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Towards sustainability with renewable energy economy: Social innovation of grassroots initiatives

A case study of 'Here We Are' in Cairndow, Scotland

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Abbreviations and contextual definitions

Ardkinglas Estate: Replacing the castle which existed in the 16th century Ardkinglas Estate was built in 1906-8. It is still owned by a descendant of the family who bought it in 1905 along with the Gardens of Ardkinglas, and other land in Cairndow area. Nowadays it is operating the Tree Shop as well as managing and renting out residential houses in Cairndow.

Cairndow: It is a parish near the head of the sea loch called Loch Fyne. Administratively it is part of Argyll and Bute council area in Scotland. It is also called sometimes as 'Kilmroch' after its church. Although this thesis refers to 'Cairndow', the greater Cairndow area is used as subject of this study.

Chipping plant: This term refers to the wood chipping plant fully owned and managed by Our Power Ltd. of HWA.

Community: This term is used to refer to the residents, estate or land owners, workers and business owners of the greater Cairndow area.

HWA = Here We Are: It is a community interest company with a charitable legal status since 1998. Its employees and volunteers aim to improving the life of the community of Cainrdow. Not all residents of Cairndow are members of HWA.

Hydro plant: This term refers to the Merk Hydro Project LLP which is a joint venture in which Our Hydro Ltd. of HWA owns 25%. The three private investors also have a 25% share each. The construction phase of the hydro plant started in May 2013.

Wind Farm: Clachan Flats Wind Farm has nine wind turbines near Cairndow. It provides community benefits for Cairndow and the neighbouring Invararay.

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Abstract

In the field of sustainability research, little is know about the socially innovative solutions with which communities seek to meet their economic and cultural needs as well as move towards a sustainable future. This thesis aims to explore the possibilities of socially innovative projects, which are carried out by bottom-up initiatives, to successfully meet the social, technical and economic challenges of climate change. This thesis applies Vandana Shiva‘s philosophical concept of ‘renewable energy economy’ which proposes to simultaneously carry out two types of actions: a decrease in energy use and consumption, and an increase in creative human energy. By adopting this framework, this thesis aims to explore the role of social innovation of grassroots initiatives in the sustainability transition towards low carbon rural economy. This thesis uses case study method to source information about a grassroots initiative called ‘Here We Are’ in Cairndow, Scotland. The results of this analysis show that HWA’s technical innovations originate from and are enabled by fundamentally social processes and social practices, such as the characteristics of leadership, group cohesion and cooperation.

Keywords: renewable energy economy, low carbon economy, sustainable development, social innovation, grassroots initiatives, leadership, community involvement

1. General introduction

Climate change has been in the focus of mainstream global discourse for the past decades. Most of us are already aware that the environmental outcomes of climate change have impacts on social, political, economic and environmental issues affecting us all, and that arguably these will fundamentally change our society. Climate change is caused largely due to greenhouse gasses produced by human activities and it has already had observable negative effects on the planet. It has been widely recognised that the world must take urgent and effective steps to mitigate climate change because "taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time" (IPCC, 2007, p. 17). We are currently witnessing the consequences of climate change and the present socio-economic, political and technological actions may reverberate, in climatic and many other ways, for centuries into the future.

Despite climate change having global effects, research on this topic has traditionally been divided into three major areas and examined separately. The first area is technical innovation. It has been argued that there is a need for technical solutions for sustainable energy production, for instance in the field of renewable energy resources. The second research area is the theme of alternative economies, including smart specialisation and low carbon economy, stressing that climate change requires a revision of the way our economy is organised. And thirdly, climate change demands a significant social and behavioural change as well. This reflects for instance in household energy use, through for example the installation of energy saving heating kits.

This divergence in climate change research has received some critiques and concerns. At the first place, these different areas still have little interaction with each other whereas they are seeking for the same societal transformation (McMichael et al., 2005). Furthermore, we may also criticise the existing imbalance favouring technical and economic solutions whereas the social side is neglected (Parra, 2013; Seyfang & Haxeltine, 2012). In addition, they usually involve

different sorts of top-down solutions imposed from above and therefore their implications can result in conflicting relationships (see Langbroek & Vanclay, 2012; Murphy, 2010). Reflecting to these critiques this thesis proposes to explore the socially innovative projects of bottom-up initiatives to successfully meet the social, technical and economic challenges of climate change.

1.1. Theoretical basis

Similarly to a growing body of research this thesis aims to reverse the trend of emphasising "the technological aspects of socio-technical transition, at the expense of social innovation, movement and actors" (Seyfang & Haxeltine, 2012, p. 382). This thesis argues that social innovations are as important as technical innovations in the process of moving towards a sustainable future. The future of energy does not only depend on technical innovations but on new social agreements. For establishing an economy that is built on responsibility towards the environment as well as towards the affected communities we will need to look beyond economic and technical answers. In other words, it is not the innovations of low carbon technologies alone that lead the sustainability transitions. The transformation needs to be generated by a new society which will use low carbon technologies that were selected according to the region's strengths and opportunities. This new society will use these technological tools to meet local needs in the present and the future, and subsequently it will be able to achieve sustainability.

This thesis aims to build bridges between the concepts of 'low carbon rural economy' and 'social innovation'. The concept of low carbon economy refers to a decarbonised economy with a minimal output of greenhouse gas emissions, especially carbon-dioxide emissions, into the environment. Social innovation in the context of sustainable development relates to the way "individuals, groups and communities take action in response to unsustainable practices and unsatisfied social needs while also focusing on the challenges of environmental degradation and climate change" (Mehmood & Parra, 2013, p. 53; Parra, 2013).

To better understand how social innovation can foster sustainable development this thesis seeks inspiration from Vandana Shiva's[1] philosophical standpoint on how society should tackle the triple crises of climate change, peak oil and food insecurity. Given the situation, Shiva argues that there is a need for a cultural paradigm shift in the society which will lead us to a more sustainable future in a broad sense by giving priority to the values of democracy, freedom and justice. In her words, the transition to a "renewable energy economy" is to be built by a dynamic process carried out by free citizens and communities who will "power down" the consumption of energy and other resources and "power up" creative, productive human energy and collective democratic energy (Shiva, 2008, p. 4).

Grassroots innovations are carrying out community-led and community-level actions and they have been increasingly held for a solution for sustainability. In academic, policy and practitioner circles there is an enthusiasm for grassroots initiatives having a potential to create low carbon communities (Seyfang & Smith, 2007). In many cases, these innovations from the bottom-up are providing sustainable applications that will also meet local needs, interests and values of the communities involved. While evidences suggest that activists of grassroots initiatives experiment with social innovations and greener technologies the role of the social innovation in grassroots initiatives is still a neglected side of the innovations for sustainability (Parra, 2013).

This thesis proposes an alternative approach for sustainability which is called 'renewable energy economy' after Shiva's philosophical concept. While this thesis adapts her framework in principal it defines the power down process differently by using the concepts of smart specialisation and low carbon economy. For the power-up process, this study applies the concept of social innovation. In addition, Shiva's free citizens and communities, who ought to carry out these dynamic processes, are here represented by a grassroots initiative called 'Here We Are'.

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[1]Dr. Vandana Shiva (1952 -), trained as a physicist, received her PhD from the Western University of Ontario, Canada for her thesis about the philosophical underpinnings of quantum mechanics. She has become an environmental thinker and activist, and she is the founder of 'Navdanya' a non-governmental organisation in India promoting biodiversity, the rights of farmers and seed saving. Her work on ecofeminism was recognised with the Right Livelihood Award in 1993 which is also referred to as the 'Alternative Nobel Price', and the Time Magazine identified her as an 'environmental hero' in 2003.

1.2. The case of HWA in Cairndow, Scotland

Cairndow is a parish located along the coast of Loch Fyne, in Argyll and Bute council area, in the West of Scotland. It has less than 200 inhabitants and additionally a relatively large number of workers living within a 30-mile radius and are commuting to Cairndow on a daily basis. Over the past decade, there has been a slight growth in the number of inhabitants and newly built houses. With these positive characteristics and trends Cairndow is an outstanding example for a small village in rural Highlands.

This thesis looks at a grassroots initiative called 'Here We Are' (HWA) based in Cairndow. HWA was established in 1998 as a community interest company with a charitable legal status. HWA has a steering committee of eleven members and is currently having six part-time employees as well as volunteers who are managing three types of projects. Firstly, HWA has carried out numerous heritage conservation projects and has been presenting these on exhibitions. Secondly, it provides services for example by being a servicepoint for the council and providing a studying facility for Argyll College. And thirdly, it has two social enterprises which have commercial interests in renewable energy projects. The first one is called 'Our Power' and it manages to wood chipping plant producing energy from biomass and the second one is called 'Our Hydro' and it manages the hydro plant which is currently under construction.

Picture 1.1. The entrance of HWA's building (Source: Author)

1.3. Research problem and questions

This thesis aims to explore on one hand, how can social innovation, steered by grassroots initiatives in rural Scotland, foster the transitional paths towards a low carbon future. On the other hand it aims to examine what societal practices follow or spring up as a result of this sustainability shift.

The central research question is based on the theoretical framework and is applied to the examined case. The main, case-specific research question of this thesis is the following:

What is the role of the social innovation of HWA in the sustainability transition towards low carbon economy?

This main question is supported with three subquestions. These are concerned with those factors that underline the dynamic processes of growth and evolution which have occurred over the time in HWA's projects. The three subquestions are the following:

What factors support social innovation of HWA?

What factors hinder social innovation of HWA?

To what extent does the social innovation of HWA go beyond tackling climate change?

1.4. Outline

This thesis is organised in the following chapters. First, the theoretical foundations of this research with demonstrating its applicability on the case of HWA will be presented in Chapter 2. The research questions and the research tools of the methodological approach will subsequently be specified in Chapter 3. Describing Cairndow and HWA will be the central parts of Chapter 4. Finally, the results will be be discussed and the conclusions will be drawn in Chapter 5.

2. Theoretical background

This chapter focuses on the move towards sustainable energy production and usage. First, the concept of climate change and the paradigm of sustainable development will be explained. Following that a literature review of the leading theories on sustainability transitions will be provided firstly, by focusing on economic theories such as low carbon economy and smart specialisation and secondly, by discussing the role of social innovation and grassroots initiatives in sustainability transitions. The section afterwards will argue for the necessity of a bottom-up driven and social innovation based transition that goes beyond tackling climate change and focuses on the local needs, values and potentials to be met. Based on Vandana Siva's work, the approach used here is called renewable energy economy. It is a transformation comprehending both sustainable resource use and stimulating creative human energy and democracy. Figure 2.1. shows the synergies between the main concepts of this framework. The last section will demonstrate why this particular theoretical framework is appropriate for the case of HWA.

