

**Sustainable regeneration: a guiding vision towards
low-carbon transition?**

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While the concept of sustainable development brings together concepts of economic, environmental and social sustainability, much has been said regarding inherent tensions between them. Conflicts between economic and environmental objectives, in particular, have been noted as restraining efforts to instigate transitions to environmental sustainability, with growth ambitions limiting environmental policy to “win– win” cases. This paper argues that they can also play complementary roles in managing transitions by creating inclusive visions for rallying actors and resources. This is explored by looking at a case of sustainable regeneration in Wales, UK. Using as a case study the Arbed scheme, an area-based project established in 2009 to retrofit housing stock for energy efficiency, this paper shows how the scheme explicitly addresses economic, environmental and social

aspects of sustainability; and, in particular, how sustainable development aims constituted a guiding vision that supported the formation of actor and resource networks necessary for large-scale retrofitting.

Keywords: sustainability transition; visions; sustainable regeneration; energy efficiency

Introduction

While the concept of sustainable development has become increasingly prevalent in academic, policy and popular discourses, it remains a contested subject meaning a range of different things to different groups and addressing issues of environmental protection, economic growth and meeting social needs. Operationalising this broad-reaching ideal has proven a challenge for governments across the world, and recent decades have seen a large and growing literature on the subject of doing so in both policy and academic circles, alongside mounting concern regarding global challenges such as climate change and growing resource constraints. Addressing these problems is likely to require improvements in energy efficiency of a factor as high as 10, which can only be realised by large-scale, wide-reaching change in patterns of provision and demand (Geels 2011).

Much faith has been invested in the ability of technological innovation to stretch environmental limits, decoupling economic growth from environmental degradation (Smith and Kern 2009). However, a key

characteristic of more recent discourse is a shift in focus from discrete changes in individual policies or technologies to a systems approach, recognising the breadth of the challenge and the need for holistic change. Such systems innovations will comprise technological and social change, altering not only the way that resources are used to meet human demands, but also the way in which they are demanded (Elzen and Wieczorek 2005, Smith *et al.* 2010). These changes are often termed “transitions” in the literature and refer to processes of structural change in major societal subsystems, resulting in greater sustainability throughout society (Meadowcroft 2009). This new focus brings with it a number of challenges, among them conceptualising – and, indeed, governing – long-term change in the face of uncertainty (Frantzekaki and Haan 2009).

Perhaps one of the most pressing challenges policy-makers have faced in governing transitions to sustainability has been defining and managing economic, social and environmental aspects of sustainability in a manner that does not overly prioritise or neglect any one facet. It has been argued elsewhere that economic growth and environmental protection objectives, in particular, have sat somewhat uneasily alongside one another. For example, While *et al.* (2004) have noted that while there has been evidence of a filtering down of international and national environmental commitments to the level of urban and regional governance, regional actors have been remarkably successful at negotiating challenges through the creation of a “sustainability fix”. Drawing on Harvey’s concept of territorial fixes, this sustainability fix can be thought of as a spatially and historically contingent organisation of political interests that allows

economic growth and development to continue in the face of social and environmental concerns (Tenemos and McCann 2012). Indeed, others have suggested that in the face of unfolding and contested debates around urban governance, economic growth is largely prioritised, with attempts for win–wins representing the dominant interpretation of sustainability. As such, a sustainability fix is a selective incorporation of ecological goals designed to safeguard growth (Hodson and Marvin 2007), and will be subject to an inherently uneven geography of economic development and its associated conflicts (While *et al.* 2004).

While it is easy to conceptualise how economic and environmental objectives can clash, this paper will argue that they can also complement each other by providing a motivating “vision” to draw together actors and resources and enable change. In order to do so, it will first set out the multi-level perspective (MLP) for conceptualising transitions and the transition management (TM) model for governing them before going on to highlight the central role of visions in the latter. Next it will consider the relationship between the sustainable development and regeneration discourses and suggest a fledgling “sustainable regeneration” agenda. Finally, it will explore how this sustainable regeneration – incorporating economic, social and environmental concerns and ambitions – has been constructed as a guiding vision in the case study of the Arbed scheme, which sought to improve domestic energy efficiency in deprived areas of Wales, UK. This paper is based on interviews with stakeholders at local and regional levels in Wales and an extensive literature review of policy documents and strategies (an indicative list of which can be found in the

appendix). Indeed, the task of identifying and reviewing policy documents relevant to the retrofit agenda poses a challenge in and of itself: “retrofitting” is rarely cited as the goal in policy, instead falling under the purview of energy efficiency, energy, housing and climate challenge documents. Furthermore, relevant policy can be found at the UK, Welsh and local government level (discussed in more detail later in the paper). This document review was augmented with semi-structured interviews with relevant experts working in the field of retrofit in the South Wales region. Twenty-five in-depth interviews have been conducted during July to October 2010 – a list of organisations interviewed can be found in [Table 1](#).

