

## GOVERNANCE OF COMMUNITY ENERGY PROJECTS



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## ABSTRACT

This research project contributes to the growing field of community energy. Building on work examining models of participation (Hoffman and High-Pippert, 2009; Walker, 200) and associated implications (Walker et al, 2006; Walker and Cass, 2007), it examines the governance structures of community energy projects.

The key innovation in the research is the framing of energy governance in terms of Hirst's associative democracy (Hirst and Bader, 2001), social learning (Collins and Ison, 2009) and Fairtlough's organisational structures of heterarchy and autonomous responsibility (2005). This entails a new conceptual and methodological approach to community based energy governance centered on the notion of a systemic inquiry, which facilitates the development of governance activity models (Checkland and Poulter, 2006). The research centers on two community energy case studies in the UK – Torrs Hydro and Baywind, which are analysed from interviews with directors and desktop research. This analysis enables reflection on how and why community energy governance processes developed and the associated implications for wider systems of governance.

The nature of the governance projects employed was found to both influence and be influenced by a number of factors including purpose or worldviews, scale of project and actors involved. In particular, worldviews associated with increased production of renewable energy, generation of financial benefit to the community, response to climate change and generation of multiple community benefits were identified as being present to a greater or lesser extent in both projects. Additionally the research reveals that the governance of community energy projects is dominated by three main relationships:

- Local community group and expert renewable energy company;
- Owner organisation (either the local community group or the expert renewable energy company) and local community members; and
- Organisations driving the project (both the local community group and the expert renewable energy company) and the government.

These two models of governance developed from the case-studies can be considered as requiring stronger or weaker acts of democracy, although both can be considered democratic to some degree within Hirst's frame of associative democracy. However, factors that limit associative democracy were identified, these include, time, relevance to stakeholders and access to expertise and financial capital.

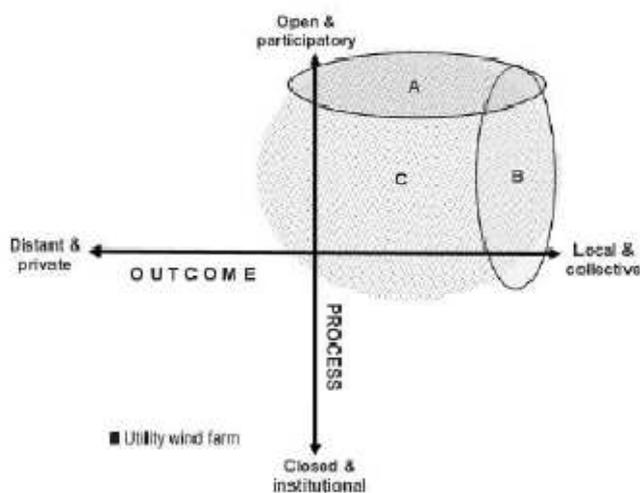
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## 1. INTRODUCTION

Over the past decade, Europe has seen the rise of a number of community scale renewable energy projects. These projects are of particular interest to researchers, community advocates and some policy makers as they have the potential to positively impact on environmental, social and economic dimensions of sustainability. For example, claimed benefits associated with community energy projects (CEPs) have included local economic regeneration, the creation of greater social cohesion and trust within a community and greater public acceptance and support for renewable energy projects or lessening of the NIMBY factor (Hepburn Wind, 2009; CREA, 2006; Walker et al, 2006; Walker, 2008; Jordan, 2000). CEPs also produce significantly less carbon emissions than traditional energy approaches such as large-scale, utility run coal-fired power stations.

Following the rise in CEPs, there has also been a significant increase in the level of associated research and literature. Particularly work has been done to develop a comprehensive definition of CEPs (Walker and Devine-Wright, 2008), to identify operating models (Walker, 2008) and potential roles of enterprises and individuals involved in the development of community scale energy (van der Horst, 2008; Walker and Cass, 2007). Research has also been undertaken to assess the merit of the theoretical benefits that have been attributed to CEP and the associated limitations and enabling factors (Hoffman and High-Pippert, 2009; Walker et al, 2009; Rogers et al, 2008).



**Figure 1: Understanding of community renewable energy in relation to project process and outcome dimensions (Walker and Devine-Wright, 2008)**

A theme that has cut across these research projects is participation. This focus on participation within the field of community energy research is unsurprising, as it is a key feature which distinguishes community models of renewable energy implementation from other models. Walker and Cass (2007) identified five main models of renewable energy

implementation – public utilities, private suppliers, communities, households and businesses. Of these models, the role of project participant, which they defined as entailing ‘membership of organising groups, attending meetings or hands on installation or maintenance’ (ibid: 465) is typically only available to members of the public within community approaches. Indeed community participation is for many authors a defining feature of community energy projects. Rogers et al (2008) require that projects have ‘input from members of a community’ (ibid: 4217), where community is geographically based. They thus found that CEPs do not proceed without participation, particularly in a project leadership role. Walker and Devine-Wright (2008) propose that community energy projects should be defined in terms of two dimensions (Figure 1):

1. Outcome - how benefits are spatially and socially distributed; and
2. Process – who is involved in the project and has influence.

By talking in terms of process models of participation must be considered. However, the process dimension also requires analysis of power or influence, with the recognition that participation is not a sufficient condition of community energy as it can be done in a disempowering or tokenistic manner. Ison (2009) builds on Walker and Devine-Wright’s definition by proposing that community energy projects distribute, decarbonize and democratize energy supply through community ownership and/or control, thereby maintaining the need for participation, while adding environmental and technical dimensions.

Levels and modes of participation have also been investigated in relation to the theoretical benefits associated with community energy projects. For example Walker et al (2009) examine through a series of case studies different models of participation and the associated implications for social cohesion. They found that in the Gamblesby community where there was already trust, a highly participatory process was employed to develop their community energy project and further developed trust. However, in the Moel Moelogan community which was not quite so tight-knit to begin with, some people felt excluded from the energy project, thereby increasing social division (ibid: 7-8). While the level of initial trust was not the only factor that led to the process employed, it was identified as a major contributor. Hoffman and High-Pippert (2009) also explored levels of participation in community energy projects, particularly examining *how* models of participation evolved and the associated implications for civic culture. They identify that community energy projects are serving as a counter to ‘what some argue is an era of declining civic engagement’ (ibid: 6), as many participants are motivated by benefits to the community not to themselves. Further, they suggest community energy projects to be examples of Barber’s (1984) strong or participatory democracy in action, whereby citizens are engaged in institutions of self-governance. However, they recognise that civic engagement and participatory democracy in action through community energy is currently limited, as projects only involve a small number of people.

While modes of participation and models of ownership and enterprise have been identified in relation to community energy projects, there has been little investigation of the associated governance processes employed. Research that moves the frame of reference from participation to governance allows a more detailed exploration of the power relationships and associated implications for communities. Investigation of governance arrangements is also of particular contemporary relevance, as many authors (Rayner, 2006; Ison, 2010) suggest we need to need to radically re-think governance structures in light of ‘wicked problems’<sup>1</sup> such as climate change. They suggest that there is a fundamental disjoint between the nature of wicked problems, and the ability of current systems of governance to respond adequately to these problems. As such, this research will inquire as to whether there are any lessons to be learnt from the governance of community energy projects that are relevant to wider challenges of governance.

To this end, this research will build on Hoffman and High-Pippert’s (2009) discussion of the participatory democratic potential of community energy projects and Ison’s (2009) claim of democratization by examining the governance structures of community energy projects. Specifically, the following questions will be considered:

- How are community energy projects governed?
- Why are these processes and structures used?
- What are the implications for wider governance processes and the democratization of the wider energy system?

Before these questions can be answered it is necessary to explore what is meant by the terms governance and democracy.

## 2. THEORIES OF GOVERNANCE

The term governance arose through critiques of government sovereignty as the main source of power (Sorensen and Torfing, 2007: 8) and in areas where no government was present for example corporations and organisations. However, as with democracy and community energy, the term governance is contested and is used by different groups and discourses to mean and promote different things (Hewitt de Alcantara, 1998). For example governance has been used typically as ‘good governance’ or ‘corporate governance’ by right wing interests who recognize the need for regulation and restraint of market forces and private interests, but who are reluctant to accept a new and major extension of the powers of the state (Hirst,

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<sup>1</sup> Wicked problems are ones of manufactured uncertainties, where ‘the risks are created by the very developments the Enlightenment inspired’ (Giddens, 1994, p4). Ison (2010: 114-121) provides a comprehensive discussion on the nature of ‘wicked problems’.

2001: 13). In contrast the term has been used by left-wing groups who see a new potential for organization, though 'civil society' and who have grown to distrust the state (ibid).

Authors generally agree that governance is used to refer to a new or changing way of governing society or groups within society (Rhodes, 1997; Stoker, 1998). To understand the concept governance it is important to determine its actors – who is involved, its function – what it does, its processes – how it does and its scale. To this end, governance can be defined as arising out of a complex set of interaction between semi-autonomous economic, social and political actors (Sorensen and Torfing, 2007: 8) who have different interests (Hewitt de Alcantara, 1998: 105). It can be considered a political process or structure that is concerned with creating the conditions for rule and collective action in accordance with some established social standing (Stoker, 1998; Hirst, 1997; Kooiman and Van Vliet, 1993). Governance typically includes processes which:

- Build consensus or obtain consent or acquiescence;
- Procure and allocate resources; and
- Coordinate or control activity to carry out programs or policies (Stoker, 1998; Wikipedia; Hewitt de Alcantara, 1998; Rosenau, 1992).

These governance processes can be simplified into Barber's (1984) three fundamental activities of democracy – talk, decision making and action. The scale of this governance activity and thus associated responsibility can range from societal or international levels to people's individual 'capacity to organize and manage their own affairs' (Hewitt de Alcantara, 1998).

This definition of governance can be used to encompass the full range of governance potential processes, structures and uses and as such is broad, some may argue too broad to be useful. However, an all-encompassing definition prevents boundaries being drawn around the concept that would exclude certain understandings, therefore minimizing the power of those traditions of governance. Instead it requires the contestation of different governance processes not to be in relation to definition but in relation to explicit socially negotiated performance criteria. Checkland (2006) in his soft-systems methodology outlines a series of potential measures of performance, including but not limited to efficacy, efficiency and effectiveness, as well as ethicality and equitability. One measure of performance that is often associated with governance processes is their democratic nature. However, what does it mean to be democratic?

### 3. THEORIES OF DEMOCRACY

Democracy comes from the Greek word *demokratia*, from *demos* 'the people' and *kratia* 'power, rule'. Pure democracy can be understood as all people govern themselves in all public or political matters all of the time (Barber, 1984: xiv), based on the principles of

equality, freedom and popular control or accountability (Dryzek, 2007: 262). However, given the complexity of society, pure democracy is not only impractical, but arguably impossible. Subsequently, a number of different theories of democracy have been developed based on how these principles are enacted in practice. Indeed, Dryzek (2004) identified 54 adjectives associated with democracy, all representing semi-distinct theoretical approaches. It is not possible or useful to discuss all these theories. Instead three significant democratic discourses –liberal representative democracy, participatory democracy and deliberative democracy are briefly outlined as the basis for introducing the theory of democracy that this research utilizes.

The current dominant theory of democracy is liberal representative democracy which can be defined as the members of a territorially defined political community – i.e. a nation state – governing themselves through the election of representatives (Macpherson 1977; Holden, 1993 in Sorensen and Torfing, 2007, p234). Or in the terms applied to pure democracy, liberal representative democracy can be understood as “some of the people, chosen by all, govern in all public matters, all of the time” (Barber, 1984: xiv). This model is important as it is enacted in some form, in almost all countries around the world. However, many critics of liberal representative democracy (Barber, 1984; Hirst, 1996) suggest that this model limits the practice of democracy.

Conversely, participatory democracy can be considered as all people participating some of the time in some of the responsibilities of governing (Barber, 1984), making it much closer to pure democracy. For Barber, the practice of participatory democracy encompasses “strong democratic talk (deliberation, agenda-setting, listening, empathy); strong democratic decision making (public decision, political judgment, common policy-making); and strong democratic action (common work, community action, citizen service)” (ibid: 266). Theories of participatory democracy are of particular relevance as they build on the discussion of participation in the community energy literature and can be considered the other end of the democratic spectrum to liberal representative democracy. The main critique leveled at participatory democracy is that it is hopelessly impracticable (Warren, 1996 in Hilmer, 2010)

Theories of participatory democracy were particularly popular in the 60s and 70s; however they have since declined and have been replaced with theories of deliberative democracy. Deliberative democracy has for many democratic theorists become at least the “legitimate heir to participatory democratic theory” (Hilmer, 2010: 51) and at most synonymous with it (Fung, 2004 in Hilmer, 2010). Dryzek (2004: 144) describes deliberative democracy as the right and ability of “those subject to a public decision to participate in genuine deliberation”. In terms previously used, deliberative democracy can be understood as it is currently practiced, as representative democracy, plus some people deliberating on some public matters that affect them, some of the time. Thus, deliberative democracy can be seen as a compromise, it is more practical than participatory democracy and has stronger processes of democracy (democratic talk and one democratic decision) than liberal representative

democracy. However, this research will focus instead on an alternative middle way theory of democracy – associative democracy.