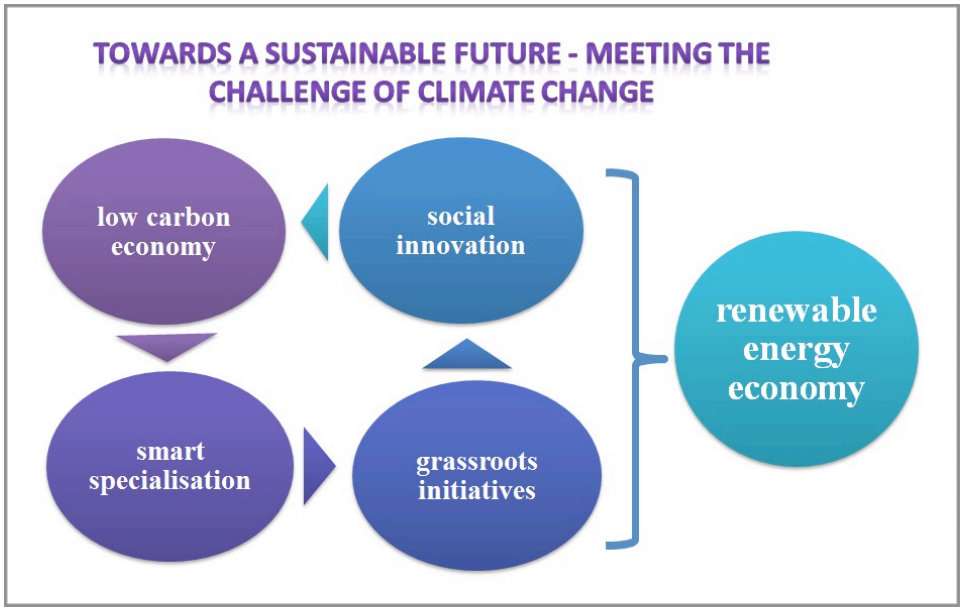


Figure 2.1. Synergies among the core concepts of the theoretical background (Source: Author)

2.1. Climate change and sustainable development

Climate change is a significant and lasting change of weather patterns over periods of time. Since the 1950s, the overall global temperature has been increasing in the lowest 8 kilometres of the atmosphere and in surface temperature by 0.1°C per decade (Ding et al., 2001). The term climate change is also used to describe irreversible, human-specific impacts caused at the first place by the increase in carbon-dioxide level due to greenhouse gas emissions mainly as a reason of burning fossil fuels (Solomon et al., 2009). The atmospheric concentration of the greenhouse gasses are determined by the balance between the emission of gasses and the sinks which remove these gases from the atmosphere. Within this cycle, the sources of carbon emission are mainly wood, coal, oil and natural gas and the carbon sinks are primarily the oceans, soil and vegetation (Cox et al., 2000). Imbalances in the carbon-cycle have long-term effects on our planet and on our lives. Nowadays, we are already witnessing the adverse consequences of climate change in various ways and these might become more often in the future (Ballantyne et al., 2012; IPCC, 2007).

Climate change concerns are not new. In fact they existed in many civilisations before the 21st century (Wheeler, 2004). Historically, the seeds of the current debates about the future prospects of natural resources and the environment were planted in the 18th century. At that time in Northern Europe, rapid urbanisation and industrialisation created localised pollution and health problems, and caused undesired changes in the landscape (Kula, 1998). These concerns were denounced by political initiatives which paved the way for the formation of environmental pressure groups in later years. Starting in the late 1960s, modern environmentalism movements have been emphasising the spiritual, natural and human values over profit and economic progress. Until the mid-20th century, development and environment were thought to be antagonists. Pursuing growth seemed to be impossible without relying on exhaustible natural resources, or causing negative ecological and socio-cultural consequences and socio-economic inequalities.

The views being hold about the way climate change could be tackled are diverse amongst the different academic and political programmes. There are scientists with radical positions (e.g.

Lovelock, 2009) proposing that it is already too late to avoid the dangerous consequences of climate change. Climate change sceptics, for example Lomborg (2001), suggest that instead of trying to cut emissions we should focus on adaptation as well as explore renewable technologies. The mainstream view (e.g. Krugman, 2010; Scottish Government, 2010; IPCC, 2007; Stern, 2007) suggests that the benefits of strong and early interventions on climate change will outweigh the costs of not acting. This main body of scientific opinions aim to gather scientific data, subject it to rigorous review, outline different possible future scenarios and try to attach probabilities to them (Giddens, 2008). Moreover, they argue that there is an urgent need to engage in more sustainable ways of energy used and production.

The phrase 'sustainable development' first appeared in 1972 in Donatella Meadows and colleagues book 'The Limits to Growth'. The concept of sustainable development was established and became widely known after the 'Brutland Report' was published in 1987. From an economic perspective, the message of the Report was that it is possible to achieve a path of development for the global economy which meets the needs of the present generation without compromising the possibilities of future generations to meet their needs (WECD, 1987). But the argumentation for sustainable development also entails a reference to moral grounds. The necessity of a move towards a sustainable use of natural resources also implies that the present generation is responsible in maintaining or upgrading the environmental quality of the planet passed to the next generations.

Since the above mentioned Brutland Report and the United Nations Conference on Environment and Development in 1992, which is also known as Earth Summit, sustainable development became a global objective. These agendas address a critic to capitalist systems, and connect development with socio-economic viability, ecological sustainability and governance while simultaneously aiming to create a design that will allow the future generations to meet their needs (Parra, 2010). Thus, sustainable development seeks to combine economic growth, distributive justice and long-term sustainability, and it emphasises on social learning and experimentation (Grin et al., 2010).

However, the extent to which sustainable development paradigm is able to explain and solve complex environmental, economic and social problems needs to be reconsidered.

Seghezzo (2009) argues certain dimensions, which are otherwise fundamental aspects of our development, are excluded from the Brutland Report's notion of sustainability. Seghezzo denounces firstly, that the adequate representation of the three-dimensional physical, geographical and cultural place is missing and secondly, that the reports do not see people as individual human beings but as undifferentiated members of society. Furthermore the reports have been criticised for failing to take into consideration the indissoluble interactions between the social, economic and ecological dimensions of development and stress mainly the technical and economical solutions by neglecting the social side of it (Parra, 2013).

2.2. Sustainability transitions

The triple crises of food insecurity, peak oil and climate change are persistent problems of the contemporary society. These types of problems are related to systemic failures of our society which, contrary to market failures, cannot be corrected by the market or conventional policies (Grin et al., 2010). However, this situation has the potential to radically transform our confronted society towards a sustainable society. Sustainable development and its challenges is increasingly understood in terms of 'transitions' that will possibly result in more sustainable arrangements.

A successful transition is a radical shift that restructures societal systems. Geels and Schot (2007) define transition as a change from a dominant socio-technical regime to a new regime. The discipline of 'transition management' is concerned with how these transitions should be managed, and it is a relatively young interdisciplinary research field. Transition management is on one hand examining the dynamics of structural changes in societies, and on the other hand it aims to explore when and how these transformations can be initiated, facilitated and influenced (Van der Brugge & Van Raak, 2007).

Within the field of transition management an emerging academic literature has developed around the concept of 'sustainability transitions'. This term refers to the governance, dynamics and directions of the change underlying 'socio-technical transitions' towards sustainable

development (Grin et al., 2010). However, the term ‘sustainable’ is used here firstly to indicate that the field is concerned with the dynamics of greener technological solutions mainly in the energy domain and secondly, because these solutions need to be sustained for extended periods of time in order to successfully diffuse into mainstream an replace incumbent socio-technical regimes (Geels et al., 2008). For this reason, the sustainability transitions literature can be criticised for having an explicit focus on the formation of socio-technical systems without providing a strong concept about the details of the formation processes, including the social approach about space, scale and power (Truffer & Coenen, 2011).

However, there exists a particular viewpoint of sustainable transition management that aims to overcome these critics by focusing on innovation formation processes. It explains ‘innovative journeys’ in terms of a process which consists of patterns that result from interactions and temporal sequences of events. The term ’journey’ stands here for capturing the uncertain nature of innovation formation which is present throughout this struggling and negotiating process, and of which final destination remains unknown. This view in sustainable transition research describes the path of any new innovations as “there may be a sense of general direction (...) but the precise journey changes as the traveller gains more knowledge and experience” (Geels et al., 2008, p.524). From this perspective, going through experimenting and learning processes and sharing potential solutions with a broad network is the natural course of successful sustainable innovation journeys.

Transition management literature uses the evolutionary term ‘niche’ as the opposition of the socio-technical regime to illustrate not just ‘how’ but also ‘where’ these innovations can evolve. Socio-technical regimes are shared technological development patterns which create the mainstream and highly institutionalised way of realising social functions. Therefore, change within the regime tends to be path-dependent (Smith, 2007). On the other hand, in certain environments called niches, which seek to fulfil special demands, the radical innovations which are deviating from existing regimes can be supported (Geels, 2011). In other words, regimes result ‘normal’ innovation patterns whilst ‘revolutionary’ change originates from niches (Smith et al., 2010). These niches are also described as ‘protective spaces’ which are empowering path-

breaking solutions (Smith & Raven, 2012; Kemp et al., 1998) where experiments can develop away from the selective pressure of the regime (Seyfang & Haxeltine, 2012).

The first of the next two subsections will define two emerging socio-technical regimes. Smart specialisation and low carbon economy provide new paths towards sustainable development and these two alternative economies are increasingly gaining attention in both policy-making and governance. The second subsection will explore what grassroots initiatives are, what social innovation means and whether grassroots initiatives can be seen as niches for social innovations.

2.2.1. Alternative economies: Smart specialisation and low carbon economy

Smart specialisation is a policy concept which emerged in 2008 and unfolded while the financial crisis entered (European Commission, 2009). The impact of the situation of the time encouraged policy-makers to turn to concepts which reduce risks by concentrating resources where returns are the highest. In smart specialisation, generating economic benefits are expected by the following things: focusing on "national/regional priorities, challenges and needs for knowledge-based development", building on "each county's/region's comparative advantages", aiming to "stimulate private-sector investment", encouraging "innovation and experimentation" and engage in "monitoring and evaluation" throughout the process (European Commission, 2012, p. 9). Smart specialisation is also a place-based agenda stressing that each region should select a limited number of sectors in which innovation is most readily to occur and from which knowledge can be built up (European Commission, 2010).

An another framework for guiding sustainable development is called 'low carbon economy'. This concept aims to decrease the level of emissions of carbon-dioxide together with other greenhouse gases in the atmosphere. As the effects of climate change are becoming more apparent governments, businesses and investors alike are increasingly focusing on cutting carbon emissions mainly by applying new technological solutions.

However, achieving a 'low carbon future' will be likely to involve the combination of decreased energy use, increased energy efficiency, and an increase in renewable, non-carbon sources of energy production (Skeratt et al., 2012). Many of these actions require individuals to make a choice to change their behaviour which might be perceived as risky and uncertain. Therefore individuals and communities can commit themselves to experiment with and learn bottom-up, innovative and sustainable practices in order to respond to their unsatisfied needs and unresolved problems.