Table 1. Organisations interviewed.

Cardiff Council

Energy Saving Trust Wales

BRE Wales

Constructing Excellence Wales

Zero Carbon Hub

National Landlords Association Wales

Carbon Trust

Welsh Local Government Association

Welsh Government Energy Efficiency

Rockwool

United Welsh Housing Association

Community Housing Cymru

Caerphilly County Council

Warm Wales

Neath Port Talbot County Council

Cynon Taff Community Housing

Torfaen County Borough

Each interview was about an hour in duration and focussed on issues such as: guiding vision(s) and priorities; policy drivers and pressures for change; capacities and capabilities to act; energy efficiency technology and skills; the learning and scaling up opportunities of current and prospective retrofit initiatives in the city regions. Recordings and notes from these interviews were later analysed for important themes and insights. Key stakeholders involved included representatives from regional and local governments, housing association (HA) managers and groups and organisations involved in energy efficiency in Wales.¹

The MLP and TM

Socio-technical systems have been widely used to describe the complex structures that meet societal needs, and can be thought of as consisting

of such wide-reaching components as technologies, regulation, user practices, markets, cultural meaning, infrastructure, maintenance networks and supply networks (Geels 2005). Addressing sustainability challenges such as climate change, resource depletion and fuel poverty is likely to require more than discrete technological or policy innovations and rather large-scale change across whole systems. The MLP provides a model for conceptualising system-wide transitions by distinguishing three analytical levels: niche, regime and landscape. The regime level, representing the obdurate status quo of provision and demand in a system, consists of semi-coherent rules which stabilise existing trajectories through cognitive routines, regulations and standards, adaptation of lifestyles, sunk investment, infrastructure, competences, etc. (Geels 2002, Geels and Schot 2007). A niche, on the other hand, is a locus of radical innovation, a “protected space” which supports the learning processes, construction of networks and articulation of institutional requirements needed to support a new innovation in its early stages (Geels 2005, Smith *et al.* 2010). The landscape level, in turn, is something of a residual category, comprising the structural “gradients of force” exerted by wider societal context including wider discourse, public sentiment and regulation (Geels and Schot 2007). Innovations break out of niches when pressures at the regime and landscape levels provide a window of opportunity (Geels 2002). System innovations come about, then, when interplay between dynamics at these three levels is conducive to change (Geels 2005).

As with any heuristic, a number of criticisms have been levelled at the MLP.

Particularly relevant here are a focus on technological processes and artefacts at the expense of social and political relationships; shortcomings with regard to understanding actors' roles and strategies; and an insufficient treatment of power in decision-making and implementation (Markard and Truffer 2008, Lawhon and Murphy 2011). These critiques have repercussions for understanding the practice of managing transitions as they illustrate that the MLP cannot (or cannot sufficiently) explore the power and negotiation dynamics that exist between social and political actors involved at the niche, regime and landscape levels. These dynamics will inevitably shape the way that transitions unfold, since all sustainability discourse will be subject to contestation as resources are (re)distributed across social groups (Lawhon and Murphy 2011).

Furthermore, managing this sort of wide-scale transition is difficult because it requires dealing with uncertainties, making decisions across a myriad of domains and actors and applying a long-term orientation to short-term policy intervention (Loorbach and Rotmans 2010). The literature puts forward a number of models for designing such governance. For example, Smith *et al.* (2005) suggest that regime change will be a function of (i) the degree to which selection pressures are articulated by those advocating change and (ii) the availability and coordination of resources to support this change. As such, governance activities should focus on articulating the pressures for change and making resources available. Two key areas for intervention, then, are articulation, i.e. rendering selection pressures understandable, explicit

and translatable, and coordination, i.e. aligning interests and developing knowledge, trust and communication between them (Smith *et al.* 2005).

The TM approach advocates creating a “transition arena” of interested parties and the use of visions, experiments and reflexive governance to express selective pressures and channel resources. In this conceptualisation of transition governance, the state can be seen as a “stimulator-controller-director” (Lawhon and Murphy 2011) whose role includes generating momentum for change by bringing together the transition arena, a panel of relevant experts to plan and manage actions for change, orchestrating experiments in protected niches and guiding the direction of change through the use of constant monitoring and evaluation processes, reflexively altering short-term policy for long-term ends.