Associative democracy entails the supplementation of national representative democracy with the devolution of as many social service activities as possible to democratically self-governing voluntary associations (Bader, 2001: 5; Hirst 2000 in Sorensen and Torfing, 2007). This model of associative democracy can be understood as liberal democracy plus all people affected by a matter, who are able or choose to govern some of the things that affect them all of the time. The rationale for this approach is that according to Hirst (1996), hierarchical institutions which dominate both public and private spheres are a key and often overlooked factor responsible for the deficiency in contemporary democracy. Particularly problematic is that those affected by the actions of the aforementioned institutions are provided with few opportunities for ‘control and consent’ (Hirst, 1996: 101). He suggests that reform of decision making or talk to be more democratic, as deliberative democracy tries to achieve, is only half the problem; the other part is implementation of decisions or action – *[O]ne cannot feed democratic decisions into the top of authoritarian structures and expect to get democratic outcomes* (ibid: 107, my emphasis). Thus, associative democracy can be considered a stronger form of democracy than its deliberative counterpart as it enables democratic talk, decision making and action, but it is arguably less impracticable than participatory democracy as it does not require the replacement of representative democracy and proposes that the most important sphere for reform is at the level of organisations.

According to Smith (2010), the best example of associative democracy in action is the social economy. The social economy can be defined as a broad category of organisations, known as social enterprises that undertake economic activity with a social remit (Smith, 2005: 276). The main differences between social enterprises and standard for-profit firms are their ethos and their structure. Social enterprises are typically motivated by “mutual, communal or general interests” (ibid) and social and environmental values (van der Horst, 2008) above profit. The governance structures of social enterprises are generally more democratic than private firms (Smith, 2005). For Smith, associative democracy is a theory of and for the social economy, as both discourses identify the need and mechanism for citizens to meaningfully “affect the patterns of governance, production and consumption that directly impact on their lives, their communities and their environment” (Smith, 2005: 287).

This understanding of the social economy and associative democracy, by definition encompasses theories of organisational democracy. Original conceptions of organisational democracy were considered a sub-theory of participatory democracy. They envisaged a shifting of power away from the macro-level of the state and arguably large hierarchical private enterprises to sundry micro-levels (Hilmar, 2010), one mechanism of which is the cooperative ownership and management of organisations. In *The Co-operative Workplace*, Rothschild and Whitt (1986), based on empirical studies, outline a model of democratic organisations involving eight features:

1. Authority, which resides in the collectivity as a whole; delegated, if at all only temporarily and subject-to recall. Compliance is to the consensus of the collective which is always fluid and open to negotiation
2. Minimal stipulated rules
3. Social controls based on personalistic or moral appeals rather than direct supervision
4. Ideal of community
5. Employment based on social-political values, friendship and informally assessed knowledge and skills;
6. Normative and solidarity incentives are primary, material incentives are secondary
7. Egalitarian approach, with minimal social stratification
8. Minimal division of labour (p. 62-3)

These attributes of a democratic organisation are highly prescriptive and not all of them are in consort with democratic principles. Particularly, employment based on friendship goes against the principle of equality, in the sense equality of opportunity. Hirst (1994) also critiques conceptions of organisational democracy limited to workers co-operatives. He suggests that democratic organisations should go beyond conceptions of democracy purely based on worker participation to consider the relationship an organisation has with the wider community within its governance structures (ibid).

However, one tenant of original organisational democracy that Hirst maintains, and organisational management theorists such as Fairtlough (2005) support, is a clear rejection of hierarchy. While Rothschild and Whitt reject hierarchy on ideological grounds, Fairtlough critiques hierarchical organisations on instrumental grounds. He suggests hierarchical organisations are inefficient at learning and thus adapting to complex situations and being able to create effective outcomes. Instead he proposes that there are two additional organisational structures – heterarchy and responsible autonomy that are just as valid and arguably more effective than hierarchy. Heterarchy is defined as “multiple rule, a balance of powers rather than the single rule of hierarchy” (ibid: 28). While responsible autonomy involves a group that decides what to do, but is accountable for the outcome of the decision. In this way, associative democracy, through organisational democracy results in a move away from hierarchical management approaches towards responsible autonomy approaches. This approach further enshrines all three elements of governance, an autonomous group is involved in talk, decision making and action. In practice, there differentiated organisational modes and accountability structures within the social economy, from workers co-operatives to voluntary associations to foundations. Thus, social enterprises enable multiple different modes of citizen participation, leading to unconventional patterns in the political division of labour and in the relationship between power and authority (Smith, 2005).

The different organisational forms that CEPs take – co-operatives, community charities, development trusts and shares owned by a local community organisation (Walker, 2008) are the types of organisation that Smith (2005) defines as social enterprises. Van der Horst (2008)

further analyses organisations that this research identifies as CEP organisations from a social enterprise perspective. CEPs thus can be considered a part of the social economy. By extension, if associated democracy is the theory for the social economy, it can also be thought of as the theory for community energy. As such, associative democracy will form the theoretical basis for the analysis of the governance of CEPs. Although it should be noted that the research employed could equally use other theories of democracy, thus presenting opportunities for future research and analysis.

#### 4. RESEARCH METHOD

In the literature, theories of democracy are often compared using four interconnected criteria associated with their enactment. Firstly power; different theories of democracy entail different structures and processes for distributing power, with the democratic aim of having an equal power distribution. Secondly citizenship; what is the role of citizens within the democratic process, what is entailed in popular control? Thirdly outcomes; do the structures of democracy deliver effective and acceptable outcomes or solutions to policy problems, for example one measurement could be the ability to effectively address wicked problems. Finally, the scope of the democratic sphere; where is the boundary drawn between the public sphere in which democratic processes are meant to hold sway and the private sphere and what are the associated implications for ideas of freedom? These issues can all be considered in terms of empowered participation. Different theories of democracy propose different levels of and roles for citizen participation and associated power to affect outcomes. However, Ison and Collins (2009) suggest that the emphasis of governance analysis purely in terms of participation, particularly Arnstein's ladder of participation is limited as it miss-conceptualises power, does not recognise why people participate and how this changes over time or consider the relationship between different stakeholders participating. As such, the relationships between actors will be considered, as well as the structures of participation as both have a bearing on power, the requirements of citizenship, the types of outcomes produced and where private and public spheres are divided. This research will examine governance of community energy projects considering these four elements and the potential implications for the practice of associative democracy. To do this a systems research approach is used.

Systems is a powerful discourse which has been used in many other fields from organisational management (Checkland, 2006) to natural resource management (Ison et al, 2004). Systems, however, has rarely been used within the energy sector and to date not within the community energy field, thus it offers a new analytical perspective. The systems discourse is concerned with the analysis of interacting parts that make up "an adaptive whole" (Checkland and Poulter, 2006: 7). A key feature of systems theory is that a system does not exist independently of its stakeholders, instead it arises in a "social dynamic" (Ison, 2010: 13), thus

systems theory as discussed here is not as hard-systems as traditionally understood by engineers. By analysing systems, which can be thought of as layered structures, there is a shift from a reductionist to a holistic research approach. As such, Systems has particular relevance for dealing with “real-world complexity” (ibid), which governance processes often entail.

Specifically tools and processes of soft-systems methodology (SSM) founded by Checkland are utilized. SSM is a set of flexible tools or investigation methods that has developed to find a better way of dealing with problematical real-life situations (Checkland and Poulter, 2006). SSM is designed to elucidate underlying assumptions within situations, allow for different conceptualisations of situations and facilitate the analysis of power within a situation, which is pertinent to the research of an explicitly political process such as governance.

Conventionally, a SSM research project entails four processes in which the completion of all or some of the stages can be described as ‘systemic inquiry’ (Ison 2010):

1. Finding out about the initial situation;
2. Creating purposeful activity models, which are constructs developed and re-developed through the inquiry as a research tool;
3. Using the models to question the real situation; and
4. Taking action to improve the situation (Checkland and Poulter, 2006).

Within the time-frame of this research (five months), it has not been possible to conduct a full action research project which the four steps of a SSM process entail. Instead the first two stages have been conducted. There is also potential to use the information gathered in future research. Further, framing research within an organisational context such as a CEP, in terms of a ‘problematical’ situation as SSM requires, relies on at least some people in the organisation viewing the governance processes as problematic and trusting the researcher to be useful in transforming this problem. However, this was not the case with this research, which was instigated by the researcher, not at the invitation of people involved in CEPs. Thus, the application of SSM is necessarily limited to the first two stages. Nevertheless, it is the experience of the author that governance arrangements in community organisations can be highly problematic, and while not necessarily true for the case –studies included in this research, this research will provide useful information for the improvement of governance processes in CEPs at a future date.

The Community Carbon Network identifies over 150 projects in the UK that could loosely be defined as CEPs. Given the large number of projects, it is not possible within the scope of this research to comprehensively analyse the governance of all CEPs. Instead two case-studies have been chosen to provide an initial examination of CEP governance.

There are a number of different variables which can be considered in the analysis of CEPs: for example purpose of a project e.g. renewable energy development, awareness raising, energy efficiency and behaviour change. Other variables for renewable energy projects include, scale

and type of technology used e.g. wind, solar, hydro etc. In determining which case studies to use for this project, the variable of project purpose was kept constant, while other variables were more flexible. Specifically, five criteria were developed for case-study selection:

- That the projects involve the continued operation of renewable energy infrastructure. This limits the scope of research to projects that have to contend with raising and managing large sums of money and operating equipment and excludes projects focused purely on awareness raising or individual behaviour change;
- That the projects are well established and with the energy technology having been installed and operating for over a year. This limits the scope of the research to projects that have been successfully implemented;
- That the projects use different technologies. Thus enabling some analysis of whether governance processes are applicable across different technologies;
- That the projects are accessible by public transport from Lancaster; and
- That those involved in the projects are willing to participate in the research project.

Based on these criteria two community energy projects were chosen and contacted – Torrs Hydro in New Mills, Derbyshire and Baywind Energy Co-op in Burrow-in-Furness, Cumbria.

In summary, this research project can be conceptualised as an initial or partial systemic inquiry into the governance of two CEPs, in order to find out:

- How some community energy projects are governed, including who is involved and who isn't;
- Why these processes and structures are used, including why some people are involved and others not; and
- What some of the implications are for wider governance processes particularly associative democracy and the democratisation of the wider energy system.

The systemic inquiry employed desk-top techniques, analysing literature from each case study, including information on the website and official documents. Each case-study was also visited and six semi-structured interviews lasting an hour to an hour and a half were conducted with people self-identified as involved in the governance of the case study community energy project. Of these interviews, three were conducted with people from Torrs Hydro (TH1, TH2 and TH3) and three from Baywind (BW1, BW2, BW3). Based on the research questions, the literature review and SSM and CSH research tools, seven questions with a series of sub-prompts were crafted to guide the interviews. These questions can be found in Appendix A.

The interviews and desk-top research has then been analysed in a number of ways. Firstly, a series of models of the Torrs Hydro and Baywind governance systems have been constructed based on what is set down in official documents, mind-maps made by interviewees and

interview information. In particular, SSM analysis tools have been used. SSM activity models are conceptual models that do not necessarily reflect actual practice, unlike those mapped by interviewees. However, they are useful, as they are constructed using very clear elements, which then structure and make transparent further discussion of the real-life praxis they are meant to represent. The elements used to construct a purposeful activity model are (from Checkland and Poulter, 2006; Checkland, 2010):

1. A root definition of the system or situation of interest, which should include the PQR formula – do P, by Q, in order to contribute to achieving R. As such within this analysis the situation of interest is always understood as a transformative purposeful activity, which in the case of this research, is the practice of governance.
2. Elements of the mnemonic CATWOE are identified in order to provide additional important information. CATWOE stands for:

Customers – victims affected by or beneficiaries of the transformation process;

Actors – people involved in the transformation process;

Transformation process – the transforming activity of interest;

Worldview or perspective from which this model is being developed. Each model can only enshrine one world-view, thus as there are many world-views, there are many potential activity models for any one situation;

Owner – people who have control over the situation and can stop or change the transformation process; and

Environmental constraints – what does the system take as given, what is the context in which T sits? There are millions of potential environmental constraints, however some can be considered much more relevant than others.

3. Activities involved or needed to achieve the transformation process (T) are defined and linked in a purposeful activity model, taking into account the information from steps one and two.

Once constructed, an inter- and intra-case-study comparison of the models is undertaken to identify common and conflicting processes and understandings of CEP governance. It is important to note that only very rough models will be developed, as insufficient interactions with the governance processes of the case-studies occurred during the research to develop richer more comprehensive models. This thereby limits the analysis potential.

Information from the interviews is then drawn on to understand why the governance processes are as they are defined in the models. Particularly, values, skills and context are considered as evidence for why the governance systems identified, have emerged in practice.

Finally, the implications of the governance processes are discussed, in terms of participation, power, citizenship, 'effective' outcomes, democracy generally and associative democracy specifically. In this discussion, interviewees' thoughts on the democratic nature of their project will be drawn on and compared to ideas found in relevant literature. No definite conclusions about the broader implications for practices of governance and the democratisation of the energy sector will be able to be drawn due to the limited scope of the research. However, useful information will be identified, which can form the basis of a more comprehensive study.

## 5. CASE STUDY 1 – TORRS HYDRO



**Figure 2: Torr's Hydro Project (Torr's Hydro, 2010)**



**Figure 3: Archimedes screw (Torr's Hydro, 2010)**

The Torr's Hydro community energy project is a low head hydro-electric scheme using an Archimedes screw with a maximum power rating of 63kW (Figures 2 and 3). It is located next to a weir at the confluence of the River Goyte and the River Sett in the township of New Mills, Derbyshire. The project cost a total of £330,000. The project is run by Torr's Hydro, New Mills Ltd, an Industrial and Provident society for the benefit of the community (IPS), which The Financial Services Authority (FSA - the regulator for UK IPSs) defines as:

“An organisation conducting an industry, business or trade, either as a co-operative or for the benefit of the community, and is registered under the Industrial and Provident Societies Act 1965. Societies run for the benefit of the community provide services for people other than their members” (Torr's Hydro, 2010)

The project was first conceptualised by Water Power Enterprises (H2OPE) in 2006, which had identified New Mills as one potential site for the first of its hydro projects. Water Power

Enterprises (2010) is a Community Interest Company or social enterprise that is committed to developing community scale, low-head hydro-electric schemes. By the beginning of 2007 New Mills was chosen by H2OPE as the site. What followed was a series of events run by both H2OPE and the local Friends of the Earth group designed to engage the local community. At one public meeting, concern was raised at the idea of the benefits of the project being used outside of the New Mills community. This led to the formation of a group of interested locals who wanted to see the scheme be community owned rather than owned by H2OPE. This group eventually became Torrs Hydro New Mills Ltd, which was officially established by four founding directors in September 2007, with H2OPE having identified the IPS vehicle. By mid 2007, planning permission for the project had been granted and there was an informal agreement that what would come to be Torrs Hydro New Mills would own the project and H2OPE would project manage and operate the site.