2.2.2. Social sustainability: Social innovation and grassroots initiatives

Social innovation in the context of sustainable development relates to how challenges of environmental degradation and climate change can be tackled by individuals, groups or communities when unsustainable practices and unsatisfied social needs have to be responded (Mehmood & Parra, 2012). According to Mulgan and colleagues (2007, p. 5) social innovation can be characterised firstly by "using a combinations of existing elements rather than being wholly new themselves". Secondly, putting social innovation into practice involves "cutting across organisational, sectorial or disciplinary boundaries". And thirdly, social innovation leaves behind "compelling new social relationships between previously separate individuals and groups (...) which fuel a cumulative dynamic whereby each innovation opens up the possibility of further innovations". Therefore social innovation can also be seen as a transformer of spatial relations by improving the allocation of goods and services and reproducing the identities and culture of its agents (Moulaert, 2009).

The necessity of community-led efforts for an energy transition has primary been addressed by equity advocates who have been concerned with structural inequality and exploitation in the Third Word (Wheeler, 2004). Recently, the so called 'grassroots initiatives' are gathering attention amongst Western scientists as well. According to Middlemiss and Parrish (2010) grassroots initiatives are formed by people acting from the bottom-up, and are relying mostly on enthusiastic volunteers who have limited power, resources and ability to influence

others, and therefore can be challenged by the hostility of local people and difficulties in securing funding and are also under the risk of a burn-out.

Despite these threats there is a keen interest for grassroots initiatives fostering pro-environmental change. In the 2005 Defra strategy document on sustainable development community groups are seen as vehicle for government policies, assuming that community groups have the capacity to instigate change in communities (UK Government, 2005). In policy context the term 'community' can be interpreted in various ways. It can be either legally driven or be bound to a physical rationale, or it can require direct local involvement (Walker & Devine-Wright, 2008), hence there is variation in what can be defined as a 'community project' towards sustainability. Yet it is increasingly understood that this change needs to be a social process and in particular that grassroots initiatives have the potential to create low carbon communities (Seyfang & Smith, 2007).

In addition, similarly to niche processes, grassroots initiatives are formed as a response to unsustainable regimes and are altering their own practices to seek a change of the social structures that they inhabit. Therefore Seyfang and Haxeltine (2007) use the sustainability transitions theory as a framework to characterise such initiatives as niches of innovative practices. The act of changing or redesigning existing practices in order to better serve societal goals lies at the heart of social innovation as well. Therefore it can argued that community action and innovation are two important stands for sustainable development and that it is sensible and interesting to examine social innovations of grassroots initiatives as key processes fostering the transition to a more sustainable future.

2.3. What kind of innovation is needed for a low carbon transition?

The question of who is the custodian of the environment has been intensely debated in recent years. Previous opinions about who has the responsibility to mitigate climate change were on 'individuals'. Even the recent and popular 'nudge' thinking sees the low carbon transition as an individual choice (Thaler & Sunsteien, 2009). Aiken (2012) argues that community projects

result from a fundamentally different form of responsibility. They reject the purely individual notions of agency and responsibility without representing a "return to structural determinism" or an affirmation to that "low carbon transitions need to be directed from 'above', through governments and corporations" (p. 90). Thus, communities, by being in-between scales, readdress both responsibility and action between supra-individual and individual agents.

All communities are unique and have a variety of different needs to be responded. Solutions for these problems often involve a process of experimenting and innovation. Climate change is arguably the strongest pressure for innovation on a global basis. To tackle climate change both technical and social innovation tools are needed, but the way social innovation contributes to sustainability has been under researched (Seyfang & Smith, 2007). Improvements in economic solutions for instance smart specialisation and low carbon economy, and technical solutions for example wind or solar power plants are undoubtedly necessary. However, policies and technical innovations should go hand in hand with deep social and environmental transitions. Additionally, successful policies need to incorporate social and cultural concepts of the behavioural change associated with the move towards a sustainable future. From an integrated society perspective social sustainability is also defined by the modes in which human beings are jointly searching for alternatives to address socio-ecological challenges (Parra, 2012). Therefore there is a need for innovations which put the 'social' at the centre.

Shiva (2008, pp. 3-4.) urges us that climate change, or "climate chaos", demands not only to reduce fossil fuel and carbon-dioxide emissions, it also demands to "power down" our energy and resource consumption and "power up" creative human energy and collective democratic energy to make the transition to a low carbon future. Beyond economic concerns of climate change, Shiva is also addressing the issues of poverty, equity, justice, heritage, and land grab to be taken into consideration in strategies that reduce our dependency on fossil fuel resources. This will guide our society to a 'renewable energy economy' where energy does not only refer to the type of energy of a purely physical sense but also includes a metaphysical energy of human creativity and democratic endeavour.

2.4. The theoretical framework applied to the case of HWA

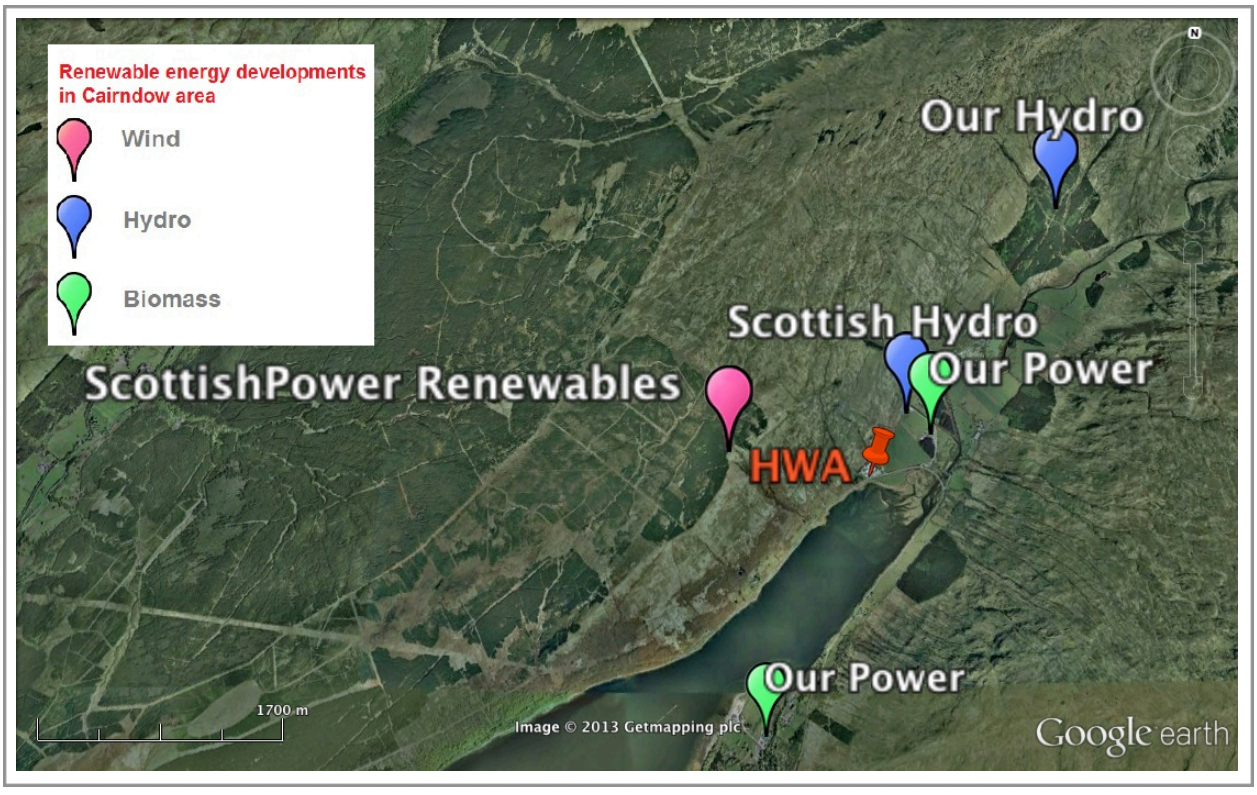
This thesis is based on a new approach called 'renewable energy economy' after Shiva's philosophical work. This thesis adopts the view of the dynamism between the power up and power down approaches towards renewable energy economy. However, in this theoretical framework the power down process is defined by using the concepts of smart specialisation and low carbon economy. Instead of Shiva's view about reaching a balance in the carbon-cycle through lowering consumption, this theoretical framework proposes the development of technical solutions for powering down carbon emissions. It must be emphasized that Shiva is critical about alternative economies related to carbon reduction because according to Shiva "the problem is not carbon per se, but our increasing use of fossil carbon that was formed of millions of years. (…) It is the other carbon economy, the renewable carbon embodied in biodiversity that offers the solution" (Shiva, 2008, p. 129-130). Therefore Shiva's proposal for powering down consumption entails a fundamental change in value systems. However, this study does not assume that such a radical shift related to values is likely to happen. Yet, it relies on technological solutions which do not aim to alter the Western lifestyle but propose alternative means to maintain and arguably even develop the quality of it. Furthermore, this thesis argues that energy developments should be chosen and located according to where their comparative advantage is the highest, and that they must be beneficial for the affected communities as well.

For adapting the power up process for this framework this thesis employs the concept of social innovation, and furthermore it identifies grassroots initiatives as the agents of socially innovative processes. Hence, social innovation is seen here as a manifestation of the creative human energy mentioned by Shiva and the free citizens looking for new solutions are represented by grassroots initiatives.

This theoretical framework also acknowledges the theory of sustainability transitions. Firstly, it adopts its process view applied on sustainable innovation journeys. Secondly, this thesis also supports the idea of social innovation of grassroots initiatives being defined as innovations nurtured in 'niches'. On the other hand, smart specialization and low carbon economy are hold to be the new regimes to move towards to. This thesis also aims to add details

to the literature about the formation process of sustainability innovations. For doing so this study examines a case where a rural grassroots initiative, through the process of social innovations based on local potentials, has been carrying out large-scale low carbon energy projects, amongst other types of projects.

HWA is a third sector organisation with a charitable status based in Cairndow, Scotland. It has two social enterprises. Our Power Ltd. is managing a biomass business and Our Hydro Ltd. is managing a hydro plant that is now under construction. Besides these renewable energy businesses, Scottish Power Renewables has its wind farm installed nearby the parish and the community of Cairndow is one of two communities receiving community benefits from this wind farm. Furthermore, the company called Scottish Hydro operates a hydro plant in Cairndow. The locations of the renewable energy developments in Cairndow area are shown on Map 2.1



Map 2.1. Renewable energy developments in Cairndow (Source: Author)

Applying the theoretical framework to the case of HWA is enabled by the following characteristics. Before the first visit, two assumptions were made about HWA. Firstly, that is led by a board of people with local affiliation. Secondly, that it is a bottom-up driven initiative having limited power and resources to control and influence mainstream technological and economic processes and policies. With these it was ensured before the first visit that HWA fulfilled the criteria of being a grassroots initiative. Moreover, the comparative geographical advantages were exploited by the renewable energy projects in Cairndow area. These are guiding the community towards a low carbon future through smart specialisation in renewable energy technologies. Two of these, Our Hydro and Our Power, are HWA's own projects and had been realised through socially innovative processes. Therefore HWA is both powering up creative human energy and powering down practices based on unsustainable activities. These dynamics can eventually lead to renewable energy economy.