The first role of the transition arena is to structure the problem at hand and create visions of desirable futures. With these visions in place, coalitions and relationships between relevant actors are developed; actors and resources are subsequently mobilised around “experiments” in new technologies or modes of provision. The final “phase” of this cycle is that of evaluating, monitoring and learning, a reflexive approach that has been vaunted as a defining feature of TM, with a strong focus on learning on the part of both incumbent actors and governance bodies. Managing, then, is not a process of command and control but of searching, learning and experimenting (Rotmans and Loorbach 2008).

TM has been criticised for underestimating the “messiness” of politics,

giving insufficient attention to issues of contestation and normativity (Lovell 2007, Shove and Walker 2007). Firstly, sustainability discourse is subject to conflict and as such “managing” a transition will not be a matter of identifying one optimal future and moving towards it, but rather a process of negotiation between an array of desirable futures. Power, then, is important in determining which future is best articulated and coordinated. Secondly, decisions throughout the governance process – from identifying systems to identifying futures and policies – will be inherently subjective. These processes of power negotiation and subjective decision-making raise the question of “whose sustainability” will be pursued (Meadcroft 2009). This question is important in light of a tripartite “sustainable development”: economic, environmental and social policy goals will likely be pursued by different groups, with different priorities and levels of power.

Guiding visions can have an important role to play here, in articulating selection pressures, coordinating responses and negotiations between divergent interests, either to work towards more inclusive sustainability agendas or for one interest group to assert power over other groups vying for the same resources. It is the potential role of visions that this paper will now turn to, before going on to explore their application in the case study of the Arbed scheme.

The role of visions in governing transitions

Guiding visions have widely been identified as central to the governance

of large-scale systems innovation; indeed, TM begins with the formulation of a vision, which plays a vital role in coordinating change (Spath and Rohracher 2010). For Smith *et al.* (2005), without the proper articulation of selection pressures, the preconditions for change cannot be met, and a prospective transition will be doomed to failure. While it must be noted that guiding visions are by no means the only way in which such pressures can be articulated, they provide one way in which policy-makers can seek to influence the way in which pressures are described, portrayed and experienced.

Visions can be thought of as “cognitive and discursive constructs decisive for the coordination of behaviour”: this is, participatively created frames of reference for describing and addressing a problem (Spath and Rohracher 2010). They play an array of important roles. For instance, they can simplify the essential components of a broader discourse into something that is meaningful and compelling to a wider audience (Smith and Kern 2009). In this way, they can take a complex, abstract or jargon-laden issue and reproduce it as something more accessible and understandable. Indeed, since framings of low-carbon concerns can be manifold and often contradictory, it is often the participative constitution of visions that serves as a basis for dominant framings of the problem at hand (Hodson and Marvin 2012). They can also act as a locus around which to collect actors, who are more likely to adhere to a compelling vision (Smith and Kern 2009) and who can in turn mobilise external actors to change through motivating narratives (Lawhon and Murphy 2011). Here, visions are useful in that they enable policy-makers

to attract, retain and motivate actors to realise change. Furthermore, within the context of transition studies, they can be thought of as a representational space that enables decision-makers to orientate change and direct learning processes (Hodson and Marvin 2012).

Smith *et al.* (2005) put forward five purposes that guiding visions can be seen as serving (Table 2). Purposes (i)–(iii) can be thought of as serving the purpose of decoding or translating wider discourse into a more accessible, motivating message. In turn, purposes (iv) and (v) are important in attracting resources for change such as financial capital, competences, etc. As such, a vision successfully meeting all five objectives will address both of the key areas for intervention identified previously: they will render selection pressures translatable and they will coordinate interests and resources.

However, the visioning approach has been identified as problematic in three key ways. Firstly, critics argue that there is little evidence that successful visions are possible *ex ante*, and rather that the historical case study literature shows little evidence that visions have played a significant role in previous systems innovation. Conversely, they do provide ample evidence of the difficulties of predicting or visioning the future, with chance events and complex feedback effects making transitions near impossible to foresee (Berkhout *et al.* 2003).

Secondly, critics question whether the creation and communication of a vision is likely to be possible in practice. Importantly, the fate of a vision – how well it is received by both communities of interest and wider audiences

and how successfully it finds purchase and momentum to push it forward – is dependent not only on the strategic capacities of its pro-ponents but also on the outcomes of inherently unpredictable interactions between heterogeneous actors and interests (Spath and Rohracher 2010).

Table 2. Purposes of “guiding visions”

Decoding or translating discourse

- (i) Mapping a possibility space
- (ii) Heuristic for understanding complex issues
- (iii) Stable framework for target setting and evaluation

Attracting resources

- (iv) Building actor networks
- (v) Focussing financial capital and other resources

Source: Adapted from Smith *et al.* (2005).

