to devise a comprehensive list of every possible impact that local energy may deliver. Neither should every local energy project be expected to deliver all the same impacts. A recurring element of discussions within the workshops was an awareness that local energy projects may have both positive and negative impacts at the local level and, therefore, any expected impacts should be framed neutrally to account for both positive and negative change.

The following 12 key areas of impact have been identified:

- Employment

- Provision of grants
- Direct local investment
- Community ownership of other local projects
- Public satisfaction with local decision making
- Knowledge and skills development
- Ambition and aspiration for the community
- Local cohesion and solidarity (bonding social capital)
- Communication and network building (bridging and linking social capital)
- Energy and climate change literacy
- Carbon footprint
- Warmth of homes

A central part of this process has been to identify the *pathway* to impact. This has revealed six (potential) features of local energy projects which act as the 'sources' of impact (see Appendix III). Local energy projects which incorporate all of these features are more likely to deliver a wider range of local social impacts:

- Income generation
- Local delivery and management of a major asset
- Collaboration with other organisations
- Local ownership of renewable energy infrastructure
- Local supply of energy for local use
- Local ownership of a technologically innovative project

A key finding regarding the requirements for the monitoring and evaluation framework included the importance of a multi-method approach, and the need for the framework to meet the needs of all stakeholders. This is currently being collaboratively developed and tested with stakeholders.

3. Future work

The economic impacts project team is developing the model inputs to support the economic analysis of the impacts of these LECF projects on the local and Scottish economies. This will be completed during Autumn 2016.

The team is also focusing on testing effects on employment, and is exploring the possibility of broadening the existing dataset with other Scottish community energy projects. In addition, findings are being considered in terms of how project risk may be valued.

The social impacts project is piloting the broad framework that emerged following analysis of the workshop outputs. Local and community energy practitioners will 'road test' the framework and their experience will be incorporated into refinement of the framework in the late Autumn 2016.

3.1 Data collection issues

It has proven harder than expected for project representatives to commit to in-person surveys for the economic impacts research, and to provide follow-up clarifications or additional information required for the study. It may be worth considering building a more rigorous survey procedure into the LECF contracts than is currently in place.

Annex I – Background: Local Energy in Scotland

The Scottish Government's Local Energy Challenge Fund (LECF) aims to demonstrate the potential economic and social benefits of establishing local low carbon energy economies. Projects funded through the LECF will provide valuable insights into the impacts that local energy projects can have on local economies; by attracting and distributing income, and by changing the way that energy is generated and consumed.

'Local' in this context relates to a geographical area of Scotland, which might be regional or sub-regional (e.g. at a level below local authorities), and within which an energy solution may be developed. Such developments typically involve some form of localised energy generation, with energy being locally consumed and/or exported to an energy network. 'Energy', meanwhile, is used broadly to denote heat, electricity and transport fuel solutions.

The Scottish Government currently provides various streams of support for local and community energy, notably through CARES, LECF and CCF. To date there is no solid methodological basis from which to begin a comprehensive assessment of the social impacts of these initiatives.

While the specifics of the local energy development vary between LECF projects, our research method is designed to produce consistent and comparable broad estimates of the actual and potential economic (either in monetary terms, such as local wage income, or local value added2), energy and environmental impacts of that development on the local and wider regional area. The methodology will be applied to the five projects funded through the first round of LECF. To our knowledge, this will be one of the first research projects – in Scotland or elsewhere – to monitor, assess and estimate the economic impacts of local energy projects over a 'longitudinal' timeframe.

A two-pronged approach is being undertaken. The first, led by FAI, employs what is known as an ex ante approach. Rather than measuring outcomes directly, this method will use an economic model that links geographies through production and consumption relationships. This model can also be used to illustrate impacts on energy use at various geographic scales. One of the important advantages of this approach is that the various impacts of each aspect of local energy projects can be isolated, e.g. local expenditure during the project phase, and ongoing impacts. FAI will focus on identifying key areas of economic impact, including "Local ownership and use of incomes", "Local content", and "Multi-level (economic and environmental) impacts".

The second approach, led by Hutton, uses what economists call an ex post method. This aims to complement FAI's economic modelling by measuring the actual outcomes of projects more directly. This will be done by examining each individual project, to observe the impacts that they have on the local economy, such as income and employment, over time. A sample of communities in which local energy projects are being established (referred to as 'treatment' communities) will be compared to a sample of similar communities in which local energy projects are not being developed ('conventional' communities). This will require a sample of both local energy communities and 'conventional' communities, which are similar to each other and would hence have similar economic characteristics in the absence of a LECF project. A comparison group of 'conventional' communities will be drawn from those communities which applied for, but did not receive, funding from rounds 1 and 2 of the LECF, and the Geothermal Energy Challenge Fund. The 'treated' group will include all 6 projects funded under Round 1 of the LECF.

All data collected for the purposes of this study will be will be collected and handled in accordance with the Data Protection Act (1998).

[2] Gross Value Added (GVA) is the measure of economic activity produced for Scotland and local levels within Scotland. It is commonly assumed to be equivalent to the more widely-understood measure of economic activity of Gross Domestic Product (GDP) which for technical reasons is not calculated at levels below the UK as a whole.

Annex III – Social impacts pathway analysis