3. Research design

This chapter describes the research questions and explains the methodological approach that was used for answering what role does the social innovation of grassroots initiatives play in the sustainability transitions towards low carbon rural economy. By doing so, case study approach will be described. The following section will introduce the different research tools used for data collection namely participant observation, interviews and document analysis. The last sections of this chapter will describe the way these data were prepared for analysis and will elaborate on the ethical considerations of this research.

3.1. Research questions and objectives

The main objective of this thesis is to examine the role of social innovation in the transition towards low-carbon rural economy. This means that on one hand, the focus of this thesis is the social innovation of grassroots initiatives which are able to foster the transitional paths towards a low carbon future. On the other hand, this thesis aims to examine what societal practices follow or spring up from this sustainability shift. These research problems are based on the theoretical framework and aim to explore mainly the power down process of the concept of renewable energy economy. Therefore, the general main question of this research is:

- ***What is the role of the social innovation of grassroots initiatives in the sustainability transition towards low carbon rural economy?***

This general research question was applied to the case of HWA as well. The specific, central research question of this thesis is the following:

- ***What is the role of the social innovation of HWA in the sustainability transition towards low carbon economy?***

3.1.1. Subquestions and specific objectives

In this thesis, there are three subquestions to help to answer the main research question:

- ***What factors support social innovation of HWA?***
- ***What factors hinder social innovation of HWA?***
- ***To what extent does the social innovation of HWA go beyond tackling climate change?***

This thesis assumes that certain conditions will enable and other will hinder community initiatives, such as HWA, to find sustainable solutions for the specific problems and needs. These subquestions aim to explore those factors which have had a role in shaping HWA's innovative journeys. It also aims to explore the motivations of HWA for choosing specific types of innovative routes.

More precisely, these subquestions can provide answers about how the vision of HWA evolved and changed over the time, what are the the characteristics of HWA's leadership and to what extent and in what ways is the community involved in HWA's projects. Moreover, these subquestions enable to explore HWA's abilities to cope with barriers and uncertainty which are necessarily part of all innovative processes. Finally, these subquestions can also analyse and explain the extent and the characteristics of the learning and sharing processes which can be linked to HWA's innovations.

By formulating these subquestions, this thesis also seeks to answer 'why', 'how' and 'by whom' types of questions in the framework of a process-oriented approach.

3.2. Case study method

In this thesis the case study method was used to explore the potentials, possibilities and consequences of the particular practices of HWA. This method combines a wide variety of research tools to allow the examination of a case from various different angles. Within case study research the unit of analysis is the 'case' which is a "bounded object or process", however this type of research "simultaneously take[s] account of the context" to be able to better explain the object of the study itself (Johansson, p. 5). Using case study method certainly assists to construct holistic and episodic descriptions and to consider multiple variables which cannot be controlled and whose relationships are constantly changing (Saunders et al., 2012).

Case study method also has the advantage of being able to grasp humanistic and affective values which form important parts of social studies (Dilthey, 1988). The responsiveness of the researcher defines the depth of the observations and their interpretations. As emphasised by Von Wright (1971) 'intentionality' and 'empathy' are central to the comprehension of social affairs. As a result of these the researcher will be able to comprehend and interpret the life of others and the socio-historical context in which they live. Case study method is therefore a powerful tool for learning. In fact it "cultivates the most useful of all human capacities - the capacity to learn from others" (Patton, 2002, p 1). Correspondingly, Flyvberg also describes case study method as "a method of learning" which benefits the scientists on the road of becoming an expertise of their field of study (2006, p. 222). Moreover, Stake (1987) concludes that these reports can be increasingly accessible to all readers by being rich in words of illustrations. Therefore case study method facilitates the mechanisms of intentionality, empathy and learning both for the researcher and for all readers.

Case study approach is a useful and appropriate method when undertaking research on initiatives, such as HWA, in order to understand how these may promote higher level of sustainability. As highlighted earlier, social actions play a key role in sustainability because "sustainability is something that must be practiced, ultimately, by numbers of individuals within a society [and it] remains something to move towards, to support and to reward where it is found" (Evans, 2011, p. 55). For instance, the 2005 Defra strategy document on sustainable

development suggests that community groups have the potential to tackle climate change amongst others by developing community energy and transport projects (UK Government, 2005). Therefore in attempt to understand how human practices affect the environment, defined both socially and physically, policy makers suggest looking at individual cases of initiatives (European Commission, 2010). These studies need to face the challenge of the profound interdisciplinary nature of sustainable social actions. In academic discourse, it has been increasingly recognised that the desired outcomes of the collective vision about sustainability requires an interdisciplinary collaboration of social and environmental studies and engineering. It is a complex challenge that can be responded with an integrated and organised scientific effort spanning a range of disciplines that are currently not in communication (McMichael et al., 2003). Case study approach is a useful tool to deal with social practices leading to sustainability as well as the interdisciplinary character of sustainability research.

A privileged case study as the core research method of this thesis is justified by the wish to carry out in-depth analysis using a holistic approach and to examine a project which is a 'good example' of low carbon rural economy in Scotland. The aim of understanding the key components of low carbon rural economy also satisfies the criteria of the following definition about the appropriate place of a case study. According to Yin, applying case study method is correct when "(a) 'how' and 'why' questions are being posed, (b) the investigator has little or no control over the events, and (c) the focus is on contemporary phenomenon within a real-life context" (2009, p. 2). Furthermore, Yin's categorisation was also used to define the type of this case study. The case of HWA is an "explanatory case" given that it is a cutting edge initiative carrying out pioneering projects that are associated with innovative ideas and practices (p. 7).

The case of HWA was researched within the framework of a 5-year long research programme on economic adaptation, commissioned by the Scottish Government. This thesis gives input to the strand called 'Work Package 4.2. Governance Assessment' of this joint project of the Scottish Rural University College and James Hutton Institute. The purpose of conducting case study research on local initiatives is to inform policy makers about the transition process towards low carbon rural economy in Scotland. HWA was identified as a potential case study for this thesis based on a pilot interview that was carried out by Dr. Marianna Markantoni.

3.3. Data collection

In this case study, multiple approaches were used for data collection. Participant observation, interviews and document analysis were applied from which the first two are qualitative techniques, and document analysis used mixed techniques having both qualitative and quantitative elements. The following three subsections will explain and justify the use of each of these tools for this case study.

3.3.1. Participant observation

Participant observation was a form of primary data collection in this study. The main source of information was observing every day activities in the office of HWA. Additionally, there were several other formal and informal occasions were participant observation was conducted such as on meetings, visits, dinners and walking across Cairndow area.

These participant observations provided ethnographic data, meaning that the researcher was able to directly observe social interactions. In other words, it enabled the observer to discover the cultural meanings that people have learned. Therefore during these ethnographic participant observations not only the behaviour or the situation were of interest but also the meaning of that behaviour or situation as seen by the participants themselves (Punch, 2005).

It is important to note that in observation research there is a continuum of possibilities to decide on the level of involvement in the studied behaviour, and whether the researcher wants to intrude into a situation during data collection. In this study the researcher‘s role was a “peripheral membership” with the attempt of interacting with and observing the members close enough to establish an insider identity without participating in core group activities (Adler & Adler, 1994, p. 380). This approach was taken to ensure that actions were changed as little as possible by the presence of the researcher in order to allow valid information to be gathered.

The information collected during these observations were personal impressions, descriptions, minutes and stories and were recorded in forms of field notes taken during or after the occasions or activities. The characteristics of participant observations are shown in Table 3.1.

What	When	Details
HWA' s work activities	18.03- 22.03; 20.05-21.05	Interacted with co-workers, volunteers and visitors of HWA and gained access to secondary data sources.
Town Hall meeting	20.03	Observed a meeting with around 15 attendants from the community. The represented organisations were the community, and Argyll and Bute Council.
Meeting with a Swedish group	20.03	HWA was visited by a Swedish group whose members were participating in pro-environmental initiatives. The activity was a knowledge exchange financed by LEADER programme.
Field visit of the chipping plant and the salmon hatchery	21.03	Learned about the operation of the chipping plant and the salmon hatchery.
Informal dinner with HWA's founder and her guest	20.05	Talked about the early days of HWA, listened to stories and had informal dinner.
GPS data collection	21.03- 22.03; 21.05	Made maps, learned about the landscape and cultural heritage, and interacted with locals.

Table 3.1. Table of participant observations (Source: Author)

3.3.2. Interviews

Interviews conducted in this research were the other primary sources of information. Before attempting to gain admittance for making interviews the researcher familiarised herself firstly, with other similar cases and secondly, with the characteristics of HWA. The first attempt to learn about pro-environmental community initiatives in Scotland took place while taking part on the first national gathering of the 'Scottish Communities Climate Change Action Plan' initiative in Glasgow on the 6th of March 2013. Meanwhile, the researcher started to learn about Cairndow and HWA mainly through online sources such as websites and articles published online. Another source of information was the interview of the pilot study which was conducted by Dr. Marianna Markantoni on the 11th October 2012. As a result of this, the researcher was able to signal to the gatekeeper, the founder of HWA, that the research was carefully prepared. In addition, the researcher provided a clear account on the purpose of the research and the type of access required. Because the founder of HWA was an existing contact her knowledge of SRUC meant that she could trust the researcher's stated intentions and the assurances the researcher gave about the use of the data provided (Saunders et al., 2012). All these factors contributed to gain access by the first attempt.

After making a request for conducting interviews, interviewees were selected the following two ways. Contacts were provided either by the founder of HWA or the researcher requested contact details. Interviewees were either visited in their homes or offices, or at another location where the interviews could be conducted without being disturbed.

All interviews took place in Cairndow except for one, which was carried out in Glasgow for the interviewees request. One interview had to be paused because the interviewee was demanded for other obligations. That interview was continued the next day. One interview was attended by two interviewees at the same time. That interview started with only one interviewee and the second participant joined later on. This was admitted because they were involved with the same project of HWA and both of them agreed to make a joint interview. All other interviews were restricted to one interviewer and one respondent taking part in it.

For this study, ten interviews were conducted with eleven interviewees in total. Not all of the interviewees have lived in Cairndow but they all had an affiliation to the community through personal or work related bounds. This parish has less than 200 inhabitants from which only a minority is actively involved with or can be linked to HWA's projects. Therefore this sample size is large enough for this case. Table 3.2 shows the characteristics of the respondents and the interviews.

Respondent	Respondent's Organisation	Respondent's role	Year of birth	Date of the interview
X1	HWA	Member who is also a 'local historian'	1933	19.03
X2	Ardkinglas Estate	Manager	N/A	19.03
X3	Tree Shop; HWA	Business neighbour; Member	1971	20.03
X4	HWA	Founder	1942	20.03
X5	HWA, Our Power Ltd.	Administrator	1968	20/21.03
X6	HWA	Chair	1950	21.03
X7	Meridian Salmon Company	Manager	1975	21.03
X8	Our Hydro Ltd.	Project Director	1971	22.03
X9	Construction company of the hydro plant	Managing Director	N/A	22.03
X10	Argyll and Bute Council; HWA	Former Area Corporate Services Manager for Mid Argyll, Kintyre and Islay; Member	1946	20.05
X11	Clachan Flats Wind Farm Trust	Chair	1946	20.05

Table 3.2. Table of interviews (Source: Author)

A semi-structured interview guide was developed before the first field visit (see Appendix A). On site however, the questions were used flexibly according to the respondents' roles and experiences, and new topics that eventually emerged were also explored. Each interview lasted between half an hour and one hour and all were recorded with the respondents' permissions.