Indeed, the public domain is crowded with interests and their associated visions of the future, many of which will be mutually exclusive. As such, it is not the presence of a vision that matters but its level of articulation – its coherence and the processes that render it translatable (Smith *et al.* 2005) – along with a third, exogenous determinant: the context in which it emerges. The likelihood that a vision will take root varies with the extent to which it

provides clear and plausible solutions to problems, fits into prevailing paradigms, conforms to public sentiment and is generally socially appropriate in its presentation (Spath and Rohrer 2010). As such, visions and vision-makers are subject to the whims of landscape pressures and opinions and may not be able to steer actors and resources in ways deemed desirable.

Thirdly, critics have questioned whether a vision is likely to pull away from the status quo. Discourse is inextricably linked to landscape pressures and opinion and as such perhaps more likely to perpetuate a current regime than seek to dislodge it. Consequently, it may prove difficult to use visions strategically in the face of obdurate and pervasive landscape discourses. The issue of consensus raises similar problems, with divergent interests and priorities meaning that reaching a broadly accepted vision may prove a difficult feat in and of itself (Spath and Rohrer 2010). These two issues conspire to make the creation of a radical, accepted vision for change difficult and uncertain.

While these criticisms certainly highlight important limitations to a visioning approach to transition governance, they also present an opportunity for what Berkhout *et al.* (2003) deem the “real value” of guiding visions: a focus for deliberation and learning. They argue that it is not the normative ambitions of a vision that make them useful for governing transitions but rather the process of seeking them. This process will open up reflexive discussions between actors, creating relationships and allowing for legitimate and effective exploration of societal problems. This process is constructive in its own right as it facilitates learning and consensus building, as well as participatory articulation of problems.

It is worth noting here that visioning processes need not take the form of a formal foresight process. Foresight processes are becoming increasingly popular among academic researchers and policy-makers in order to explore long-term horizons in the face of uncertainty, with high-profile examples in the UK context including the Department of Energy and Climate Change (DECC) Renewable Energy Roadmap and DECC 2050 Calculator, both of which explore pathways towards associated visions of increased sustainability. On the other hand, visions can be emergent, with interest groups developing shared world views as a result of coordination and discussion rather than seeking to develop a vision. Indeed, Rotmans and Loorbach (2009) identify a shared perspective and set of guiding principles as outcomes of a transition arena approach, with shared processes of discussion and governance facilitating emergent understanding of potential futures.

As can be seen above, the literature presents a number of potential roles for guiding visions in governing transitions towards sustainability, at their heart the twin objectives of rendering discourse explicit and translatable and rallying resources, actors and relationships around a cause. The next development and regeneration, before going on to present how such processes unfolded in the case study of the Arbed scheme.

Sustainable regeneration

Regeneration of existing buildings and communities will be a crucial part of a transition to greater sustainability in the built environment given that a large proportion of the buildings we live and work in today will still be standing in

2050 – Kelly (2009) predicts as much as 87%. Increasing attention has been directed towards understanding the role that the built environment can play in achieving ambitious carbon reduction targets and wider sustainability goals (Kelly 2009, Lomas 2009, Lowe 2009).

Regenerating the housing stock in a sustainable manner and retrofitting at scale have gained increased prominence within research and policy arenas (Kelly 2009). In order to transform the built environment, though, retrofit and sustainable regeneration need to move from largely ad hoc and piecemeal activities, into more strategic and systemic programmes. This offers a wide range of ancillary benefits (e.g. Urge-Vorsatz *et al.* 2007) and a narrative for retrofit,² at national, regional and city scales, has therefore started to emerge in response of a complex set of pressures, political priorities and economic drivers ranging from climate change, energy security, green growth, social equity, fuel poverty and long-term sustainability.

Addressing the challenges of retrofit and sustainable regeneration can be thought of as a process of socio-technical transition and as argued, the paper aims at ascertaining in what ways the economic, social and environmental benefits of retrofit are being constituted as a vision to regenerate the built environment. Before turning to an example of how sustainability and regeneration concerns and ambitions have been constructed as a guiding vision, it is important to understand the ways in which regeneration and sustainability can be managed as complementary activities.

Both sustainable development and regeneration emerged as important discourses in the late 1980s and early 1990s, yet writing in 2003, Percy

identifies sustainability as a new agenda within regeneration practice and literature (Winston 2008). Despite sharing common ground that includes the redevelopment of the built environment and development of strong communities, the two discourses have largely continued parallel to each other with little intersection. In more recent years, an ambition for sustainable development has been almost universal among regeneration programmes, though many have questioned how far this has extended into practical progress (see, for example, Rydin *et al.* 2003, Evans and Jones 2008). Nonetheless, notable interactions between the two include a shift towards higher density, mixed use, brown field development and a focus on sustainable communities as a core feature of UK regeneration policy (Winston 2008).