In November 2007, the share offer was launched; raising £102,000 in the first round, grant funding and a loan from the Co-operative Bank was also secured. Construction, undertaken by a small company Western Renewable Energy, with the support of a newly appointed director of Torrs Hydro, commenced in March 2008 and was completed by September. After the first week operating, although not originally intended, operational responsibility for the project was transferred to Torrs Hydro New Mills Ltd instead of H2OPE, as Torrs Hydro were better placed to provide the continuous maintenance necessary. To this day, Torrs Hydro New Mills continues to operate the plant through a dedicated team of volunteers, having overcome a series of technical issues in the interim year and a half. However, the project has yet to turn a sufficient profit to provide grants for local community projects, as is intended.

## 6. CASE STUDY 2 – BAYWIND ENERGY CO-OP

Baywind Wind Co-op, founded in 1996 is the UK's first energy cooperative. It currently owns the five turbines totaling 2.5MW at the Harlock Hill wind-farm (Figure 4) and one 600kW wind-turbine in the Haverigg II wind farm; both wind farms are located in Cumbria. Baywind is a trading co-operative, one of the stipulations of which is that the membership should be direct beneficiaries of the services of the co-operative. However as BW1 identified:

*You can't do that with a wind farm, because the energy goes into the grid. I can't make it so that member living in Oxford receives energy from Cumbria, it's too free a market at the moment, and you can get your supply from anywhere.*

As such, the Baywind rules require that a member be – “any person, society, company or other corporate body who or which is an electricity consumer”.

The conception for the project was first developed by the Harlock Hill site land owner, who whilst visiting Sweden was inspired when seeing a series of co-operatively owned wind-farms.

As such he listed his site on a database for potential wind development sites, and the Swedish company Wind Company expressed an interest. The Wind Company set up a base of operations in Barrow-in-Furness in Cumbria, developing the Harlock Hill wind project and supporting the land owner and another committed local to develop the Baywind Co-operative. Planning application for the project was approved by mid-1996 by South Lakeland District Council and in October 1996 Baywind had been formed as a legal entity with seven board members from the local community. With the help of a lawyer with expertise in co-operatives, Baywind launched a share offer to raise enough money to purchase one turbine of the Harlock Hill wind-farm. By February 1997, the Harlock Hill wind turbines were generating electricity and Baywind had raised £1.2million, enough to purchase a stake in the project from the Wind Company equivalent to two wind turbines not the one as previously intended. Within a year the first dividends were paid back to members.



**Figure 4: Harlock Hill wind farm (Baywind, 2010)**

In 1998, after unsuccessfully attempting to develop a series of other wind farms, the Swedish Wind Company closed down its Cumbrian base of operations and handed management responsibility of the Harlock Hill site to Baywind. For the next few years Baywind was managed by the current Baywind Secretary out of her house. Not long after, the Baywind board made the decision to raise the money to purchase the remaining three Harlock Hill turbines from the Swedish company. They did this through a second share offer and a loan from the Co-operative Bank. Additionally, Baywind raised the funds to buy a share in the Haverigg II wind farm which was developed by the Wind Fund. Baywind also set up an independent trust - Baywind Energy Conservation Trust, where 1.5% of the annual Baywind turnover is given over to the trust to fund for local projects.

After being approached by a number of communities interested in following in Baywind's footsteps, the membership of Baywind through a referendum at an AGM decided to invest the money currently sitting in a depreciation fund, in supporting the development of other renewable energy cooperatives in the UK. As such, Energy4All was formed. Energy4All is a co-operative of co-operatives, owned by the co-operatives it helps develop and continues to manage. To date, Energy4All has helped develop seven co-ops located across the UK from the Fens and Oxfordshire to Scotland. The Energy4All uses two different ownership models – 100% community ownership or working in partnership with a wind developer, with a co-operative then owning a stake in that developers' wind farm.

## 7. GOVERNANCE MODELS

### 7.1. LEGAL MODELS

Having provided the background to the case-studies, their governance systems will now be examined. Figures 5 and 6 represent the legal governance models of the Baywind Energy Co-operative and the Torrs Hydro Industrial and Providence Society as identified in their rules. Both models are conventional approaches to organisational governance as typically stipulated by the Financial Services Authority. Specifically, they both incorporate a board of directors who are responsible for the organisation and a membership who can participate in decision making through voting at an Annual General Meeting of the organisation. Baywind has a minimum of two directors and a maximum of nine; while Torrs Hydro has a minimum of two and no maximum, though currently there are seven directors. The Baywind and Torrs Hydro rules require 1/3 of the nine directors to stand-down at each AGM, providing an opportunity for new people to become involved in the governance in an ongoing capacity. It is important to note that both organisations can remunerate their board members for time spent. This is standard practice in Baywind but currently the membership of Torrs Hydro has not voted to do this.

Both organisations also have a co-operative structure, as distinct from a company structure, the main legal difference being one member one vote, not one share one vote. This is designed to create a more democratic approach to organisational governance, whereby all members have equal say. The Baywind legal governance model also identifies who is responsible for the day to day management of the wind- farm, a manager, however the Torrs Hydro model does not specify. What is immediately obvious from this legal structure and identified as a democratic shortfall by a number of the interviewees is that members of the local community have no formal rights in the governance of these projects if they are not members and to become a member requires a £250 investment, thereby discriminating against people who cannot afford it.

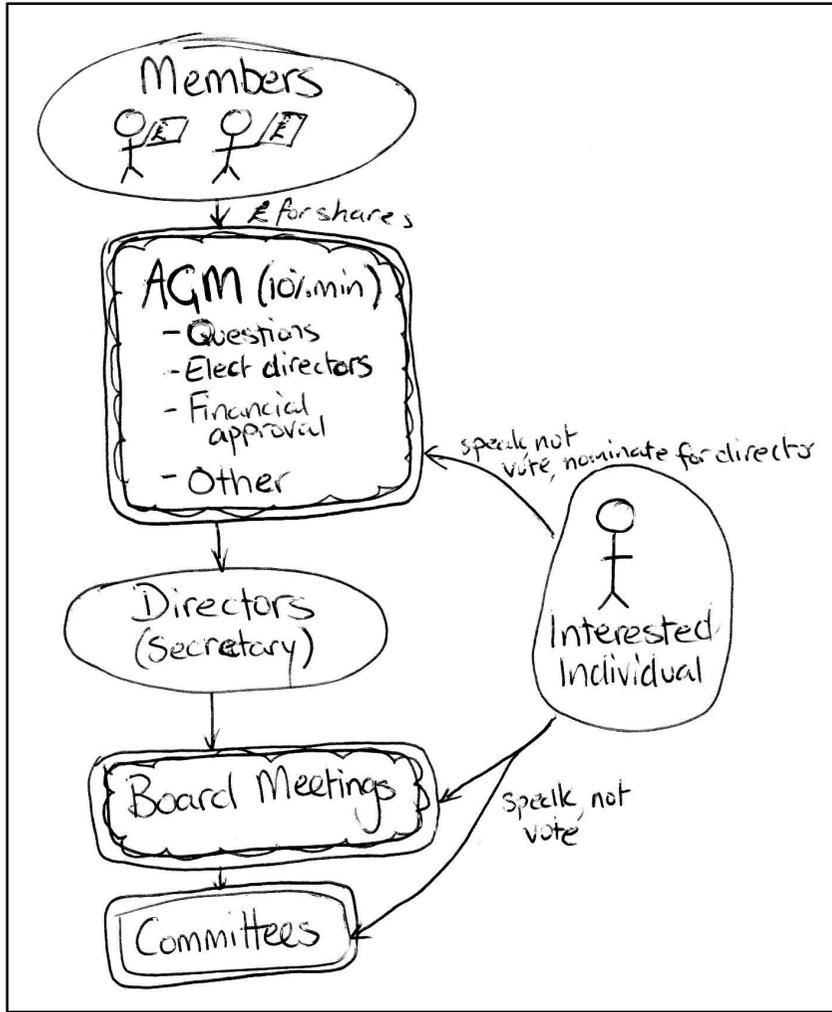


Figure 6: Formal governance model of Torrs Hydro

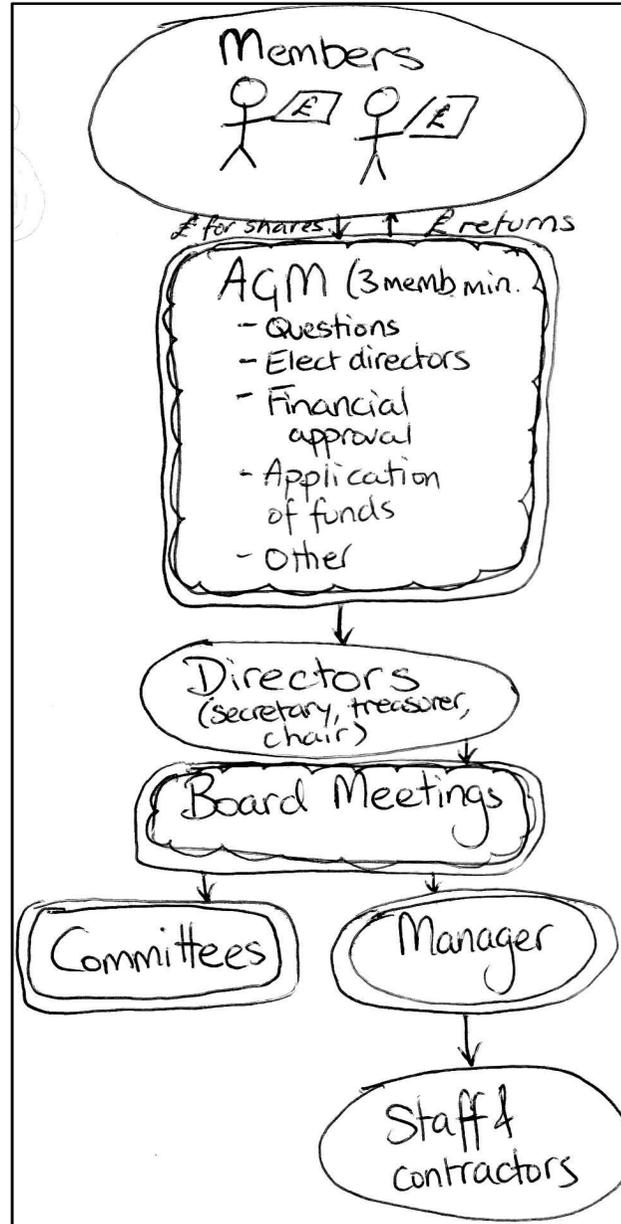


Figure 5: Formal governance model of Baywind

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## 7.2. ACTIVITY MODELLING AND ANALYSIS

These legal governance models while informative do not identify the richness of the governance processes actually employed or identify the full range of stakeholders involved. As such to develop a richer picture of the governance system, a CATWOE analysis and associated purposeful activity model has been developed.

The starting point for undertaking the CATWOE analysis was the project purposes identified by different interviewees. These purposes closely relate to their respective motivations for participation and underlying worldview. As such, the common partial root definition below - do P (what), by Q (how) has been developed and applied to four dominant motivations identified; the associated CATWOEs are tabulated in Table 1.

Based on this common root definition one possible generic activity model has been constructed (Figure 7)<sup>2</sup>. It assumes that a renewable energy company while not necessarily the owner of the system is the instigator, as occurred with the Torrs Hydro project. Similarly another system could be constructed where local people are the instigators and this would include an additional activity – *Activity 1.0 a group of local people identify a desire to develop a CEP and seek expert help*. This would ultimately change action 1.3 to also involve the local group and company seeking participation, but otherwise the remainder of the system would remain fairly similar. The model is not specific to any one of the worldviews identified in Table 1, instead in Activity 2 and Activity 3 a series of questions and meta-processes are identified that could and would be answered and enacted in different ways according to each worldview. The CATWOE analysis also has bearing on who participates in the other activities identified and how. In order to understand how these particular worldviews manifest in certain governance arrangements (particularly how Activities 2 and 3 are answered and structured) a series of factors or dimensions have been identified and the associated governance arrangements described in Table 2. Only three of the worldviews have been considered as purpose 3 (reduce the community's carbon footprint) is very similar to purpose 1, as carbon reduction is based on energy produced.

This activity model can be considered a heuristic for understanding, evaluating and constructing governance systems for CEPs. In this way, this analysis process is cyclical or iterative; the real-world information, in this case from interviews, is synthesised to create this conceptual model, the model is then used to better understand the real-world situation. Specifically, the factors in Table 2 can be used to explain *how* governance is arranged and some implications, while the unique relationship between the CATWOE factors provides a way of explaining *why* governance arrangements have developed in the real-world. The factors from Table 2 are discussed in relation to the two case-studies.

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<sup>2</sup> For comprehensive flow charts or models of the different steps involved in developing a community energy project see DTI, 2000, Energy4All and LUREG, 2010.

Root Definition: A system to govern the development and operation of a community renewable energy project in order to...