The field work study was carried out in two stages. The first stage was between the 18-22nd of March and the second stage was during the days of the 20-21st of May 2013. Thus, there was a two months interval left between the two visits. During the first stage, nine people were interviewed on eight occasion and two additional interviews were conducted during the second visit.

Respondents were encouraged to draw figures if that helped them to explain the information they wanted to disclose. As a result, two of the participants provided visual interpretations of certain issues while those were discussed.

3.3.3. Document analysis

Document analysis was used in this thesis as a form of secondary data collection. These data sources were either published or unpublished documents containing both numeric and non-numeric data. They were part of HWA's library which the researcher was able to use during the field visits. HWA collected, archived and thematically organised these data in file systems. The purpose of using these sources was to gather contextual data. Learning from secondary data sources about the projects and events of HWA saved time and effort both for the interviewees and the interviewer and helped to formulate more accurate interview questions.

One of the secondary data sources were newspaper articles. These articles were either from local newspapers or from the Newsletters published by HWA. The local newspaper articles contained mainly reports of events, such as when HWA opened an exhibition. HWA's Newsletters were just partly about HWA's past and future events and mainly about providing information about cultural, natural, heritage and sport issues for the community.

Another sources of secondary data were books and booklets. The books of HWA's library provided information about the historical, cultural and environmental characteristics of Scotland and Cairndow. Some other books and booklets were sold in HWA's shop. These were mainly related to the exhibitions and one of them was a recipe book with stories.

The third type of HWA's documents was providing survey data. These were either numeric data about demographic issues or historical tracks about residential houses including their past and current inhabitants. The latter information was also available in a digitalised format. All these were administered by HWA using both census data and data that were collected as part of a HWA's activities.

3.4. Data analysis

All interviews were digitally recorded and transcribed completely before they were analysed. In the transcripts the exact use of language was retained and the activities (for example leaving and returning) as well as the gestures (for example laughing) were also noted. These ensured that the transcripts were rich and accurate sources of information.

After the transcripts were complete they were coded manually by the researcher. In this analysis 'open coding' was used. This means that the analyst applied conceptual labels on events, actions and interactions in order to explore the differences and similarities between them (Liamputtong & Ezzy, 2005). For doing so, the transcriptions were imported to Atlas software for qualitative data analysis. With that software several codes were used to label certain parts of the transcripts. In this study each part of the text was a restricted to only be labelled by one code. Therefore labels formed coherent categories. Nine code were used in this research with the following labels: *Relationships*, *Barriers*, *Sharing and networking*, *Governance*, *Concept and vision*, *Learning*, *Uncertainty*, *Community involvement*, and *Leadership.* The process of coding helped to transform the data in a standardised form (Babbie, 2012). The codes in this study were

selected in attempt to help to answer the research questions of this study and therefore they provided a structure for the analysis as well.

Other primary sources of information were also explored. Two drawings were made during the interviews and these were later used to illustrate organisational structures. The notes taken during the participant observations helped to retrieve impressions and stories that were gathered on the site and use these during the analysis. These drawings and notes were also suitable to demonstrate whether the interview transcripts were consistent with what could be observed. Finally, the GPS data were used for constructing maps with the help of Google Earth software.

Secondary data were mainly helpful sources of contextual information. As secondary data sources have a high risk of not coming from valid and reliable sources special attention must be paid to only select data which represent an objective account of reality (Saunders et al., 2012). Therefore secondary data were evaluated with particular caution. In order to use accurate and valid data only the factual data of secondary sources were assessed in this study. For example, in articles describing an event the occasion and the date were part of the analysis but the portrayal of the event was not. In other words, any secondary data which might have reflected the author's perceptions and views were excluded from the analysis.

3.5. Ethical considerations

Ethical concerns are the greatest where research involves human participants as it was the case in this particular research as well. Acting along the ethical principles and looking at the case from a position based on trust and respect enabled the researcher to gain access to information. Throughout the process of collecting, analysing and formulating the outcomes careful considerations were made to ensure that the ethical principles have been fully applied.

During this study the ethical principles advised by Saunders and colleagues (2012, p. 231-232) were used. The researcher's attitude and actions were open and promoted accuracy

demonstrating the “integrity and objectivity of the researcher”. The researcher practiced “respect for others” through developing trust and fulfilling certain obligations towards HWA and the community of Cairndow. An example of this was the preparation of a summary that was written for the request of HWA after the field works have been conducted.

In this research the principle of “avoidance of harm” has been fulfilled by not taking any emotional, mental or physical risk, leaving the social cohesions unaltered. None of the funding agencies of HWA’s projects are mentioned in this study either, except for Ardkinglas Estate and the wind farm, to avoid causing any conflicts between HWA and these agencies. The principles of the “privacy of those taking part” and the “voluntary nature of participation and right to withdraw” as well as the “informed consent of those taking part” were incorporated in this research before, during and after the data collection. When personal information about social relations were provided it was always acknowledged but the interest of the researcher of accessing these data had never extended the scope of what was freely given.

In this research all respondents were informed at the beginning of the interview that they can exercise the right to determine how and to what extent they wish to contribute to the data collection. All participants declared that they agree to be recorded. The informed consent was a verbal agreement between the researcher and the respondent after the purpose of the investigation of this research was explained. According to the principle of “ensuring confidentiality of data and maintenance of anonymity of those taking part” participant names are not mentioned in this study despite the fact that no participant asked for anonymity or provided a fiction name instead of a real name. Anonymity and the retainment of personal details were practiced in relation to secondary data as well.

In order to fulfil the ethical principle of “compliance in the management of data” all personal data were carefully analysed the following way. Sharing these information were restricted to the minimum level of what was necessary for the readers to understand the argumentations of this thesis. The assurances about anonymity, privacy and confidentiality discussed so far were also been uphold when analysing and reporting data. Thus the principle of “responsibility in the analysis of data and reporting on findings” was fulfilled. And finally, the principle of “ensuring the safety of the researcher” was maintained throughout both field visits.

4. Analysis and results

This chapter will first describe some of the geographic, demographic and economic characteristics of the parish of Cairndow. Following that, the activities and projects of HWA will be explained and analysed in the subsections about the chipping plant, the hydro plant, and the services and other projects of HWA. The last section of this chapter will discuss the hindering and fostering factors of the community's involvement and will elaborate on the leadership issues within HWA as well. In this chapter, the argumentations are supported by the relevant quotes of interviewees who will be mentioned according to their respondent's number. The results of the participant observations and the document analysis will also be shown.

4.1. Presenting Cairndow

The parish of Cairndow is located in the West of Scotland, in Argyll and Bute council area, along the A83 highway from Glasgow to Inveraray. The parish consists of two distant parts. There is a central part where Ardkinglas Estate, Kilmroch church and most of the residential buildings are located. By the head of Loch Fyne, there is a recently built-in territory which is the location of HWA and various businesses as well, and it is planned to be subject to residential housing developments.

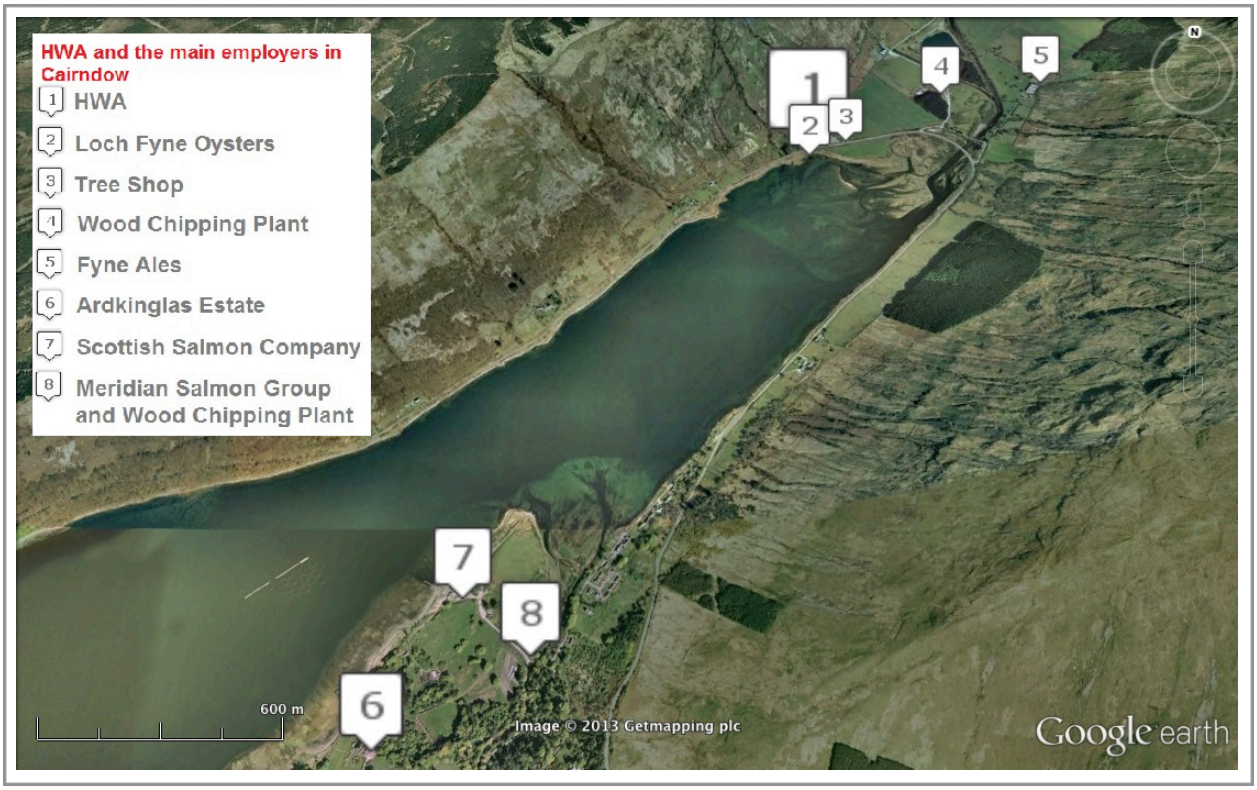
Recent surveys show a small growth in the overall number of inhabitants of Cairndow. The demographic data about Caindow's population numbers assessed in 1998 and 2005 are shown in Table 4.1. However, only one new property was built during this period. One of the factors hindering building investments are related to financial difficulties, but the other hindering factor is the lack of new housing infrastructure. These population and housing trends remained the same since the most recent survey of 2005.