One of the most common arguments put forward for potential antagonism between the two agendas is that sustainability itself is a contested term, as noted in the first section: it means different things to different people. Given the emphasis of partnership working in UK regeneration practice, this ambiguity means that sustainability ambitions can be compromised by a minority of stakeholders, especially given the relative power of the pro-growth economic agenda, leaving room for hijacking and failure of communication (Couch and Denneman 2000, Raco 2003).

This argument resonates with that of the sustainability fix, outlined earlier. While *et al.* (2004) argue that local governance of sustainability issues must necessarily be concerned with pressures for and against environmentally orientated governance. On the one hand, decision-makers are subject to pressures to “green” their governance, e.g. quality of life improvement accrued from reduced pollution and congestion, re-branding the city as an

ethical place to live, while on the other hand pressures from business elites and state restructuring enforce competition between locales and restrictions on fiscal capabilities. The final “sustainability fix” reached in a given place will depend on the balance of pressures and relative power bases of respective actor groups.

It is worth noting that all of these pressures can be thought of as comprising sustainable development: they should not be thought of as “pro” and “anti” sustainability but rather adopting different priorities and rationales. Intensified urban competition can be argued to be a means to pursue economic sustainability by decreasing regional inequalities; the drive to increase consumption could be rationalised as a vehicle for social sustainability by increasing quality of life; the restriction of local finances and a resistance to impose limits on firms can be considered vital in redressing economic recession. However, they act as limits on governance for environmental sustainability, and thus illustrate one way in which such a nebulous definition of sustainable development can be problematic.

It is easy to envision how regeneration managers would be subject to such pressures. Given the level of partnership working in regeneration, many of these actors will be endogenous to the project and so involved in negotiation for their respective priorities. This negotiation process, in this conceptualisation, will result in the organisation of environmental sustainability concerns relative to other goals such as economic growth, profit, social sustainability, etc. Importantly, this does not mean that no weighting or progress is awarded to environmental concerns, simply that they are often given a lesser weighting than other issues, and arguably lower than is needed

to achieve large-scale transition. Many have argued that, even under the banner of sustainability, social and especially economic priorities are awarded decisive weighting, with environmental concerns lost (e.g. Rydin *et al.* 2003).

Some theorists have argued that the emergent benefits of an ambiguous definition of sustainability have been underestimated: that this ambiguity provides a platform for communication and motivation of actors. For example, Evans and Jones (2008) conceptualise sustainability as a “shared territory” where discussion around an ambiguous term allows for shared understandings and interactions. Drawing on Michael Bakhtin’s sociolinguistic theory that meaning is inherently social in nature, they redefine ambiguity as *meaning potential*: a lack of concrete definition allows for interpretive freedom and consequent space for novelty. In this conceptualisation, the very fact that sustainability has different connotations for different partners within local government and regeneration schemes more specifically convenes stakeholders around common meaning and innovative solutions: it provides a guiding vision for articulation and assemblage. The next section will outline how this can be considered to have occurred in the case of the Arbed energy efficiency scheme in Wales, UK.

The Arbed scheme: articulation and assemblage around sustainable development

The Arbed scheme was established in 2009 with the ambitious objective of bringing environmental, social and economic benefits to Wales through coordinating investments into the energy performance of Welsh homes (WG

2011a). The first phase of the scheme – the largest programme of its kind in the UK, running between 2010 and 2011 – invested £30 million of Welsh Government (WG 2011b) funding as well as leveraging a further £31 million from energy suppliers, HAs, councils and gas distribution network providers. Developed by the WG in association with the Building Research Establishment and the Energy Saving Trust, it was delivered by WG, Community Housing Cymru, the Welsh Local Government Association and social housing providers (WHQ 2011).

In total, over 6700 measures were installed in over 6000 properties, including solid wall insulation (40% of measures installed), solar hot water (installed in over 1000 properties) and solar PV (over 1800 properties). The majority of homes improved were owned by social housing providers, either HAs or local authorities (LAs): this reflected the scheme's focus on strategic regeneration areas with particularly low household incomes, as well as practical issues of coordinating projects in a short time frame. Outputs of the scheme include an estimated saving of £98 million on energy bills over the lifetime of installed measures and an annual CO₂ emissions reduction of around 12,000 ktCO₂/year, as well as economic benefits such as supply chain development, with five of the seven products eligible for Arbed support manufactured in Wales, and 41 of the 51 installers involved operating solely or primarily in Wales. Arbed 2, for its part, will seek to improve a similar number of homes to phase 1, but will run as three rounds of projects over three years. This will be funded by £33 million of European Regional Development Funds funding met by £12 million WG (2011b) match funding.