**Table 1: CATWOE analysis for community energy governance systems based on different potential worldviews**

Purpose	1	2	3	4
R (why)	... create (many) renewable energy project(s)	... generate money for the community	... reduce the community's carbon footprint	... show community ownership can work and provide benefit to the community
Customers	Electricity consumers	The local community	The local community	The local community
Actors*	Local group, expert renewable energy company, other contractors (lawyers, energy and environment consultants, construction firms, electricians etc), turbine manufacturer, local council, FSA, Funding organisations (Co-op Bank, Regional Development Authorities etc)			
Transformation	Desire for R -> desire for R met			
Worldview	There are abundant renewable resources that could make a positive contribution to the energy system and the community if harnessed. A community approach can help ensure renewable energy project success.	Local communities are important, they should benefit financially from energy projects in their area, and/or renewable energy projects provide a good income stream for funding community projects.	Community response to the urgent issue of climate change is an important strategy and creating a local zero carbon energy supply project is one approach	Local ownership and control of community assets is achievable even if run by volunteers. Such initiatives can provide multiple benefits to the community including empowerment, cohesion, trust and income
Owners**	Renewable energy company	Either a Renewable energy company or a local group	Either a Renewable energy company or a local group	Local group
Environmental constraints or considerations	FSA regulations, renewable resource availability, governance tradition of stakeholders, energy price, technology availability, maturity, economic scale and cost	Energy price, FSA regulations, renewable resource availability, governance tradition of stakeholders, technology availability, maturity, economic scale and cost	Energy price, FSA regulations, renewable resource availability, governance tradition of stakeholders, technology availability, maturity, economic scale and cost	Time of local actors, degree of existing community participation, Energy price, FSA regulations, renewable resource availability, governance tradition of stakeholders, technology availability, maturity, economic scale and cost

\*It should be noted that all the same types of actors are required for these governance systems, however the arrangement and responsibilities of these actors is different from model to model.

\*\* It should also be noted that many of the actors have the power to impede the system from functioning; the stakeholder identified in this category however, has primary control over the system.

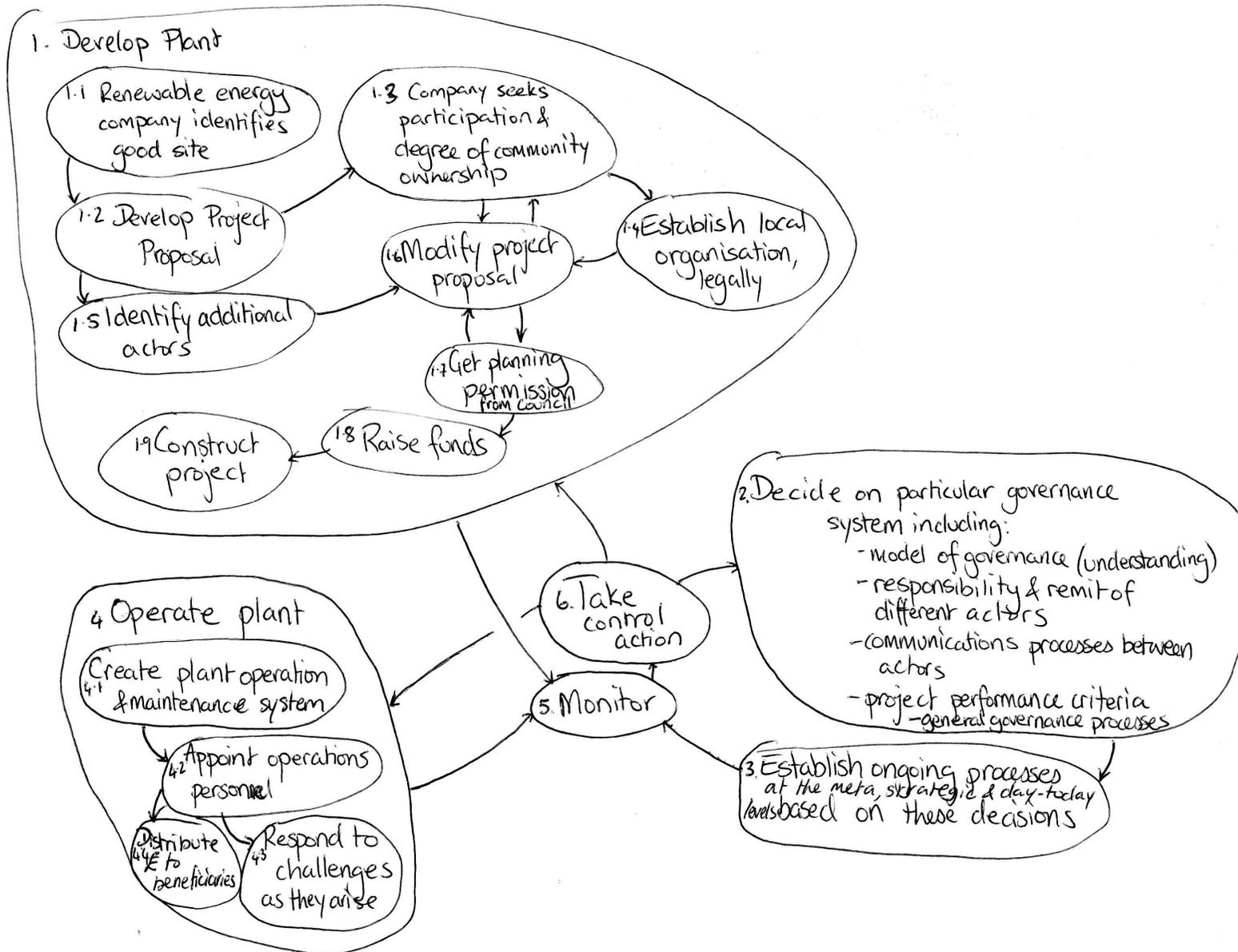


Figure 7: Potential purposeful activity model of a system to govern the development and operation of a community renewable energy project in order to...

**Table 2: Factors for analysing governance arrangements of CEPs in accordance with different worldviews**

Model option	1	2	3
R (why)	... create (many) renewable energy project(s)	... generate money for the community	... show community ownership can work and provide benefit to the community
Key performance criteria	Expediency	Economic efficiency	Community attitudes, community economic benefits, level of positive participation, continued operation of project, interest from outside the local community
Organisational structure	Typically more hierarchical organisations, with some level of responsible autonomy	As 1	Typically more heterarchical organisations with some level of responsible autonomy
Deliberation and decision making processes employed	Pre-determined motions, opportunity ask questions, then a majority vote	Pre-determined motions, opportunity ask questions, then majority vote	Consensus decision making
Processes dealing with opposition or conflict	Internal conflict within the organisations is dealt with through discussion and majority vote at the meeting at an appropriate level. Conflict between actors is resolved through negotiation and is closely connected to the exercise of power. Those actively involved can also withdraw from the project, if they oppose its direction. Local community members who oppose the project can pursue legal channels such as the formal planning process.	As 1	Internal conflict within the organisations is dealt with where possible by discussion and consensus decision making falling to a majority vote if necessary at the meeting at an appropriate level. Conflict between actors is resolved through negotiation and is closely connected to the exercise of power, with the aim of getting the best possible outcome for all parties. Those actively involved can also withdraw from the project, if they oppose its direction. Local community members who oppose the project can pursue legal channels such as the formal planning process, or directly negotiate with the local organisation.
Responsibility and remit of different actors	Expert renewable energy company is responsible for doing the bulk of day-to-day activity and project decision making. Local group directors are involved to a certain extent in the share-offer, in community education and engagement. Local citizens can invest and thus have a say at the AGM in meta-decisions once a year, some may be employed as local contractors where appropriate.	Expert renewable energy company is responsible for doing the bulk of day-to-day activity and project decision making. Local group is involved to a certain extent in the share-offer, in community education and engagement and setting up a community fund for community projects. Local citizens can invest and thus have a say at the AGM in meta-decisions once a year, some may be employed as local contractors where appropriate.	Expert renewable energy company and local group are both involved in the day-to-day activity and project decision making. Some division of labor. Local citizens are involved in deliberation and decision making about some key project decisions, plus having the opportunity to invest, can also volunteer in the day-to-day operation of the project.
Relationship between local	Differentiated activity, with greater communication from expert company to the local organisation. Can	As 1.	Joint implementation, two way communication between expert company and the local organisation.

organisation and the expert renewable company	be amicable or fractious depending on whether the relationship meets the needs of the actors involved.		
The relationships between owner organisation and local community members	Quite a distant relationship between owner organisation and local community.	Quite a distant relationship between owner organisation and local community, although some joint involvement in identifying community projects.	Close relationship between owner org and local community, with many opportunities for local community members to formally and informally provide input.
Power	Expertise is the dominant source of power and is enacted by the expert renewable energy company, primarily through their ability to undertake most of the activity, thereby setting the boundaries around who makes what decision and establishing norms. Local organisation directors and membership have some power as they provide some of the financial resources and have legal responsibility. Local council and government authority can chose to exercise power through their ability to deny planning and other permissions. Financial institutions can put prescriptions on what is possible through placing conditions on loans or grants.	As 1	Power is shared between directors of local organisation, who control some of the financial resources and develop expertise, the expert company who has expertise. All people who participate have power. Local council and government authority can chose to exercise power through their ability to deny planning permission. Financial institutions can put prescriptions on what is possible through placing conditions on loans or grants.
Public vs. Private Boundary	Can be considered to be part of the private sphere as the majority of those involved receive economic dividends. That is for the project to proceed it does requires some volunteerism, but most <i>can</i> participate purely on economic grounds	As 1	Can be considered to be part of the public sphere as it requires at least some people to act as citizens – that is to work for the benefit of the community.

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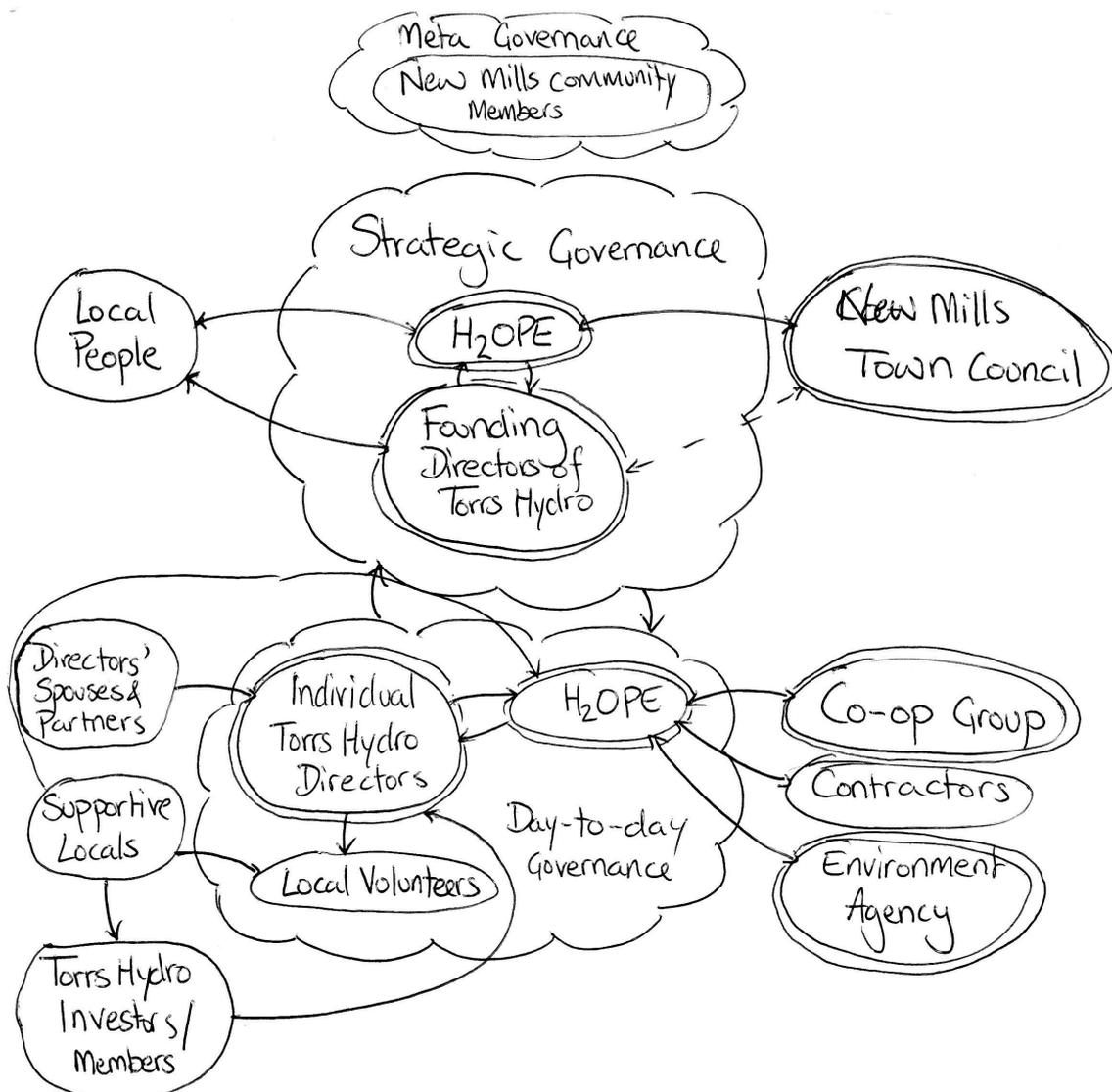
### 7.2.1. POWER, RESPONSIBILITIES AND RELATIONSHIPS

Power is a fundamental issue of governance and democracy. The dynamics of power have significant bearing on how Activities 2 and 3 in Figure 7 are constructed. When power is conceptualized not as something fixed, instead as something which circulates and is employed and exercised through a net-like organisation (Foucault, 1980 in Ison and Collins, 2009), the dynamics between actors must be understood. To understand the dynamics between actors involved in Baywind and Torrs Hydro it is necessary to understand their responsibilities, which in turn are partially dependent on the power relations. Thus, these three elements can be considered as mutually co-evolving (Fairtlough, 2005).