	0-5 years	5-12 years	12-16 years	16-34 years	35+ years	Retired	Total
1998	9	8	8	26	92	23	**166**
2005	7	11	2	33	71	51	**175**

Table 4.1. Cairndow's population number in 1998 and 2005 (Source: HWA's database)

Recent employment and land use changes had a great impact on Cairndow's economy. Until the beginning of the 20th century sheep farming was one of the most common type of agricultural land use in Cairndow. That aristocratic family who bought Ardkinglas Estate, used to employ many of Cairndow's inhabitants mainly as shepherds or hired them to help around the household. Certain jobs also included the right to live in certain residential buildings as long as the position was hold. Ardkinglas Estate is still owned by a descendant of the family mentioned above and it still manages the gardens, residential houses and agricultural land. The descendants of that family own several new businesses such as Loch Fyne Oysters, Fyne Ales and the Tree Shop and they have brought alive community initiatives such as HWA and the community trust of the wind farm. The estate manager explains these recent changes in employment the following way: "Over the last 20 years [the new businesses and initiatives] created a number of jobs which to a certain extent replaced the shepherds and house stuff that would have been here a hundred years ago. So we are very lucky from that point of view. There are a lot of jobs near here." (X2).

Currently, there are eight main employers in Cairndow. These are the two fish farms (Meridian Salmon Group and Scottish Salmon Company), a restaurant with its own fish farm (Loch Fyne Oysters), a brewery (Fyne Ales) and Ardkinglas Estate which also runs the Tree Shop. Because of the considerable amount of jobs being available at least 40 workers commute on a daily basis to the parish. The main employers in Cairndow and HWA's location are shown on Map 4.2.



Map 4.2. HWA and the main employers in Cairndow (Source: Author)

Besides these, there is a hotel with a pub in Cairndow which operates as a family business. However, shops, post office and ATM can only be found in the neighbouring Invarary lying about 16 km away from Cairndow. Additionally, a childcare facility is located in the town hall of Cairndow and there are plans to build a nursery school, with an investment of £1 million, by the head of the loch. As there is no school in Cairndow children have to go to schools that are located in different towns.

Transport is designed to enable both the children and the adults to commute between home and school, and home and work. Buses go on a daily basis to Strachur (18 km away), Dunoon (45 km away) and to Glasgow which is about 90 km away.

4.2. HWA's renewable energy projects, services and other projects

Here We Are Ltd. is a charity established in 1998. Its steering board of eleven members have meetings every six weeks. These members are coming both from the community of Cairndow and from elsewhere. HWA operates in its own building by the head of the loch since 2001. The building is open on weekdays and is functioning as office and meeting place for HWA. It is located in a car park of a busy junction along the A38 highway connecting Glasgow and Invararay. It has two business neighbours, the Tree Shop and Loch Fyne Oysters.

HWA carries out three main types of activities. It manages the renewable energy businesses of Our Power and Our Hydro. It also provides certain services and is involved with various other community projects. HWA's main activities and projects are summarised in Figure 4.1.

Figure 4.1. Main activities of HWA (Source: Author)

HWA was founded with a vision about fostering the connection between locals and visitors as well as reflecting on the past, present and the future of the community. This vision is based on the Founder's experience in the Himalayas where she ran a trekking company. She observed the interactions between the young, local sherpas coming from small villages and the tourists who came mainly from Western countries. Essentially, the fact that these tourists were interested in the sherpas' cultures and traditions made those boys realise that their heritage and traditions are meaningful and interesting. This helped to ease their shyness and made them grew in confidence.

When HWA's Founder permanently returned to her home village in the 1990s, she wanted to apply in Cairndow this lesson she learnt in India. She wanted the community to be aware, perhaps even be proud, of their heritage and to have a say in shaping their future. Based on her own experiences, she wanted to provide a platform where HWA, with the help of the community, could realise community projects and where they could display their heritage so visitors could see it as well. The meetings started as a gathering in the local pub where HWA's Founder and other current members of HWA decided to create an initiative which will look at Cairndow's past, present and future. The name 'Here We Are' was given to show that this initiative aims to 'put the parish on the map'. The Founder of HWA reflects to that stage the following way: "It was difficult to explain the concept partly because it wasn't that clear to us. We worked it out as we went through all. It was a concept and it was innovative. And it was new, nothing like that has been here." (X4). The first project resulted an exhibition with the title Today, Yesterday and Tomorrow. The exhibition looked at local culture and history and was displayed in a portacabin at the location of the current building of HWA.

The other vision of HWA emerged as a result of the Our Power exhibition. This exhibition looked at the history of generating power in Cairndow. It showed for example that Ardkinglas Estate was the first house in Argyll which had electricity powered by its own hydro scheme. The outcome of his exhibition inspired HWA to explore its possibilities in renewable energy sector. This lead to the realisation of the biomass plant and it also motivated HWA to start to provide information for the community about sustainable household energy use. The administrator of Our Power assessed the success of these aims with the following words: "We

really wanted to make Cairndow a low carbon community. To reduce its carbon footprint that is one of our aims. And we probably did achieve that." (X5).

Ever since, HWA's main aim is to became self-sustaining and self-funded. HWA is currently applying for funding by itself because the professional they previously hired "cost a lot of money and did not understand what HWA is about", and also because by applying themselves HWA also claims to have "more influence and more power" (X4). Thus, HWA spends an enormous amount of time and effort on funding applications. Not depending on external funding would enable HWA to have more capacity to organise those kind of projects which are related to its initial vision.

Hence, HWA's activities, which evolved during the last fifteen years, are diverse. The main events of these activities are shown in a chronological order on Figure 4.2. These activities will be further explained in the next three subsections.

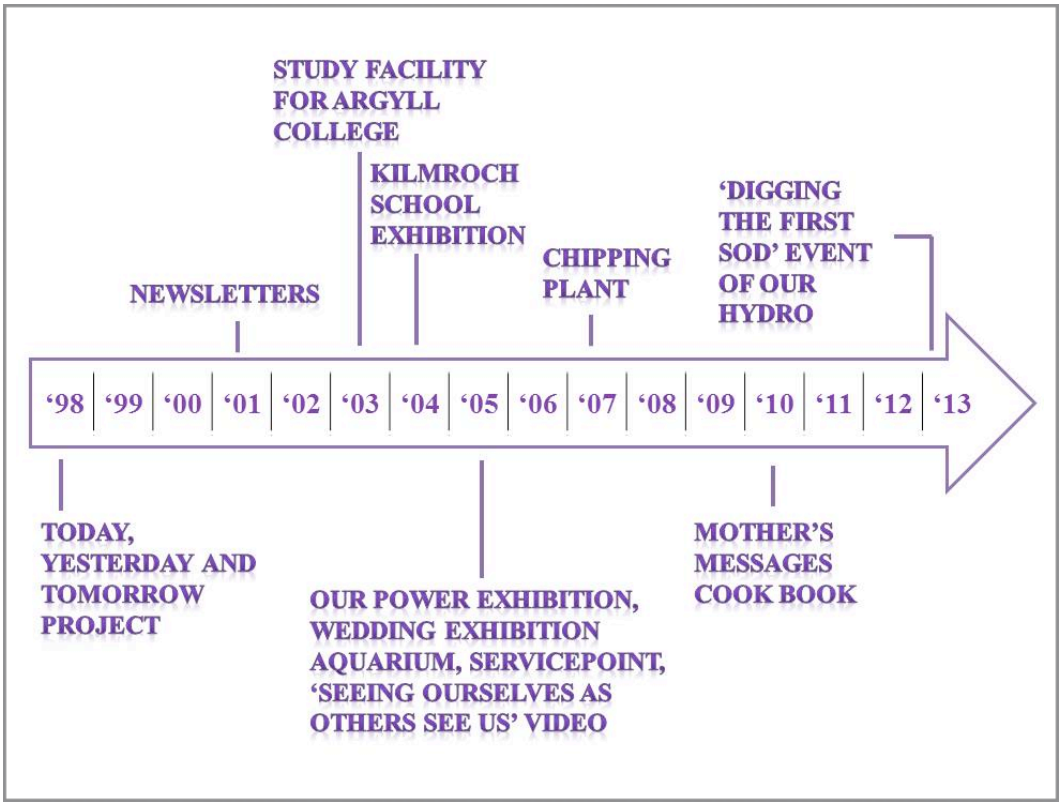


Figure 4.2. Timeline of the main events of HWA (Source: Various sources)

4.2.1. Chipping plant

The feasibility plan, which was carried out after Our Power exhibition, assessed that biomass and hydro energy are the best sources of sustainable energy production under local conditions. HWA subsequently decided to start to install a wood chipping business. Our Power Ltd. is a community interest company and also a subsidiary company of HWA, and it manages the chipping plant since 2007. Its main business partner is the local salmon hatchery farm of Meridian Salmon Company. It is also supplying a housing scheme with a community heating circuit located about 50 km away, and Our Power has other smaller partners as well.

Biomass is carbon-based biological material and wood chips are a source of biomass energy. Biomass takes carbon out of the atmosphere but returns it as it is burned which helps the atmospheric carbon-dioxide level to be will be maintained. Therefore sustainable woodland management, growing replacement plant material, is necessary to absorb the carbon released by the harvested biomass. Burning fine wood chips in a boiler and heating up water that are pumped through pipes is a simple and effective way of biomass energy production and usage. This mechanism is used both by the salmon hatchery and the housing scheme. The timber is sourced within a 30 mile radius and it is stored at HWA's chipping yard and shed. One of these plants, which can be seen on Picture 4.1, is by the head of the loch, and another one is next the hatchery.

Picture 4.1. The chipping plant and the shed by the head of Loch Fyne (Source: HWA)

The timber is delivered, stored and chipped by the Our Power Ltd. of HWA for the salmon hatchery of Meridian Salmon Company. This company is a customer of a private, Birmingham-based boiler company called Energy Supply Company. The biomass boiler at this farm is managed by Fish and Chips Ltd. and it is regularly maintained by the boiler company. The organisational diagram of this chipping plant can be seen on Figure 4.3.

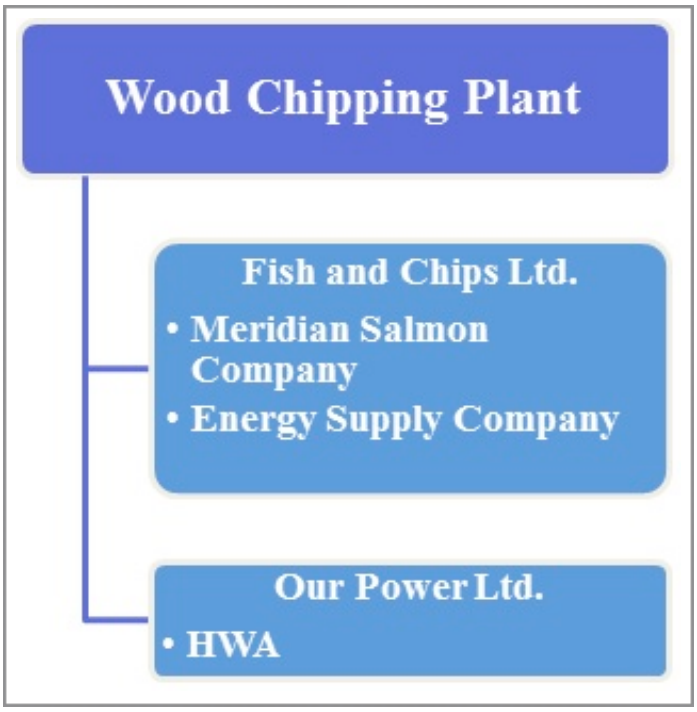


Figure 4.3. Diagram of the organisation of the chipping plant by the salmon hatchery (Source: Author)

The profit generated by the chipping plant contributes to HWA's income enabling it to cover the running costs and carry out some of the community projects. The salmon hatchery profits from using biomass energy instead of using only kerosene as well. As stated by the current manager of the salmon hatchery, "HWA has been pretty reliable" and additionally this environmental project provides financial benefits too: "The whole thing about being sustainable and environmental is that it's a nice thing to do but at the end of the day it makes it cheaper for everybody as well." (X7).