The scheme is not without its criticisms, with issues including: a lack of time and

strategy for home owner, tenant and landlord engagement in order to overcome scepticism and dis- trust regarding works and encourage holistic behaviour change; a “measures-based” rather than “whole-house” approach adopted in phase 1 due to the nature of funding and timescales; rushed timescales in phase 1, with consequent difficulties in supply chain capacity and coordination with other funding streams such as the Welsh Housing Quality Standard (WHQS)³; a large gap between phases 1 and 2 that threatens to undermine capacity built thus far; and insufficient data collection and evaluation over the course of phase 1 (WG 2011a). However, while question marks remain over the scheme’s outcomes, it can certainly be deemed a “step change” in the level of retrofitting carried out in the country, marked by a shift from a piecemeal, fragmented approach to larger scale, more strategic activities. It is the argument of this paper that the overarching message of “social, economic and environmental benefits” – a tripartite approach to sustainability – was instrumental in this change: firstly, by articulating a clear, compelling narrative and secondly, by rallying actors and resources.

Articulating drivers for change

The sustainability agenda in Wales is necessarily informed by a long history of regeneration efforts which have placed something of an imperative on economic and social development. Indeed, “Wales has, since the 1950s, suffered from entrenched, and in places apparently intractable, problems of deprivation, poverty and social exclusion” (WAO 2005). As early as 1934, parts of South Wales were designated as “Special Areas” by UK government in

recognition of dire levels of deprivation; subsequently, South Wales was designated a “Development Area” in 1945, much of Wales an “Economic Development Area” in 1966, the South Wales coalfield a “Special Development Area” in 1967 and much of South Wales a “Development or Intermediate Area” in 1984. Amidst this slew of regeneration-minded monikers, earnings in post-war Wales continued to decline relative to those in the rest of the UK (WAO 2005). As such, governance bodies at the European, UK and Wales levels have endeavoured to create economic growth but parts of Wales remain among the poorest in the UK, with the Heads of the Valleys region in the South Wales coalfield notable as the poorest in the UK (BBC 2012).

Nonetheless, there are a number of drivers relevant to environmental sustainability at play in Wales. Importantly, the WG is subject to a somewhat unusual legislative duty to state how it will promote sustainable development in all its activities, enshrined by Section 121 of the Government of Wales Act 1998 (responsible for creating the National Assembly for Wales (NAW), the devolved assembly responsible for producing legislation in Wales under certain devolved subject areas) (WAO 2005). As such, WG is subject to a sustainable development scheme that requires all ministers to set out how they will promote sustainability, as well as housing a “Sustainable Futures” directorate including departments for Environment and Sustainable Development and Housing, Regeneration and Heritage. Key policies in this area include the One Wales: One Planet scheme (2009). Further to this, WG has committed to achieving a 3% annual reduction in greenhouse gases in policy areas of devolved competence and to set sectoral targets for residential emissions, transport and the public sector as part of its One Wales commitments.

Fuel poverty⁴ is also a powerful driver bridging the divide between social and environmental sustainability. Wales has a notably poor housing stock – on average, the oldest of any Western European nation (WAO 2005) – which contributes towards a prevalence of fuel poverty. In 2003, the WG committed to eradicating fuel poverty among vulnerable households by 2010, in social housing by 2012 and in all Welsh homes by 2018; however, trends between 2006 and 2010 saw an increase in the number of households suffering fuel poverty, standing at just below 400,000 at the end of the period (WG 2012). Given this increase in the face of ambitious targets, fuel poverty is an important driver at government and LA levels. It is worth noting here that Wales is subject to a many-tiered multi-level governance system, with some powers retained at the UK level, others devolved to the Welsh level and others enacted at the LA level. The NAW was established in 1999 following a referendum two years previously and in 2006, the WG (then Welsh Assembly Government) was established as an executive body separate from the legislative NAW (WG 2011c). At the local level, governance is divided into 22 LAs. Indeed, while WG is subject to a sustainable development obligation, its LAs are not, which can lead to a lack of clarity or commitment in implementing sustainable development as a guiding principle. At the Welsh level, there are 20 areas under which the NAW can make legislation in the form of an Act of Assembly including health, education, transport and local government; similarly, the WG has a number of areas of devolved competence in which it can dictate policy choice. Other areas are reserved to central UK government with energy policy a relevant example. Consequently, UK policy is an important driver, as is that of the European Union (EU). In addition to being subject to policy at the UK

and EU levels, Wales was dependent on external funding for regeneration efforts for much of the twentieth century, with repercussions for priority areas in policy (WAO 2005).