To elucidate the relationship between actors, stakeholder maps have been drawn. They show how the different actors are involved in the governance structures, their relationships and how these change over time. From the Baywind and Torrs Hydro interviews it was possible to identify three levels where some combination of governance activities - talk, decision making and action, occur. For the purpose of this research these levels are named meta-, strategic and day-to-day levels. Meta-level governance can be considered the overarching governance associated with transparency and accountability; strategic governance is at the level guiding the direction of the project; while day-to-day governance fairly self-explanatory.

#### **Torrs Hydro Stakeholder Mapping**

TH2 identified that the governance of Torrs Hydro has had/will have four phases - development, construction, operation and community project support. Figures 8, 9 and 10 identify the actors involved in governance during the development, construction and operation phases of Torrs Hydro, but not the community project support phase, as it has yet to start. However, they do not identify the particular activities or processes involved in the governance system; as such process descriptions drawn from interviews will supplement the explanation of the models. These figures indicate that H2OPE and the directors of Torrs Hydro are the main actors involved in governance. Particularly, what can be taken from Figure 8 is that H2OPE was most concerned with day to day governance, dealing with almost all external stakeholders, although Torrs Hydro directors were the main intermediately with local community members. These sets of relationships have bearing on the level of relational power or capital of these two stakeholder groups. Interviewees stated that at the level of strategic governance, there was tension between H2OPE and Torrs Hydro, as both were involved, though with different objectives and no clear division of responsibility or agreed communication channels. At the meta-governance level, activity was limited, with some opportunities for the community to have input and ask questions through public meetings, site tours and exhibition days. These arrangements imply that at this stage, the first and second worldviews dominated (Table 2).



**Figure 8: Torrs Hydro governance stakeholder map, development phase**

During the construction phase (Figure 9), Torrs Hydro directors took more of an active role in the strategic-level governance. They developed an active relationship with external stakeholders such as the New Mills Town Council and Co-op Bank, thus building their relational power. These stakeholders were involved peripherally in the governance arrangements through planning approval processes and funding agreements respectively which are particular type of power relation. Table 2 identifies these formal processes as one way of exercising over the development of CEPs common to all worldviews.

Another feature of Figure 9 was that the distinction between day-to-day governance and strategic governance was blurred, with chaotic processes, many different actors and many meetings. Meta-governance was at the level of AGMs allowing shareholders to participate in limited decision making. Additionally, one of the Torrs Hydro directors was more involved in the day to day governance. The tension between H2OPE and Torrs Hydro predominantly remained at the strategic level. Specifically, issues of budget and associated communication were identified as problematic, with H2OPE having initially under budgeted the project,

requiring Torrs Hydro New Mills Ltd, to raise more money during the build phase. These relationships suggest that the fourth worldview (Table 2) stated to dominate as this phase as there was a degree of joint implementation, even if it was dysfunctional.

Finally during the Operation phase, (Figure 10) meta-governance remains the same, however other levels of governance have simplified, with H2OPE no longer playing an active role in governance of the project at any level. The distinction between day-to-day governance and strategic governance is also clearer, with different responsibilities of day-to-day governance delegated to different people. Also, now more local community members are actively involved in the governance system as volunteers. What is not clearly identified in Figure 10 is that during this phase:

- There are a larger number of directors making up the Torrs Hydro Board, thus slightly increasing local participation at the strategic governance level; and

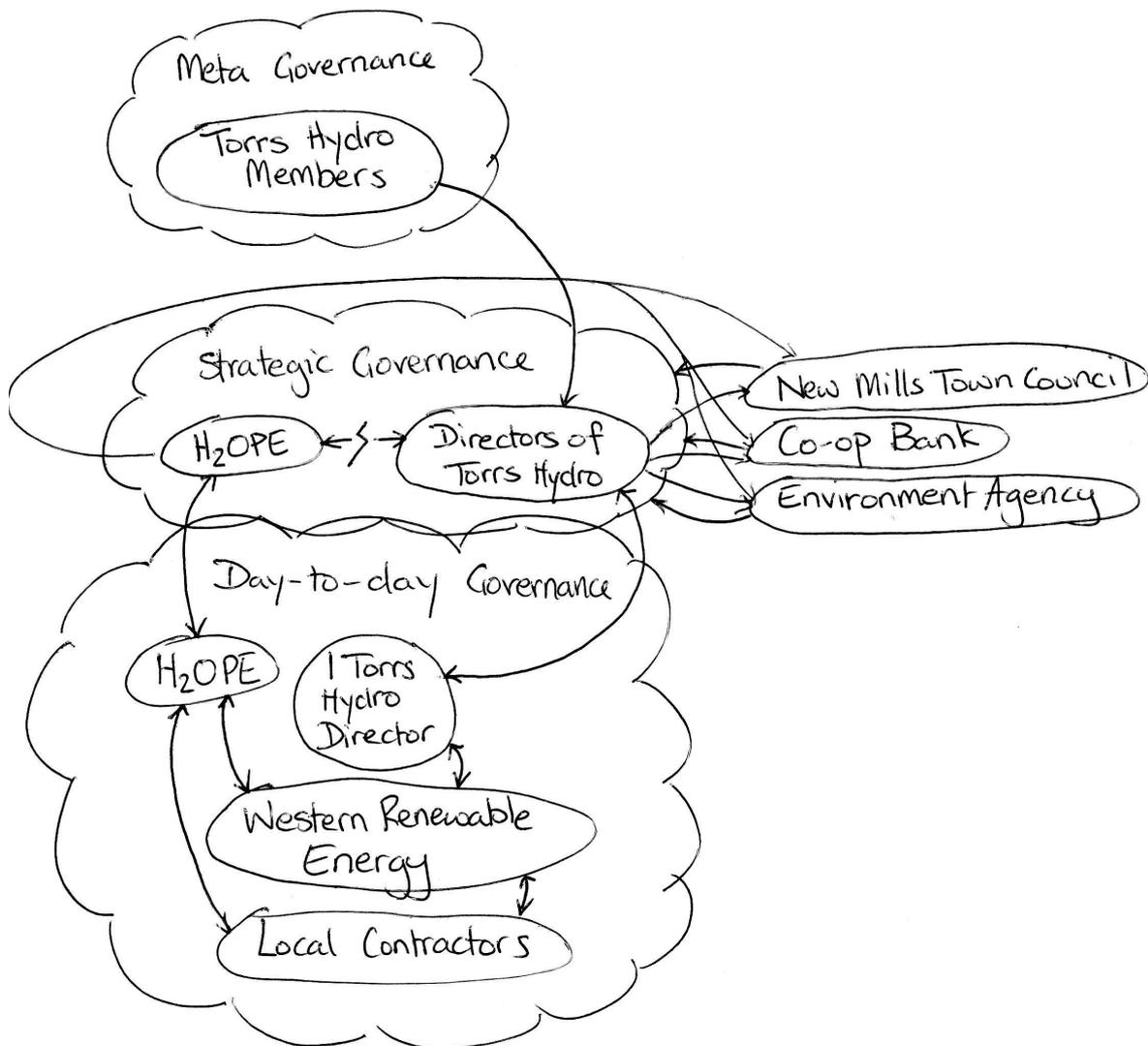
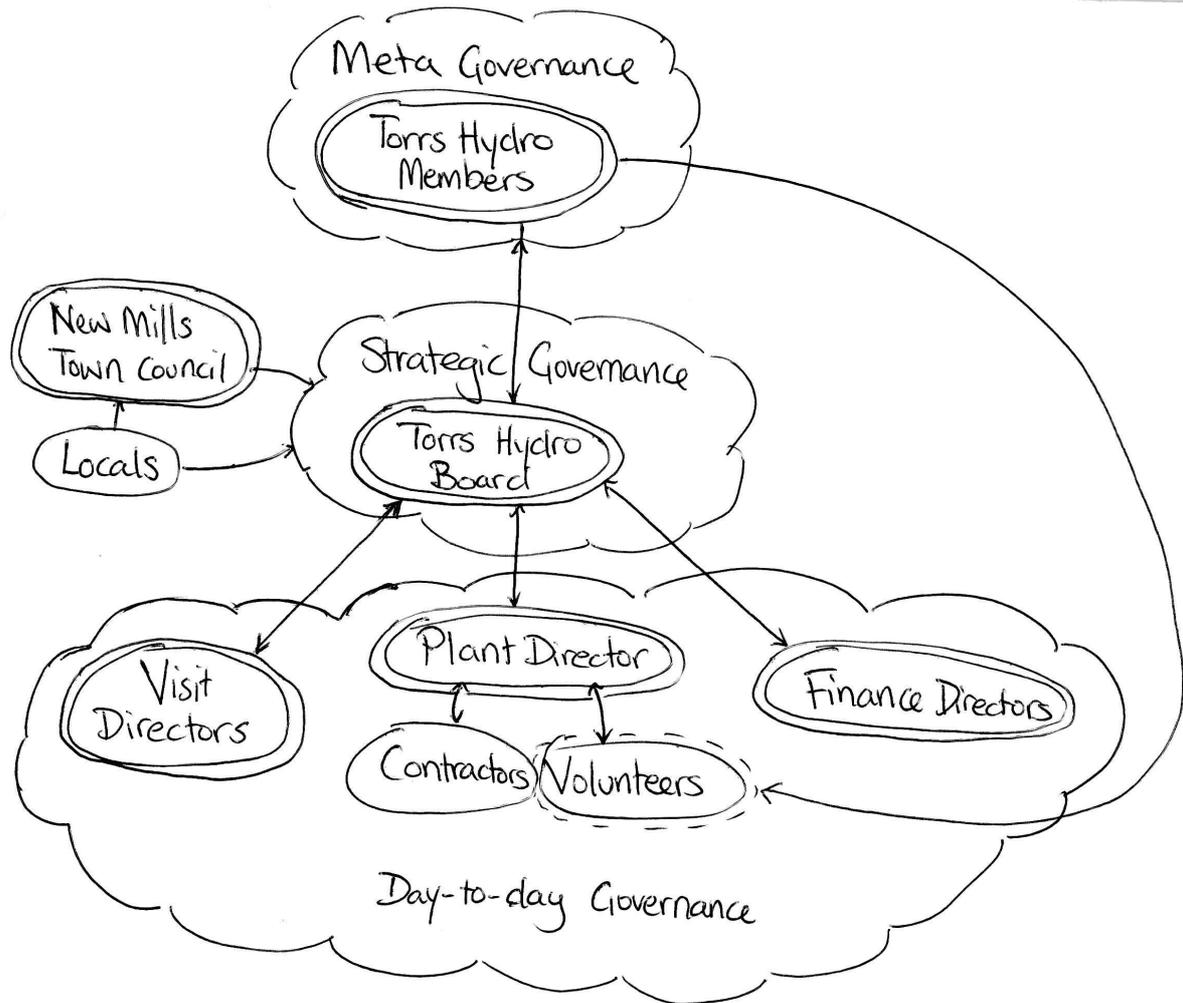


Figure 9: Torrs Hydro governance stakeholder map, construction phase



**Figure 10: Torrs Hydro governance stakeholder map, operation phase**

- Visits program including, school visits, talks to interested groups and monthly site open days, this provides locals and interested outsiders the ability to give informal feedback that can be incorporated in day-to-day and strategic governance decisions.

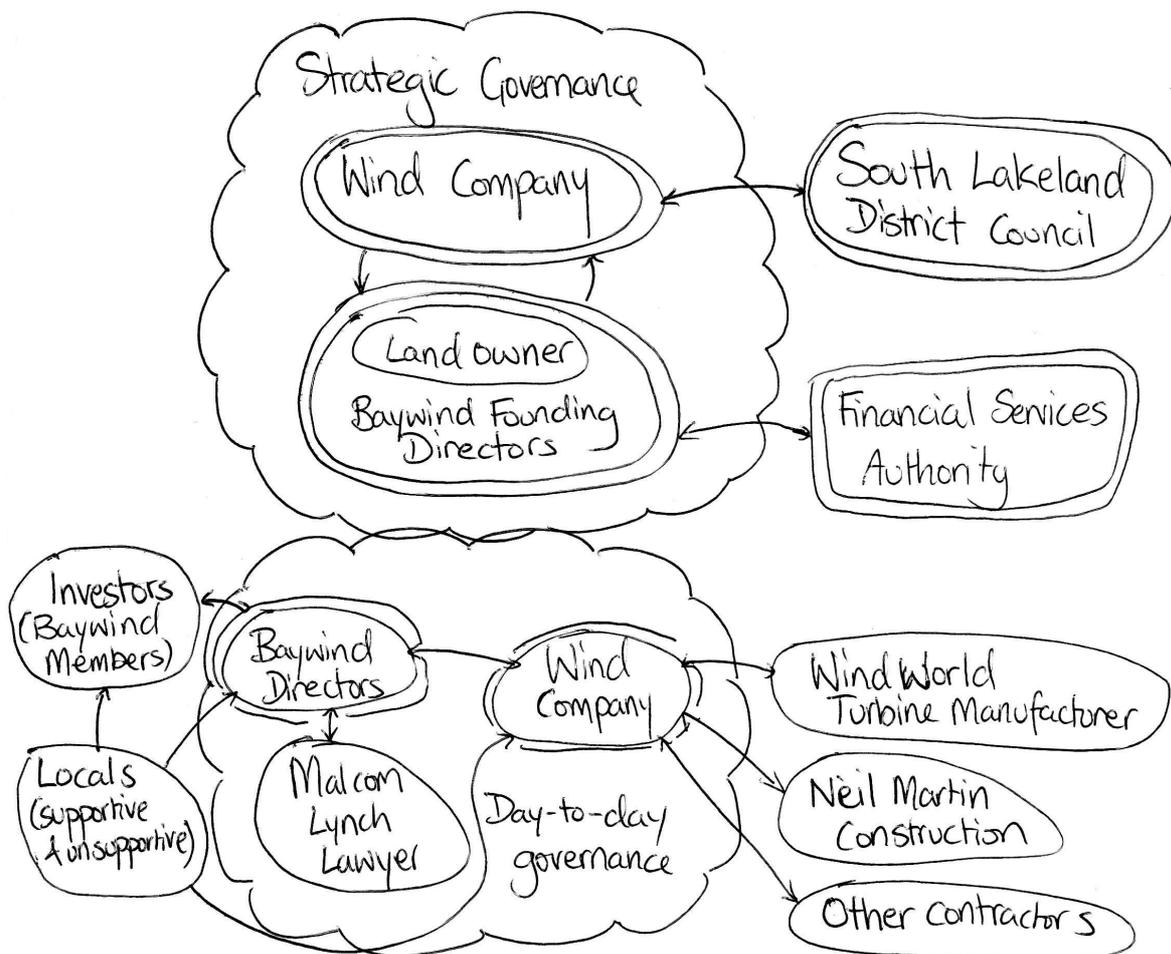
The fact that responsibilities and opportunities to participate in multiple levels of governance is available to Torrs Hydro membership and local non-members, suggests that the fourth worldview remains dominant; although it should be noted that Torrs Hydro does not enact all the associated processes described in Table 2.