Our Power's administrator describes the beginning of the chipping plant project the following way: "I didn't know anything about renewable energy when I came here. It has been a learning process.", and "At the beginning, there was not many other communities doing a chipping plant. (…) It was all new to us, we had no experience" (X5). At the time, HWA got expertise help mainly form the biomass officer of a local energy agency. However, the Founder of HWA admits that often it was often after the event that they realised how important the advice. This demonstrates that "learning is very difficult because is always specific to something and [the advice] is not necessarily relevant at that moment or to that particular thing" (X4).

The chipping plant project provided a learning curve for HWA during which unforeseen problems have emerged even after the chipping plant was installed. Amongst other challenges it has been difficult to produce low-moisture and finely chopped chips to receive a certificate and compete with bigger companies who have more capacity for doing these. HWA's Founder comment on these issues the following way: "One of the important things for HWA is the process and also that you don't know what leads to what. You can't predict what comes out of what. (…) You have to take the opportunities. Things may or may not be working." (X4). In about five years, when the temporary fixed contract between HWA and the salmon hatchery will expire, HWA will have to face that the salmon farm will probably get rebuilt with a new heating system being installed which will need substantially less energy for its operation. For now, the Chair of HWA declares: "It makes money at the end of the day so [HWA] keep[s] doing it. We want to carry on doing it if we can." (X6).

4.2.2. Hydro plant

Hydro energy is a renewable energy harnessed from falling and running water which can be converted into electric power allowing distant energy uses. Cairndow receives more than 2 m rain a year on average which is three times higher than Edinburgh's average annual rainfall. The construction of the hydro plant started in May 2013, seven years after the idea of it was born. The hydro plant is managed by the subsidiary company of HWA called Our Hydro Ltd.

The initial plan was to create a joint venture, based on public-private ownership with 51% belonging to HWA and 49% to CFR Hydro Developments. The Project Manager of the hydro plant explains the reason for this setting the following way: “How it started was that [CFR Hydro Developments’s Manager] was on the board of Our Power. So once they had Our Power with the wood chipping plant [he] said 'Why don't we look at hydro?'. He was put in the board of Our Power because he was selected for that by [HWA’s Founder] because he knows renewables obviously very well and is local.” (X8).

The difficulties of the first years, which were related to getting loans and renting the land for the hydro plant, caused the project to be substantially delayed. To realise the initial but already ambitious plan, HWA first looked for a bank providing a suitable loan. However, the banks refused to lend money to HWA because it could not put enough assets against the loan. HWA’s Founder argues that community initiatives are “very vulnerable because [they] don't have any assets.” (X4). Furthermore, it has been criticised that on one hand “The banks seem to have a very strong hold on the whole project and it was their views only that applied.” (X9), and on the other hand “The Scottish Government doesn't have any way of reinforcing the banks.” (X4). Moreover, communicating with the banks also caused difficulties for HWA in some other ways. As declared by the Founder of HWA, the hydro team did not have sufficient specialised knowledge in “financial language [and] financial vocabulary to deal with banks” (X4).

Being a joint venture was another hindering factor in the eyes of the funders because of the risk that the public sector client could take advantage of the money initially given to the public sector. Therefore HWA had to prove that “the public sector funding hasn't allowed the private sector people to profiteer.” (X8).

Another major delaying issue was related to the lack of agreement in the heads of terms with one of the landowners. The hydro project would have initially needed firstly, to rent a forestry block from a trust of landowners based in the Central Belt of Scotland. Secondly, the bigger share of the land would have been rented from a local land owner who is also linked to Ardkinglas Estate. The forestry block’s owners had “a friendly relationship with some of the members of the community” (X8). However, their trust could not go against their professional advisors, solicitors and land agents who suggested amending the conditions by asking for a price

which HWA could not afford. For this reason, the original plan of the hydro scheme was redesigned and its final plan uses only local land. The local land owner has been perceived "more amenable" and the possible reason behind it is that "he lives in the community and he can see the benefits of the hydro scheme" (X8). Additionally, the local land owner, through the estate company, uses the profit to put it "back in the community to employ local farmers and shepherds and does houses up" and therefore this setting "recycles the money through the community" (X8).

Finally, these difficulties caused years of delays and increased the costs of the project as well. At the end, the total investment of the project will £3,5 million which will pay back in ten years. To be able to finance this and satisfy the banks other private investors, HWA and CRF Hydro Developments had to invite other private investors into the situation and they broke up in four. As a result of this, two more private investor got involved in the project. HWA and the three private investors have 25% ownership each. The diagram of the hydro project's organisation can be seen on Figure 4.3.

Figure 4.4. Diagram of the organisation of the hydro plant

For a period of eighteen months, the Project Manager, who is originally from Cairndow, was “working for nothing against the hope that when this scheme was going to work than he'll get reimbursed for this” (X4). He reasons that this commitment to “deliver something for the community” comes from the “community spirit” (X8). He further adds that “If it would have been a pure business project we probably would have stopped quite a while ago and been quite blunt and ask if there is a payment for it. (...) But it was for the community so that was the motivation.” (X8). Another reason that drives him forward is the work experience he gains by being involved in this hydro project: “The reason that I'm working with [couple of other communities] is that they've heard about the work I've done here.” (X8).

The first seven years of the hydro project were turbulent.The hydro team perceived this process the following way: “it’s always been stop, start, stop, start...” (X8 and X9). More descriptively, “It's like a fire that has been doused and put out but all of a sudden there's flame again. Phoenix out of the ashes and it lights again.” (X9). HWA’s Founder argues that the hydro team could successfully overcome these difficulties by their “cohesiveness” and “trusting relationship”, because “without that little bit fun and trusting friendship these things won't happen” (X4). Furthermore, she believes that “all the conflicts that has enabled [HWA] to get to this stage have been positive things” (X4).

4.2.3. Services and other projects

Besides the chipping plant and the hydro plant, HWA organises several activities which benefit the Council, the community and the visitors as well. By being a servicepoint for the Council, HWA makes the council services more accessible for the community, and vice versa. HWA also publishes Newsletters for the community, and published a recipe book and some booklets for the visitors. Some of these booklets, the recipe book and a kitchen towel, which HWA sells in its shop, are shown on Picture 4.2.

Picture 4.2. Booklets, recipe book and kitchen towel of HWA (Source: Author)

The first project of HWA was a cultural-historical exhibition and organising these sorts of exhibitions has been one of the priorities of HWA. For example from the first exhibition, which had the title Today, Yesterday and Tomorrow, emerged an ongoing heritage preservation project. The outcome of it is a biography of the 107 houses of Cairndow as well as the story of those who lived in them. Other cultural-historical data were collected also about wedding traditions and the former Kilmroch School, amongst others. Furthermore, as mentioned before the Our Power exhibition was the starting point of the renewable energy projects.

HWA's building is decorated inside with pictures, maps and figures produced for these exhibitions. Therefore HWA provides information for the visitors about Cairndow also by displaying some of these materials. When visitors enter the building to use the toilet facilities for example, they usually notice these and sometimes even start to ask questions about Cairndow and HWA. These interactions are desired also because HWA gets feedback through them: "When people are coming and ask you what you are doing and why, it makes you think and it makes you realise if what you do is important or not." (X4). Next to the building is Our Aquarium which shows what lives in the loch. There is a meeting room in HWA's building as well which is often

rented out. It is not only the financial benefit what HWA profits from the meeting room but these business guests also made HWA “more known within the Council” (X10).

HWA also has projects which aim to share HWA’s practices by knowledge exchange programmes. HWA’s Founder argues for the need of the interactions on national and international exchanges because these can “change the mind-set.” (X4). For example, HWA produced a video with the title ‘Seeing ourselves as others see us’ which was the outcome of an exchange project between Ballyliffin, Ireland and Cairndow. However, HWA has encountered some barriers too in relation to these sharing and networking projects. One of the main public founding agencies was too restrictive for HWA and therefore HWA decided to not to take part in its programme. This experience was described as follows: “We thought what’s the point of doing something they think we should do?! We knew exactly what we wanted to do. So we just gave up.” (X10). Nonetheless, knowledge exchange does not only happen on planned activities. The hydro plant might inspire some locals, for example the owner of a music studio just outside Cairndow who just started his own hydro in a smaller scale. Some might argue whether he “would have done that without the knowledge of HWA’s [hydro plant]” (X3).

HWA is currently employing six people who work part-time. Since the first funding arrived for archiving photographs and anecdotes onto a database, people have been paid for their work. The Founder of HWA believes that it is important to express that work is valued and argues the following way why she insisted on paying for a member of HWA (Respondent X1) for her help: “I thought that it was important that she should get paid something for what she contributed because without that kind of information and expertise we wouldn't be anywhere.” (X4). Many of the women who have worked for HWA are locals, they are without higher education, and have families with young children. HWA’s Founder describes the process of their success the following way: “[These women] have grown so much in confidence and that's through the process of doing things and working on things. (…) It is kind of what HWR is about. You can't just wave a wand and it happens because it takes deliberation.” (X4).

4.3. Interacting with and steering HWA: Community involvement and leadership

HWA has become a focal point for the community of Cairndow and they usually contribute to HWA's projects when they can. One of the members of HWA, who collected old photographs for the wedding exhibition, assesses the community's help as follows: "The community helped a lot. When you ask them to do things they will do that." (X1). The Founder of HWA argues for community involvement the following way: "The business of a community being able to think about its development is really important because if you can't try to make decisions for the future than you will end up blaming other people." (X4).

However, the community has been seemingly left out, but not on purpose, from HWA's renewable energy projects. For example, most people in the community were not aware of the hydro plant before the construction work took place because "It tends to be with any project, that [the members of the community] are not aware of it until you start digging holes." (X9). However, the community supports HWA's renewable energy projects, partly because the profit will help HWA to invest in further community projects.

It was observed that relatively few people were present on the town hall meeting which took place during the first field visit. The Founder of HWA, who was one of them, complained about a couple who are actually not living in Cairndow but rent out their recently bought houses. HWA's Founder describes them and their adverse impact the following way: "They are negative about everything but in a really rude way. (…) So everybody's been put off ever going to a meeting. That's part of the reason why there were so few people there." (X4).