In light of a complex governance system managing a number of often intractable, seemingly contradictory drivers, an important task for the Arbed scheme was to construct a narrative sufficiently coherent and compelling to persuade heterogeneous actors to work together on retrofitting aims. Developed around the promise of a cross-cutting sustainability agenda, this narrative included

- increasing the energy efficiency of existing homes in Wales and reducing carbon dioxide emissions;
- reducing the impact of fuel poverty on people in Wales;
- creating jobs and economic opportunities for Welsh residents and businesses in the design, manufacture, distribution, installation and maintenance of domestic energy efficiency measures;
- two supporting aims of creating an evidence base for future phases.

Importantly, it addresses a number of cross-cutting objectives (social, economic, environmental) through a unifying set of activities (providing job and savings, both monetary and carbon, through retrofitting houses). More than that, it defined a number of entrenched problems – poor quality housing stock, low levels of economic activity – and reframed them as a vision for undertaking “largest of its kind” change and a win–win situation.

This narrative was then disseminated by two project managers along with Warm Wales and the Energy Savings Trust as delivery partners. Indeed, the project itself states that its objectives are drawn from no less than nine policy documents (WG 2011d). Distilling these objectives into a practicable scheme served an important purpose in mobilising actors. Recalling Smith *et al.*'s (2010) roles for visions, it can be seen as

- mapping a possibility space: presenting an achievable aim, i.e. retrofitting existing homes for energy efficiency with a focus on regeneration areas;
- a heuristic for understanding complex issues: synthesising and simplifying aspects of the complex sustainable development discourse into a single vision, including drawing key objectives from a large number of policy documents and different organisations and levels of government;
- a stable frame for target setting and evaluation: providing measurable proxies for progress made, i.e. emissions reduced, bills saved, fuel poverty reduced, along with a requirement for data collection and ongoing evaluation.

This balance of objectives, spanning social, environmental and economic policy with reasonably equal weighting due to its cross-departmental nature, meant that no single issue could either dominate the agenda or fall by the wayside.

Furthermore, Arbed provided a “transition arena” for housing providers, increasing understanding and awareness of retrofit activities that were likely to fall into the existing remit of social housing maintenance. For example, it

encouraged councils and HAs to consider external insulation as part of re-rendering projects; it recast retrofitting from a separate, relatively alien activity to one that was familiar. This was achieved through partnership working between a government team (two people in phase 1, four in phase 2) and LAs, concerned with surveying, selecting and procuring measures, materials and installers. As well as facilitating economies of scale in procurement, it allowed the project team to act as a knowledge transfer unit, disseminating best practice and supporting learning and familiarity. They were also able to ensure that each individual scheme undertaken under the wider project – led by 6 separate councils and 22 individual HAs (WHQ 2011) – was aligned with project objectives.

It may well be asked whether this arena overcame any of the power issues noted in the TM literature (mentioned previously). That is, are a variety of voices heard? Is the future envisioned by those with the loudest voices (or largest budgets)? It can certainly be argued that alternative voices had a place in the Arbed programme, with a number of councils and the Job Match scheme (described later) representing often under-represented groups such as residents and the unemployed. The nature of the project and the methods of delivery also meant that different departments within the WG (e.g. regeneration, energy efficiency and housing) and LAs (in some instances: financial, planning and housing departments) started working and “talking” to each other moving from a well-known culture of “silos” in the delivery of policy objectives.

Furthermore, Arbed created an opportunity for communities to become more engaged with issues such as climate change and energy efficiency. In this

respect, particularly relevant has been the work conducted by community interest companies such as Warm Wales⁵ and Wales Co., that have allowed through their engagement activities with local communities to establish links with community groups in the private housing sectors and to give a voice to existing organisations and often excluded communities.

As most of the activities have been driven by public funding which targeted mainly social housing, the private rented and private housing sectors have been to some extent excluded. Nevertheless, the prevalence of social housing actors in the scheme has certainly played a role in facilitating the building of networks and relatively short time scale of development. HAs and RSLs (Registered Social Landlords) have been very receptive to energy efficiency and carbon emission reduction targets set at the regional level and interpreted their role (as social housing providers) in a wider sense, encompassing strategic development, economic development and reducing climate change. The design of phase 2 of the scheme is set to encourage more involvement of the private sectors, as it aims at including at least 50% private housing, and so time will tell how much of an impediment this adds to the process.

The programme can be considered, then, to have served a number of purposes by articulating sustainable development issues in a way that could support the second role of visions, assemblage.