### **Baywind Stakeholder Mapping**

Interviews suggested that there have also been four main phases of governance of Baywind – development and construction, operation with The Wind Company managing, operation with Baywind Secretary managing, operation with Energy4All managing. Figures 11 and 12 identify the actors involved in governance during the development and construction phase and operation phase with Energy4All managing phase. The other two phases are not mapped as

they effectively represent a transition between the first and the last phase, which have been the most significantly different.

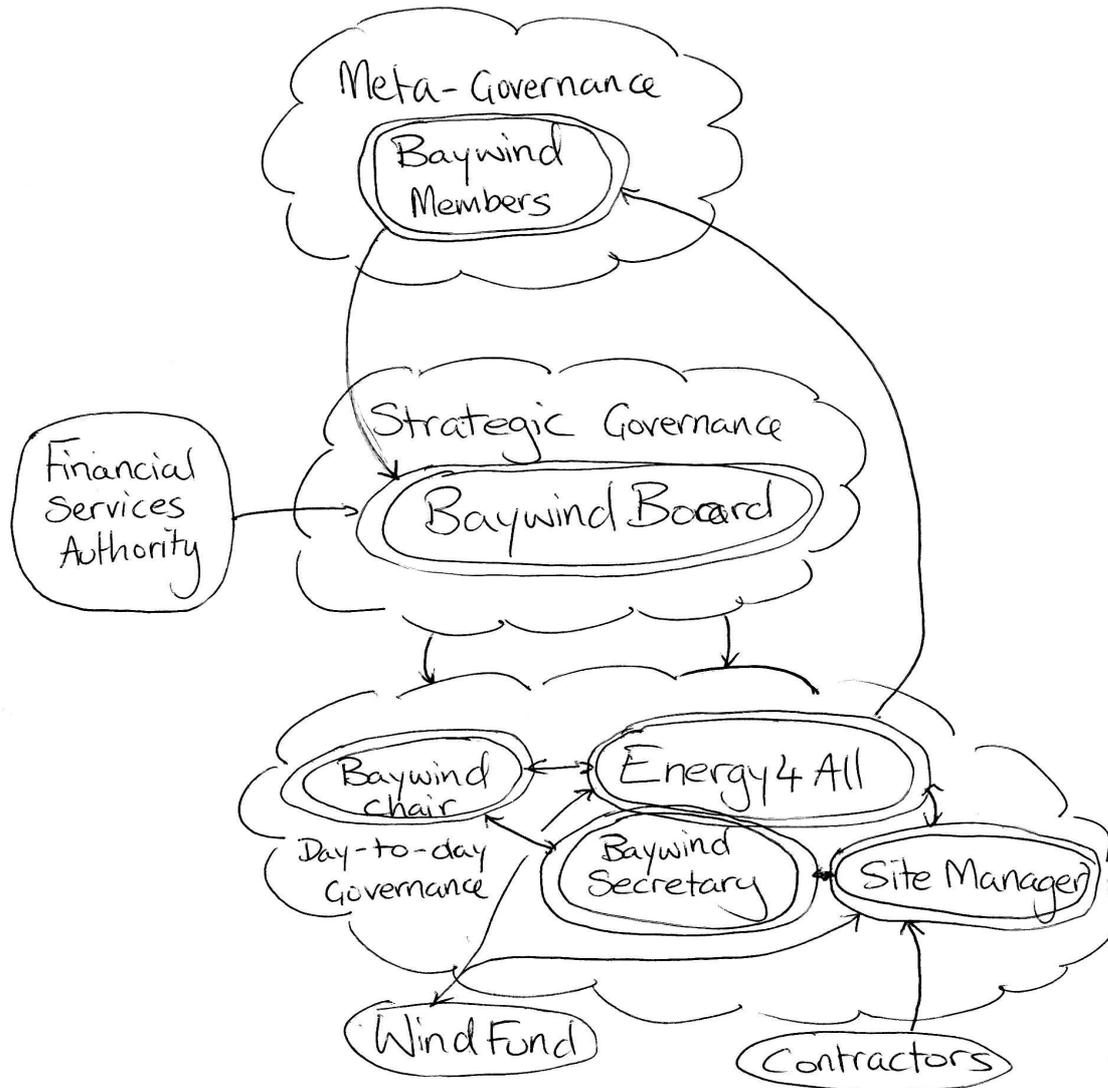
Similarly to Torrs Hydro governance, the development and construction phase was dominated by an expert renewable energy company – Wind Company and the Baywind Directors. There was also no meta-level governance to speak of and some blurring between day-to-day and strategic governance. The Wind Company also maintained the relationships with most of the external stakeholders, with the exception of the local community, which the Baywind Directors were engaged with.



**Figure 11: Baywind governance stakeholder map, development and construction phase**

The major difference between the governance of Torrs Hydro and Baywind occurs during the operational phase. During this phase, for Baywind, at each level of governance there are distinct actors involved, with clearly delineated and separated responsibilities. Specifically, the Baywind members are responsible at the meta-governance level through AGMs and the occasional questionnaire, and the Baywind Board at the strategic governance level, through quarterly meetings. While Energy4All who is closely connected with the site manager, do the

majority of the day-to-day governance, with only the Baywind Chair and Secretary involved at this level. The Baywind Secretary is drawn as overlapping with Energy4All deliberately in Figure 12 as currently the person who occupies the role also works for Energy4All as the Company Secretary. This description matches closely with the processes and features described in Table 2 associated with the first and second worldviews, suggesting they dominate.



**Figure 12: Baywind governance stakeholder map, management by Energy4All phase**

These case studies clearly identify that at least in the development phase there are usually two key stakeholder institutions involved in the governance system – a local community group and a renewable energy company or social enterprise. Other examples of community energy projects such as Hepburn Wind, Australia’s first wind co-op and all the other Energy4All Wind Co-ops also exhibit this relationship. The relationship between these two organisations was identified by most interviewees as one of the major governance challenges. On the one hand

interviewees from both Baywind and Torrs Hydro identified that it was impossible to proceed without the presence of that expert company:

*For some groups that is very important, to get to the point where you can say we're investment ready... most groups don't have the capacity or ability to find the sort of money necessary to put into a company or company structure (TH1)*

*We've realised these communities can't do it on their own, you need money, you need expertise (BW1)*

On the other hand, if you are going to have community ownership model it cannot be done without some degree local community involvement. The sources of power associated with this relationship include expertise and control of resources both financial and relational for the expert company and local relationships or people power on behalf of the local community. However the power of the expert company means they have the ability to prescribe the level of involvement of the local group. For example, Energy4All's approach with its developer led co-ops mean that communities have limited decision making power over the nature of the project, but can be involved in outreach activity:

*Some of them come in and want to start changing the agreement... You can't do that, we've worked years on that, that's set in stone, that can't be changed. But what you can do, they've been doing other things, what they call outreach work, things like educational visits (BW1)*

For the Torrs Hydro Project, although H2OPE had difficulty 'giving up ownership' of the project (TH3), they did even though they didn't have to, as one interviewee stated:

*H2OPE could have said, well we're just going to build this anyway, you can help somewhere along the way (TH1).*

Instead H2OPE provided significant support for the community group to develop, for example identifying an appropriate organizational structure. Baywind was also supported by The Wind Company, for example by suggesting that local people they met get involved with the co-op. These were conscious decisions made on the part of the renewable energy company to maintain or cede a level of control and thus power. However, control was only ceded when it was requested by the community.

In Table 2, one of the distinctions between the governance approaches that manifest in accordance with particular worldviews is the degree of differentiation of responsibility or activity. The renewable energy focused worldview emphasizes differentiated responsibility, whereas the multiple community benefit worldview seeks joint implementation. Joint implementation is identified as one key element in Collins and Ison's (2009), heuristic for social learning activities that can enable adaptive transformation i.e. the ability to deal with complex, uncertain situations such as wicked problems or as Fairtlough (2005) puts it the

ability to 'adapt and evolve to create new order and coherence' (p31). They suggest joint implementation can bring about:

- The convergence of goals, criteria and knowledge, leading to awareness of mutual expectations and the building of relational capital
- The co-creation of knowledge
- The change of behaviors and actions resulting from understanding something through action (Collins and Ison: 364-5)

Torrs Hydro's governance arrangements entail joint implementation, however while those involved learnt much there were drawbacks, specifically:

*What we thought we were getting was more of a business. That's not true, we always knew we were working together with them, but we thought they knew what they were doing and as it transpired they were learning with us. They might have been a couple of steps ahead of us most of the way, but there were times we were ahead of them (TH1).*

This suggests that the co-creation of knowledge is useful only if it matches expectations and the processes leading to this are intentional. Torrs Hydro also allows for governance praxis in to a greater degree than Baywind's governance arrangements. This is because at least some of the same people are involved in talk, decision making and action, allowing for learning and quick adaptation as challenges arise. This is also true to a lesser extent in Baywind as the Secretary of Energy4All who manages the day-to-day is also a director of Baywind. The disadvantage of praxis is that it involves a high degree of participation which can lead to burn out and also requires a particular type of person to be involved. Further, for Torrs Hydro this praxis is at the scale of those who choose to be involved e.g. directors and plant volunteers, but not at the scale of multiple stakeholders with the exception of during the construction phase, where multiple stakeholders were working and learning side-by-side.

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## 7.2.2. ORGANISATIONAL STRUCTURE

The governance arrangements of key stakeholder organisations can be as understood in terms of the blending of Fairtlough's (2005) three ways of getting things done - hierarchy, heterarchy and autonomous responsibility. The Baywind and Torrs Hydro have Board structures (Figures 5 and 6), which can be considered as involving a heterarchical relationship between directors, with all decisions discussed and made on the basis of equal power of the directors. Although the presence of a Chair on the Baywind Board, who has the deciding vote, slightly skews this arrangement.

When Torrs Hydro took over operation of the plant, they started to evolve a responsible autonomy structure at the level of day-to-day governance. Different directors or groups of directors are responsible for different operational considerations and are empowered to

make associated decision to an agreed level without taking the issue to the board. This approach was partially the case during the development and construction phases, but has since been formalized. This responsible autonomy approach is considered more important as it expedites the process, by allowing people to build up skills, experience and necessary relationships. For it to work effectively relies on trust and accountability processes, which regular report-backs to the board provide. However, there is one potential implication of the responsible autonomy approach – if one area of responsibility is considered more important, the responsible director will likely have more power over the decisions made, affecting the heterarchical natural of the board. However, different skills, levels of participation and experience means that power is never completely equally enacted.

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### 7.2.3. DECISION MAKING PROCESSES

Decision making processes are fundamental to a governance system. Within a decision making forum there are essentially three processes that can be employed:

- Unilateral decisions by one person;
- Majority vote; and
- Consensus decision.

Which process is employed has relevance for the power dynamics, continued participation of individuals and the effectiveness of the decision made. Both Baywind and Torrs Hydro at a meta-governance level employ a majority vote process to pass motions. This involves a list of motions being sent out to shareholders in advance; shareholders then have two options, the first is to attend the AGM, ask questions and debate the motion and then vote; the second is to complete a postal vote. Typically Baywind gets 300 postal votes which are approximately 23% of the 1300 members and 40-50 people attending the AGM. This low participation begs the question, why do members chose not to participate, when they have the opportunity? Is it an issue of relevance?

For Torrs Hydro, whether a consensus process or voting is used at an AGM level has rarely been an issue, as according the AGM minutes, the majority of motions have been passed unanimously. One interviewee when discussing the business of electing directors at the AGM stated:

*I would never expect them not to vote directors in, because if someone else thinks they can do a better job, then they're quite welcome to get involved as directors themselves (TH2).*

For both organisations at a board level, formal majority vote decision making is employed. However, interviewees stated that in practice decisions were made by consensus<sup>3</sup>. As one interviewee put it:

*We discussed things, quite often at great length... To some degree it was a sounding shop, it was therapy... We would talk around an issue, and we wouldn't move on until we got a consensus. It was never the point that these three think yes and these two think no, therefore we're going to do it. It was always important to get the views of the two who said no, so that they would understand, they still wouldn't necessarily agree with it, but they would be happy that that was the decision (TH1).*

This quote identifies some of the key benefits of a consensus approach versus a majority vote approach to decision making. Consensus is based on co-operation not competition, people feel listened to and are able to share the emotional burden, which is important in maintaining continued involvement particularly in a volunteer organisation. Consensus typically involves reworking proposals to come to a more creative solution that takes into account all views. Christian (2003) suggests that this approach can lead to quick implementation, while 'majority voting, in which half the people can be unhappy with a decision, often generates foot dragging and other forms of unconscious sabotage'. One drawback of consensus is that it can be time consuming. It should be noted that many formal models of consensus decision making have been developed, however these are not employed by either case-study. Decision making processes have been examined at an organizational level, at an inter-organisational level, negotiation was the process employed.