Working for the community has always been important for HWA's Founder and her brother: "That's the way his mind was set and that's the way my mind is set too." (X4). She further adds: "My brother and I have been very fortunate having had a background that enabled us to be outside and to think about things in a bigger picture, in a bigger context." (X4). The brother of HWA's Founder was the person who fostered the installation of the wind farm and insisted on a wind farm community trust to be set up as well. The community is pleased to be getting about the annual community benefit of around £6000: "We're getting it every year and the community didn't have to put too much work in, we didn't have to work for it at all." (X11).

Moreover, the wind farm and Ardkinglas Estate have been sponsoring HWA right from the beginning as well.

HWA's Founder is admittedly "the main source of energy" in HWA (X6). A member of HWA describes her impressions when she first met the Founder of HWA with the following terms: "When you speak to [the Founder of HWA], you're involved. That's it." (X10). Another member says: "If it wasn't for her I wouldn't be there at all." (X1). She is theoretically the Development Manager of HWA but it is most likely that her income comes from elsewhere and that she is not paid for her work by HWA. As a member of HWA argued, "[HWA's Founder] is doing such a lot for nothing" (X10).

HWA's Founder has a very wide network of people that she knows and always had support from senior councillors as well as could attend some council meetings which is not a privilege of everyone. The way she is able to assert herself has to do with her aristocratic background as well: "[HWA's Founder] is not a lot like [the aristocratic clans of Argyll and Bute] but she is still on that level. And they just have these links." (X10). The Founder of HWA is not only respected for her background but for her personality and her vision about Cairndow as well: "People listen to her and they are polite to her, usually. And she is usually polite to them as well. (…) Everybody is her friend and she socialises with everyone. She's very much one of the people as well." (X10).

HWA's Founder will going to resign to be fully in charge when the hydro will secure HWA's existence. Some members are "worried about what happens if she falls off" (X6). It haven't been decided yet who will take her role when this will happen.

5. Conclusions and discussion

As a result of the analysis, the following factors were identified to be fostering HWA's projects. Firstly, from a governance perspective being known by and having a good relationship with Argyll and Bute Council certainly enabled HWA to have support from the local authorities. Secondly, because of HWA's much appreciated vision to foster community development, the community of Cairndow has also participating in some of HWA's projects and has been supportive towards HWA's aims in general. Thirdly, HWA's volunteers, employees and partners established a relationship based on mutual support and a collective ambition. This shared basis of objectives promote cooperation and other positive behaviour and attitudes to be developed. And finally, the Founder of HWA is a legitimate leader and has the abilities and capacity to organise HWA's activities in effective ways.

HWA was unexperienced both with the chipping plant and the hydro plant at the start of those projects. A threatening factor for HWA is that it might not be able to have enough customers for the chipping business in a long run. In relation to the hydro project, the hindering factors for HWA's projects were the lack of assets to put against the loan of the banks and not being able to come to an agreement in heads of terms with the trust of landowners of the forestry block.

These renewable energy projects go beyond tackling climate change and the financial and environmental benefits related to sustainability. They provide social sustainability through psychological benefits both for HWA and the community. HWA has been going through an innovation journey, and learning and adapting have been the central elements of it. These processes reinforce social practices to be changed within the community. It is a gradual change that fosters the establishment of social interactions within the community as well as improve the wellbeing of the individuals taking part. These social aspects of HWA's projects might be the sources of that metaphysical energy which power up the creativity for social innovation.

HWA is certainly a pioneer of its kind as a grassroots initiative investing in large-scale renewable energy projects. HWA intrinsically used a place-based approach to explore its possibilities in renewable energy production. One one hand, the chipping plant has been the first community owned biomass plant in Scotland and on the other hand, the hydro plant was one of the first joint venture hydro project in Scotland.

HWA's innovations might be technical but they originate from fundamentally social processes and are enabled by certain social practices. The exhibitions, and the other activities and services of HWA, which have had the aim to empower the community, provided the ground for the realisation of these renewable energy projects. Without these the team cohesion might not have evolved to be as strong as it actually is. Furthermore, these relationships based on familiarity, positive affection and the motivation to deliver something for the community were those social practices which helped HWA to succeed during the learning phases when the technical solutions of the sustainability transition were experimented.

Two previous assumptions were made about HWA before the first visit. These were namely that HWA is a bottom-up initiative and that it is lead by the community of Cairndow. However, the analysis showed that it is not lead by the community even though it provides benefits for the community. It led by a steering committee but the Founder of HWA has had a profound role in the decision-making process. HWA is also not only acting ultimately from the from the bottom-up. HWA itself does not have resources to influence others but its leader has to a certain extent the capability to persuade others and assert herself and thereby HWA as well.

The personal qualities and the background of HWA's Founder enabled her to be an individual change maker in Cairndow. It is her vision and mind-set, her history, the previous experiences she had and her personal relationships and links which fundamentally underline the way HWA has been operating. With these, the leader tries to find ways to meet the needs of the community and explores new solutions which mark out the way to a sustainable future for Cairndow.

5.1. Generalising the findings of the case study

When trying to generalise the findings of a case study, it is not for arguing weather the observed results could be applied to an other case as well. A generalisations made from one case to an other would often not be valid (Flyvberg, 2006). However, case study research can try to generalise findings to the theory (Ruddin 2006). Therefore, this section compares the findings of this case study with social theories about leadership, reciprocity and responsibility, and social identity theory.

This thesis argues that the success of grassroots initiatives carrying out social innovation can largely depend on the legitimacy of its leader. According to Weber, the domination of the leader can be supported firstly by the charisma which is a personal strength secondly, it can come from a tradition or custom and thirdly, it can be legally established (Reinhard, 1998). Either kind of these powers can be accepted as legitimate by those who are subjected to it. In addition, Ferdig (2007) argues that in the contemporary challenges of unsustainable systems, leadership needs to be more more of a joint act. The practice of 'co-creating' a sustainable future provides opportunities for collective understanding of the problems from which people can jointly generate their own answers and actions.

Furthermore, this thesis argues that community renewable energy projects can be more successful than top-down initiatives because on a smaller scale reciprocity can be better performed. The human brain evolved with a restricted capacity to count social obligations such as returning favours. In a community of small number of people it is easier to keep on track on what favours are expected to be returned in forms of non-market exchanges (Ernst & Gächter, 2000). Moreover, the responsibility of taking actions for the common good is shared between less actors in a community setting which puts a pressure on agents to act quicker (Latane, 1981).

Finally, this thesis links the result of this case study to social identity theory. According to the propositions put forward by Tajfel and Turner (2004) we derive a sense of who we are, and a large part of our self-esteem, from the groups to which we belong. Therefore, community actions which have positive outcomes, for example being a low carbon community, can enhance the wellbeing and even modify the identity for good of those taking part in it.

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Appendix A: Interview Guide

'HERE WE ARE' (HWA) CASE STUDY
Third sector-charity
Place:
Date:
Interviewer: Agnes Kovacs

About the Interviewee:
Name or fiction name:
Role:
Born in which year:

Introduce WP 4.2 research

This 'governance assessment' strand of the programme aims to explore existing and novel **approaches to governance and institutions which might support or hinder the transition to a low carbon rural economy in Scotland.** Specifically, the strand seeks to identify **what is being done; who is involved; how decisions are being made; and – fundamentally – how individual, community, third, public and private sector led initiatives are constrained or encouraged by governance structures at multiple scales**.

Q1. Can you describe your role and work within HWA?

- When did you join the organisation?
- What was your motivation to join? Did this change over the time?
- How much time/week approx. you spend in HWA? How much time/week does it take for you to be involved in HWA (e.g. how many hours a week)?

Q2. Why did you start to work on this issue within the project HWA?

- What did you want to achieve originally?
- Did your aims change over the time and why?

LOW CARBON FUTURE

Describe what we mean under LCRE: A low carbon economy or society will minimise the output of greenhouse gases (CO_2 and others) A 'low carbon future' will be achieved through a

combination of: 1) decreased energy use, 2) increased energy efficiency, and 3) an increase in renewable, non-carbon sources of energy production. This might for instance change the land use (biomass/biofuel, woodland creation and increase the development of renewable energy.

Q3. What role do you think your work has in low carbon rural economy (examples)?

- How far you think your work contributes to a transition to a LCRE

Q4. How far do you feel included in decision making processes to achieve a low carbon rural economy? Why and why not?

COLLABORATION

Q5. Who do you need to work with? How far working with others is an important part of the work you do to contribute to a low carbon future? (examples)

Q6. A. The actors that you work with…how far are they involved in the realisation of your project? How are they involved/do they help you?

- Public (the Council, educational institute)
- Private
- Third
- Communities
- Individuals (capacity problems?)
- Volunteers
- Other

B. Can you give me some examples of the ways that you work with others to achieve a low carbon future, and how that happens?

- On which projects?
- At what levels?
- To what extent?
- Do you have a formal or an informal relationship?
- What are the challenges of working with these groups or individuals?
- What are the good things?

CHALLENGES

Q7. What did/ did not not worked well during delivering your project? At what stages? (examples)

- Getting funding (UK, Scotland, LA. Other funds)
- On a scale from 1-10, how far is the funding we have spoken about crucial for your day-to-day operation?
- Has it become easier or harder to win funding for low carbon activity?
- How far is there sufficient funding available to support low carbon activity in your experience?
- Legal issues
- Reliability and trust
- Deliver the targets (How do you know that you delivered your targets?)
- Administrative or bureaucratic issues
- Communication with partners
- Tensions/support from the community

Q8. Who provides help (financial support, advice) when you encounter problems (examples)?

- Who do you rely on?
- How do you cope together as a community?

DECISION MAKING

Q9. In your experience, who are the key players/influencers (institutions/individuals) in making decisions about low carbon activities (e.g. renewables, recycling) in your area?

- Why are these the most important?

- What do you think they have done so far?
- What is what they haven't done and why?

Q10. In relation to your project when a new idea comes up or you struggle, how do you make decisions within the community about how to move on?

- Formal and informal gatherings
- Forums and discussion
- Voting
- Other

Q11. Is there anyone you feel is excluded from this decision making process?

- Why and how could this be addressed?

MECHANISMS

Q12. A. Which in your opinion are the key mechanisms that helped (were in place or were needed) your project?

- Funding
- Policies
- Forums
- Informal gatherings
- Grassroots initiatives
- Media
- Other

B. What is your experience of these?

- Which have been challenging and what really helped?
- Is there anything that could be involved and how? What do you mean here?

EFFECTIVENESS

Q13. What is still missing?

- What would you and your organisation like to see happening or changing and to what?
- And by whom?

Q14. A. Given all we discussed so far to achieve your vision/objective, what do you feel the key policies/initiatives that are successful and other policies/initiative that hinder or stop you from achieving your goals?

- Good examples?
- Bad examples?

B. If you would start all over now, what would you do the same way and what would you do differently?

Q15. What is your wish for the future of low carbon rural Scotland and for your community/region?