#### 7.2.4. MANAGEMENT OF OPPOSITION OR CONFLICT

Dealing with conflict is according to Barber (1984) the basis or motivator of democratic activity and thus the ability of governance arrangements' to deal with conflict, dissent and opposition effectively is a test of democracy. Indeed, for Fairtlough (2005), voice and exit the two mechanisms for expressing dissent, are processes that lead to organizational improvement. While for Hirst (1997) voice and exit are fundamental tenants of associative democracy, as they are the processes by which those affected can 'control and consent'.

For both Baywind and Torrs Hydro, at the intra-organisational level, conflict is dealt with through the decision making processes identified above. At the inter-organisational level conflict is negotiated. At both of these levels there is an option for an individual or organisation to leave. Although it is likely more difficult for an organisation to leave if there is a contract involved. At the level of engaging with local community members, Baywind and Torrs Hydro during the development phases had concerns or opposition raised at public

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<sup>3</sup> Note consensus should not be confused with unanimity.

meeting and other community engagement events. Torrs Hydro interviewee suggested that the project was modified to respond to some of the concerns raised. Local community member was opposed to the project are also able to have their voice heard through the formal planning processes run by the New Mills Town Council or the South Lakeland District Council. For Baywind this process also resulted in project modification – the height and numbers of turbines were reduced. During the operation phases of both project direct negotiation and formal complaints to the local council are available for those affected. For example, Torrs Hydro received a noise complaint; one interviewee discusses how it was dealt with:

*... they didn't bring their concern to us initially, which was a shame. They took it to Environmental Health at the council. There is no way we want to hurt anybody; it was the last thing we want to do, we were happy to work with them. The council felt at some point they had to serve an order on us, telling us that we couldn't make a noise over night. However, for about 6 weeks prior to that we'd been shutting it down, every night at 10pm and starting it up at 7am, just to make sure we didn't disturb this guy's sleep.*

The nature of the relationship between the owner organisation (as identified in the CATWOE analysis below) and those affected in the wider community, as the associated processes employed to resolve conflict, have relevance to whether to the potential of associative democracy. The fact that these projects use wider systems of governance such as local council processes to mediate conflict, either by choice or by requirement, shows that these governance arrangements developed are not autonomously democratic. These governance systems are connected to the wider societal governance arrangements, thus their democratic potential, is to some degree dependant on the democratic nature of wider society.

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#### 7.2.5. PUBLIC VERSUS PRIVATE SPHERE

Theories of liberal democracy propose that lawful association in civil society is a 'private' matter (Hirst, 1996: 98). However, Hirst contends that participation in democratically run services can be a political and thus public act. One key measure of whether the governance of community energy projects is part of the public or private sphere is its requirement for citizenship. Citizenship can be understood as the recognition of duties in relation to a public good or issue and taking responsibility to act in line with those duties (Smith, 2005). So the question becomes, do Baywind and Torrs Hydro require people to act as citizens?

Participating in the board of a trading co-operative or as a member does not necessarily entail an act of citizenship, as those involved get monetary remuneration. However many of those on the board of Baywind have worked to set up structures for the public good. Where the existence of energy co-ops that mean more people have a stake in sustainable energy provision, is considered a public good. Participation in the Torrs Hydro board, its volunteer program and its membership involves an act of citizenship as it is done not to receive personal

economic benefit but community and/or environmental benefit. As such, Baywind governance can be considered partially in both public and private spheres, while Torrs Hydro is more in the public realm.

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#### 7.2.6. PERFORMANCE CRITERIA AND OUTCOME

This factor is important as it determines of what governance systems are set up to achieve and whether if other unintended outcomes emerge they are valued. Further theories of outcome democracy theories democratic institutions ought to be judged by their ability to create just solutions (Young, 2000, p27) or solve policy problems experienced by people ‘more effectively than alternative institutional arrangements’ (Fung and Wright, 2003, p25 in Sorensen and Torfing, 2007, p239), thereby implying that the outcomes produced also has bearing on the democratic potential of CEPs.

In the case of Baywind the following were identified as valued outcomes:

- Good annual returns to members;
- Expedience of development and its continued existence;
- The ability to support the set up of other energy co-ops through the development of expertise and financial resources; and
- Some returns going back into the local community via the Baywind Energy Conservation Trust and not all profits being taken by large corporations.

However, the inability to contribute to the wider at a transformative scale was identified as a shortcoming:

*As the critics would say it's a fraction of a fraction, its only electricity, it's only a small percentage of the electrical capacity of the country. In different scales it could be a valuable contribution to the local economy (BW2).*

This suggests that the success of Baywind is mainly measured in terms of worldviews one and two and according to the performance criteria (Table 2) the project has been quite successful. For Torrs Hydro the valued outcomes were named as:

- Huge personal satisfaction;
- Community spirit, support for the project and cohesion;
- Attracting more people to visit New Mills and associated economic benefits;
- Its continued operation and supply of power. Although a series of technical and political issues mean that not as much energy is being generated as planned.

However, one interviewee stated:

*It's yet to be proven whether a scheme like this is cost effective... there's unfinished business, I want to see those first grants go out to the community (TH2).*

This suggests that Torrs Hydro has been quite successful in terms of the multiple community benefit worldview, but not yet in terms of the direct financial benefit worldview. Whether these projects have produced just solutions more effectively than other institutional arrangements is a highly subjective claim and is worth further investigation.

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### 7.3. CATWOE ANALYSIS

From the stakeholder maps and processes identified, Baywind and Torrs Hydro governance arrangements can be understood in terms of the CATWOE factors:

#### **Customers**

- Baywind members, the National Grid and by extension electricity consumers
- The New Mills community, the New Mills Co-op Store who purchases the electricity generated

#### **Actors**

Identified in Figures 8-12

#### **Transformation and worldview**

Torrs Hydro key motivations or desired transformations identified by interviewees included:

- *Wanting to see the thing built (TH1);*
- *Raising funds for community projects (TH2);*
- *Wanting to show that this sort of project can work on a small scale, that it can work within a small community and that it can benefit that community, and not just in an financial sense (TH3)*

These can be associated with the first, second and fourth worldviews in Table 1 respectively.

Baywind key motivations included:

- *To get people on board with the development of renewable energy projects and counter opposition (BW2)*
- *To spread the benefits (BW2) of the project to the local community*

These can be associated with the first and second worldviews in Table 1.

#### **Owner**

The owner of the governance system for both case-studies has changed over time. Initially The Wind Company was the owner institution of Baywind as the development would not have

happened without them. However, when the Wind Company returned to Sweden and sold the remaining turbines at Harlock Hill to Baywind, became the owner organisation. H2OPE was the initial owner of the Torrs Hydro governance system. When Torrs Hydro New Mills Ltd took over the operation of the plant they became the owner organisation, in the construction phase H2OPE and Torrs Hydro could be considered joint owners.

### **Environmental Considerations**

All of the environmental considerations identified in Table 1 are relevant to both projects.

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#### 7.4. GOVERNANCE MODEL ANALYSIS SUMMARY

To summarize, the governance arrangements of Baywind can be considered to involve semi-autonomous responsibility at different levels of governance, with clear delineation of responsibilities at different levels. At the day-to-day level first The Wind Company and then Energy4All have been responsible for management, while at the strategic level the Baywind Board has been active for the co-operative's 14 years of operation. Baywind provides *some* opportunities for the local community to participate through the preferential offer of Baywind shares, and through programs run by the Baywind Energy Conservation Trust. Baywind is valued particularly in terms of providing financial returns to members and its ability to support the set up of other energy projects. Thus, Baywind can be considered more closely aligned with the worldviews of creating multiple renewable energy projects and some financial return to community members.

The Torrs Hydro governance system entails a greater degree of community participation and control. While initially the owner organisation was H2OPE the expert social enterprise, over the course of the project power and responsibility was ceded and taken by Torrs Hydro New Mills Ltd. Torrs Hydro is run by volunteers from the New Mills community, their internal governance arrangements have evolved from heterarchical processes to a greater degree of responsible autonomy. They too provide opportunities for the wider local community to participate through the purchase of shares; however the day-to-day presence of directors in the community and the volunteer program affords informal opportunities for local people to input. Another feature is that the development of the project involved a high degree of overlapping responsibility and joint implementation between stakeholders, which while fostering joint learning, was problematic at times. Torrs Hydro is currently considered successful in terms of providing multiple community benefits, but not yet direct financial benefit. This suggests that the multiple benefit worldview is dominant within Torrs Hydro governance. However, why have these governance features developed in these ways?

## 8. WHY GOVERNANCE ARRANGEMENTS DEVELOP

The factor which has perhaps the biggest influence on the governance structures developed and subsequently how the questions in Activity 2 would be answered and leading to the governance arrangements in Activity 3 (Figure 7) is the scale of the project in terms of technology size and associated cost. Scale is strongly dependent on environmental constraints such as renewable energy resource availability and technology availability, maturity, economic scale and cost. Scale particularly has bearing on what is possible; according to Baywind interviews:

*...you'll never get it 100% community owned, as people don't have the money to put in (BW1).*

*Ideally it would be... run completely locally, so it's in its purist form, I think it should be run that way. In practical terms you can't do that, but what you do is offer the shareholding to local people preferentially (BW2).*

This suggests that governance based on a high level of community control is desirable, but not possible, particularly at Baywind's scale i.e. the megawatt scale. Whereas for Torrs Hydro, community project control is not only desirable but more practical at the scale of their project – tens of kilowatts, than an external management company:

*We were expecting them [H2OPE] to maintain it afterwards and the prospectus clearly shows this – a 10% management fee annually and that was going to cover, their cost for maintaining it. They'd done their sums wrong, because the cost of maintaining it would have ultimately been much more (TH1).*

Scale of project, however is not entirely dependent on environmental constraints, it is also a choice of the actors involved. Circumstances and worldview have particular bearing on this choice. For both Baywind and Torrs Hydro, the expert company – The Wind Company and H2OPE, were seeking to do a wind and hydro project respectively and garnered local support. Thus the type of technology pursued was presented to locals as fait accompli, the choice for locals was then whether to support, get involved or oppose the project. This choice was one of worldview.

This analysis highlights that no one CEP entails a singular motivation or worldview, indeed the power and potential of CEPs is that many people can and do get involved for many reasons; CEPs are not the remit of a single worldview and combine all of those identified in Table 1 and more. However, this means that the governance is likely to be more complex, as there is tension at the fundamental worldview level. Nevertheless, the two case studies show that a common commitment to developing the CEP itself provides common ground from which to build trust and collective action. However, what is also clear is that while there are many worldviews, one worldview is more dominant in the development of governance system for a

particular project and that this is highly dependent on the scale of project. For example, Torrs Hydro is dominated by the multiple community benefit worldview:

*I don't think I was instantly for it. I needed to be sure that this truly was a renewable energy project that would mean something... I was happy with it, once we had that IPS vehicle for the benefit of the community. It felt like it was worth doing, even if it wasn't a big money earner, even if it was only 60 houses worth of power that you generate each year, because it was going to be out there for people to see in the park and it's a community company.*

Conversely, Baywind is dominated by the creation of many renewable energy projects and monetary community benefit worldviews. This issue of scale seems to lead to the fundamental tradeoff between the worldviews enshrined in Torrs Hydro and Baywind. You can either have a CEP that has a high level of community control or one that generates significant amounts of electricity and creates more profit. This finding supports the claim by a Fairtlough (2005) that size is a key determinant in organizational style.

Other factors which have significant bearing on governance arrangements are the culture of participation and values within a community and demographic of person involved, including their skills and their worldview. For example, in the New Mills community there was a tradition of community enterprise and environmental values, as one interviewee put it:

*If we go back before the Torrs Hydro, New Mills was is quite a geeky place to begin with, each summer, there's the one world festival in the park across the way, where every weirdo group known to man has a stall, whether its save the whales or Greenpeace, you name it they have a stall and there's live music all day into the evening (TH2).*

The demographic of person actively involved in CEPs typically are those who are tertiary educated with a mixture of community and environmental values and to whom the project has relevance or put another way that develops a stake. The governance arrangements that develop are in-part associated with the time availability of those who have a stake in the project. Typically, those most actively involved have flexible but well-paying jobs, affording them the time and the financial security to participate.

This research has identified that many of the governance arrangements developed for CEPs and CATWOE factors are mutually reinforcing. For example worldview of people involved influences which governance arrangements are developed, which in turn influence who is able to or wants to participate, which leads to further changes the governance arrangements.

## 9. GOVERNANCE IMPLICATIONS

This research reveals that at least in the case of Baywind and Torrs Hydro, some form of associative democracy is being practiced. The governance systems of these case-study projects allow citizens to meaningfully “affect the patterns of governance, production and consumption” (Smith, 2005: 287) in terms of energy to some degree, with the understanding that energy production can “directly impact on their lives, their communities and their environment” (ibid). They do this by:

- Mediating between public and private spheres to a greater or lesser extent. The governance structures are not entirely in either realm and are in part independent of both large private firms and large bureaucracies, although they cannot be escaped entirely.
- Providing flexible opportunities for civic participation to suit the requirements of individual, from buying a share and voting, to dedicating much of one’s time to the endeavor. Further the way this participation is structured varies depending on the project considered. Although these projects do not explicitly reject hierarchy as Hirst (1996) does, they do entail a significant level of heterarchy (Torrs Hydro’s model) and responsible autonomy (both governance arrangements).
- Attempting to distribute power equally within different levels of governance, for example within board of directors, however it should be noted that power is not equally distributed between all stakeholders.
- Providing an opportunity to learn the skills necessary to participate in democratic governance which Hilmar (2010) and Barber (1984) identifies as necessary for increased citizenship. For example Fairtlough (2005) identifies that general skills for interpersonal processes and special skills for dialogue, teamwork, mutual respect and openness are important. While negotiation skills are identified as important by a number of interviewees.

If the mechanisms that Hirst suggest for the practice of associative democracy are compared to those enacted through Baywind and Torrs Hydro, Torrs Hydro entails stronger acts of democracy. For organisations to be democratic Hirst (1996: 113) requires firstly that they have a mode of exit – the customers or those affected by the project are able to leave the organisation. Secondly, that stakeholders have a voice – specifically he suggests the membership and/or workers should be able to vote for activists to sit on the board. This is essentially how Baywind is structured. However, Torrs Hydro in addition to these features involves the continued operation and control of the organisation and project through volunteers, who have their roots in the community and try to be accountable to that community as well as the membership.

Nevertheless, despite the opportunities that these CEPs present for associative democracy, there are limits. One limit is associated with access to the money necessary to develop these

capital intensive projects. The control of financial resources necessarily prevents the power dynamics between all actors being equal. Specifically the fact that to have formal rights and thus voting power in the local organisation requires £250, thus leaving the project opens to:

*... accusations that its people with big money imposing something on the landscape of an area which doesn't bring them a lot of benefits (BW2).*

It also means that organisations such as expert renewable companies with capital reserves can prescribe the level of community involvement, thus to a certain extent it takes a top-down act to facilitate community empowerment, rather than communities coming from a position of equal power. The power associated with expertise also has significant bearing on the democratic potential of community energy projects. The final factor that has bearing on power and the degree of democracy is time – time of volunteers and time it takes to enact democratic processes. According to Barber (1984), activity is power; by this logic those who are more actively involved in a project generally have more power. However, the ability of someone to participate in a CEP is in part to do with the amount of time they are able to make for it. As previously discussed this means that typically it is middle class, educated people with flexible jobs but well paid jobs or sufficient savings most active and having most power; thus discriminating against those who do not have that time to give.

The model of participation found in this research supports Hoffman and High Pippert's findings that participation in community energy projects is "hierarchical, radiating outward from the enthusiasm of the initial participants, to those who would volunteer time and energy but within 'reasonable' limits, to the mass of community members who can be convinced by their neighbors to participate in energy-related ... activities" (2009: 7). The fact that those involved were originally self-chosen is also a limit to democracy as they weren't decided on by the community. However, that directors must stand for re-election once every three years does enable the membership at least to democratically elect those involved in the strategic governance of the project.

Enacting more democratic systems requires time and money. As one interviewee put it:

*Democracy is alright, but it comes at a price. There's only a fine line up to which you can do it. Because then you're doing it with no return to the members, just because you want to keep it 100% democratic (BW1).*

They also went on to say that:

*There's only so far you can push democracy (BW1).*

Specifically, they were referencing that CEP organisations and governance systems can only be as democratic as those involved want it to be. This is particularly obvious in the level of attendance of AGMs. For many, participating in the governance of a CEP may not be of relevance. Although it should be noted that choosing not to participate is one tenant of

democracy. However, what makes the governance of CEP relevant to a stakeholder would be worth further investigation, building on work of Walker (2008), Hoffman and High-Pippert (2009) and Rogers et al (2008).

For people who do not have formal rights within the community energy governance models, when conflict arises often they avail themselves of legal government channels for resolution. This suggests that organizational democracy cannot replace all the institutions of the state, but neither does Hirst's model of associative democracy suggest it should. This relationship between the state and the community energy project has additional implications for the governance of community energy. Some institutions of the state have been mentioned in this research including local councils, the Environment Agency and the Financial Services Authority; however one interviewee (TH2) expressed surprise that the UK government and particularly the energy ministry were missing from the stakeholder map. There was a mixed response in terms of whether the relationships with these institutions were positive and productive or stifling. Particularly the planning processes were identified by interviewees from both case studies as a major obstacle.

The lack of identification of government support for these two successfully operating CEPs is surprising given that a number of community energy research projects have included analysis of supportive government programs (Adams, 2008; Walker, 2007). However, this may be that these projects were early adopters, before government institutions became involved in specifically supporting community energy projects. However, if such projects are to move beyond a novelty and have more impact on the wider system of energy governance there needs to be greater connectivity between local actors in CEPs and policy makers. However, this relationship should not come at the expense of these projects' autonomy i.e. associative democracy would not be served if these projects were co-opted by the state. Building on the work of Smith (2007), Adams (2008) further investigation is required to understand exactly how these projects fit into the wider system of energy governance and what role associative democracy can play.

The premise of Hirst's associative democracy is to democratize action. However, the processes he proposes do not entail democratization of activity as Barber conceptualizes it. Instead democratizing decision making at a level closer to action i.e. the board level of an organisation is focused on rather than at the level of policy. However, if associative democracy and the governance of CEPs are to be relevant to the biggest contemporary governance challenges, namely addressing wicked problems, the level of action or day-to-day governance must be considered, particularly in terms of the relationships between organisations.

The governance arrangements of Torrs Hydro likely foster ongoing resilience and adaptive capacity, because joint implementation between multiple stakeholders led to a high level of expertise and support in the community. Additionally, the involvement of directors in all levels of governance allows for praxis or learning through action, which Collins and Ison (2009)

identify as essential features of a transformative governance system. These features are present in this author's conceptualization of the Baywind governance system, however to a lesser extent, as there is a greater division of responsibility. This research finding implies a fundamental tension in addressing the wicked problem of climate change. On the one hand, governance structures such as those found in Baywind produce bigger direct carbon savings and on the other governance structures such as those found in Torrs Hydro likely increase community adaptive capacity and resilience to the inevitable changes associated with climate change. The degree to which models of community governance such as those found in Torrs Hydro do increase community resilience and the extent to which this trade-off is inevitable is a possible topic for further research.

## 10. RESEARCH LIMITATIONS AND FUTURE RESEARCH

The research method employed was generally successful in enabling an understanding of what governance arrangements are involved in these two community energy case studies, why and some of the associated implications. The SSM analytical tools provided a useful framework for understanding key processes and underlying influences on CEP governance. In particular, the ability to consider governance arrangements in terms of different worldviews was a powerful analytical tool. However, the fact that the research did not include observation of some of the key interactions and processes, such as board meetings, AGMs and day-to-day operations, meant that it was difficult to develop activity models at a finer level of detail. As such a series of factors (Table 2) were identified to provide an additional framework and language for comparison of governance arrangements, in terms of similarities, differences and associated implications.

Within research, it is often difficult to inquire about power, thus another implication of not observing interactions first hand, is that the power analysis is conjectural. Using Ulrich's (2005) critical systems heuristics in the research and analysis, would likely provide greater depth of understanding of the power relations involved.

Generally, there are limits to the robustness of this research methodology and thus the strength of conclusions drawn. In particular, the development of the governance activity model and associated analysis of governance arrangements is centered only on some of the directors of Baywind Co-operative and Torrs Hydro New Mills' understandings. Thus there is an opportunity to extend the governance analysis through interviewing and incorporating the perspectives of other key stakeholders, such as lay members of the local community, members of the local councils, other directors and people employed by H2OPE and the Wind Company. Currently, the governance model developed is the product of the author's analysis, however to yield a greater insight into the governance arrangements the model and associated analysis could be presented to those interviewed for feedback and further development, in accordance with the next stage of an SSM systemic inquiry. Another

limitation is that this research only considers two case-studies of successfully operating CEPs; the analysis is therefore limited in the conclusions that can be drawn about implications for wider systems of energy governance. It would be possible to extend this research method to include other case-studies, including ones at different levels of development.

As well as undertaking the measures identified above, this research has also raised a series of additional questions that could form the basis of further research. These questions include:

- Why don't members of community energy projects chose to participate when they have the opportunity? Is it an issue of relevance? What if anything would make the governance more relevant?
- Do these CEPs have produce just solutions more effectively than other institutional arrangements?
- How do these projects fit into the wider system of energy governance and what role can associative democracy play?
- Do high levels of community participation actually lead to greater community resilience in the face of wicked problems?
- To what extent is the tradeoff between scale and community based democracy or carbon savings and community resilience inevitable?

This research has specifically focused on a broad understanding of governance and one specific theory of democracy. There is potential to undertake similar research examining the implications for other theories of democracy and governance. In particular, it would be worthwhile drawing more on political science debates on the democratic potential of governance networks (Sorensen and Torfing, 2007; Hirst 2000; Rhodes, 1997) and the science and technology studies debates on participatory versus deliberative democracy (Cass, 2006; Liberator and Funtowicz; 2003; Hilmer, 2010).

## 11. CONCLUSION

This research has sought to understand how CEPs are governed in terms of relationships between stakeholders, their responsibilities and the processes employed. This was done through a partial systemic inquiry into two community renewable energy case-studies – Torrs Hydro and Baywind, identified as successful in their own way. This inquiry discovered that multiple governance arrangements are possible and by necessity evolve over the life of a project. The nature of the governance projects employed was found to both influence and be influenced by a number of factors including purpose or motivation, scale of project and actors involved. All these factors can be understood in terms of worldviews. In particular, worldviews associated with increased production of renewable energy, generation of financial benefit to the community, response to climate change and generation of multiple community

benefits were identified as being present to a greater or lesser extent in both projects, suggesting that CEP governance requires community and/or environmental values to proceed.

This research further revealed that the governance of community energy projects is dominated by three main relationships:

- Local community group and expert renewable energy company;
- Owner organisation (either the local community group or the expert renewable energy company) and local community members; and
- Organisations driving the project (both the local community group and the expert renewable energy company) and the government.

Establishing a functioning governance system requires the establishment and maintenance of these relationships at the appropriate level of governance.

At least two distinct CEP governance typologies exist. The first is highly participatory, with a significant degree of community power; this is typically possible for smaller scale projects and requires significant commitment on behalf of a few local activists. In addition to the successful operation of the renewable energy plant, this arrangement tends to produce benefits such as increased community cohesion and pride, trust and even tourism. The second model entails differentiated responsibility of different organisations at different levels of governance, less community participation and power, with an expert renewable energy company having the majority of responsibility and power. These arrangements tend to produce expediently developed projects that provide dividends to its membership and to the local community through a trust fund.

These two governance models can be considered as requiring stronger or weaker acts of democracy, although both can be considered democratic to some degree. Both provide those affected some opportunities for control and consent through the processes of exit and voice, although, the number and weight of these opportunities could be increased. Baywind and Torrs Hydro successfully created new institutional arrangements for the provision of energy that are largely though not completely independent from large hierarchical government bureaucracies and private firms, thereby indicating that Hirst's model of associative democracy is possible, within limits. Key limits include, time, relevance to stakeholders and access to expertise and financial capital. The first model of governance also facilitates praxis or learning through action, which has potential implications for community resilience.

In conclusion, theories of sustainability governance emphasize the need for governance at multiple levels. This research shows that democratic energy governance is possible at a community scale and while there currently are not many operational community renewable energy projects, the numbers are growing rapidly. However, can these local practices actually bring about a transformation in the way energy is produced and governed at a societal scale? If they cannot is there any hope of avoiding climate change?

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## APPENDIX A: INTERVIEW QUESTIONS

Q1. I thought a good place to start would be with the story of how Torrs Hydro came into existence and how it came to be what it is today?

- What were the aims of and objectives of the project? (Transformation process – what)
- What was your motivations for being involved, were there other people who had different motivations? (World view)
- What was your role?
- How did you go about doing X? (Transformation process - how)
- What was the starting context, why here, why then? (Environmental constraints)
- What were the challenges you faced and how were they overcome?

Q2. Who has been involved in Torrs Hydro? (add theory and ideas about putting it down on paper – doing a mapping)

- Who was involved in the beginning, what were their roles, what skills did they have/develop?
- External people
- What about the New Mills Community?
- With key decisions, who do you think had the most power?
- Now who has a major say/influence over what the decision making or other aspects of the process?
- Based on this map who's not on there, who could have been?
- Who/what roles is/are absolutely necessary for the continued existence of Torrs Hydro?

Q3. How are decision made in Torrs Hydro?

- What different types of decisions are made?
- What processes are used? (What)
- How do the processes differ for different types of decisions?
- How formal are these processes?
- How does what is on paper differ from practice?
- Why is it like this?
- Have the governance structure/processes changed between the development and operation phase?
- What decisions were involved at the beginning versus now?

- What skills do you think are necessary for these processes to work?
- Going back to the actor map that we developed, could you draw the boundary, around who is involved formally and informally in the governance of Torrs Hydro?
- How did it come to be like this?

One of the ideas I'm exploring through this research project is democracy, what it means particularly in the context of our energy system...

Q4. Do you think that Torrs Hydro is democratic and why?

- Is this model more democratic way of running our energy system and why?
- How do you think projects like Torrs Hydro fit into the transformation of our energy system?

Q5. What has changed/transformed because of this project, how are things different?

- For you?
- For the New Mills community?
- For other communities?
- For the UK energy system?

Q6. Looking back and reflecting on now, what would you do differently? OR If another community was doing this what would be the 3 pieces of advice you would give them?

Q7. Clarifications/interesting points