Assemblage: rallying and mobilising resources

The programme brought together a large number of actors including government, not-for-profit organisations, LAs, local businesses and home

owners. Developed by the WG along with the Building Research Establishment and the Energy Savings Trust, the programme was delivered by WG project managers in partnership with Community Housing Cymru, a charity representing over 70 HAs and community mutuals in Wales, and the Welsh Local Government Association (WHQ 2011). In turn, they engaged with social housing providers including 6 councils and 20 HAs as well as private households in eligible areas (representing 21% of homes retrofitted in phase 1 and a predicted 50% of phase 2). As well as aligning actors exterior to government, it brought together a number of departments within WG including the Climate Change and Water Division, Strategic Regeneration and Housing Divisions (Heath 2010). This exercise in assemblage was important in two key ways: bringing together disparate competences and expertise and allowing access to complementary funds.

With regard to the former, aligning competences, the project was able to make use of policy capabilities at the WG level, local knowledge and priorities at the LA level and practical capacity at the delivery end, among others. These competences were an important resource with regard to planning and implementing the scheme successfully, especially given tight time frames and a limited evidence base.

Indeed, a notable feature of the project in this respect was the close relationship it had with Job Match, an existing organisation dedicated to helping local people find employment. A key objective of the programme was to provide jobs and build supply chains in Wales, for example, requiring 156 weeks of training to be delivered for every £1 million spent. Sourcing training and jobs through Job Match allowed access to existing capacity and networks

already in place for reaching local businesses and the unemployed. However, it should be noted that this only took place in the Heads of the Valleys regeneration area⁶ and was not replicated across Wales; in some areas, in particular rural areas, meeting training targets proved challenging in that small contracting companies did not necessarily have the resources to take on apprentices.

Similarly, relationships and expertise already existing in social housing organisations, with previous experience in carrying out maintenance in accordance with funding streams, could be employed to deliver the scheme. Care was taken to encourage partnership working at the tender stage in order to meet a variety of diverse skills needs including understanding building fabric and engaging with vulnerable tenants. The role of Arbed project managers consequently included bringing together these different types of knowledge and coordinating action. This could be seen as a second economy of scale generated by the scheme: further to savings accrued through bulk buying, centralised programme management and delivery allowed for greater efficiency.

With regard to accessing funding, the multidisciplinary nature of the Arbed programme was instrumental in accessing funding streams. The Strategic Capital Investment Fund through which the WG (2008) primarily funded Arbed phase 1 was dedicated to the delivery of “cross-cutting projects”, making the inter-departmental working of the programme crucial. Furthermore, by working with social housing providers the programme was able to access other funding streams to leverage funds, for example, WHQS funding available to support social landlords making improvements to their stock to meet the new

national standard and Homes Energy Efficiency Scheme funding, a demand-based scheme offering grants for energy efficiency improvements (now the Nyth scheme). Further to this, the coordination of a large number of projects allowed for economies of scale, providing cost savings.

Importantly, the Arbed scheme helped social housing providers and LAs involved in the scheme to access funding available from national (UK) utility provider obligations in the form of the carbon emissions reduction target (CERT) and Community Energy Saving Programme (CESP).⁷ By collecting individual housing projects together into larger projects, Arbed was able to attract CERT and CESP: instead of contacting 22 different LAs and any number of social housing providers, energy companies were able to coordinate with Arbed to find projects to fund. Indeed, the programme included a sort of account management mechanism whereby Arbed account-managed all of its grantees on the one hand and major energy companies on the other.

In these respects, Arbed's integrative vision of sustainable development can be seen as "building actor networks" and "focussing financial capital and other resources", roles (iv) and (v) of those suggested by Smith *et al.* (2010), discussed above. Furthermore, the opening of discussion, identified as the most important role of visions in TM by Berkhout *et al.* (2003) as noted earlier, can be observed as a third outcome of this assemblage. Firstly, partnership working supported the building of relationships and networks between actors, for example, social housing providers and local businesses, and local businesses and Job Match. Secondly, it built capability within these actors, for example, giving social housing providers experience of undertaking retrofitting activities which can now be better integrated into rolling maintenance

regimes. Indeed, WG were proactive in sharing knowledge regarding both technical and organisational aspects of retrofit activity: key learning outcomes included project management skills and understanding of works. Many of the initial project proposals submitted by housing providers underwent a lengthy redesign process, moving away from a solar PV-dominated approach to more holistic whole-house intervention. The project started alongside the UK-led Feed in Tariffs (FiTs) programme which aims at supporting micro-generation renewable systems. LAs and HAs that wanted to use the Arbed scheme to promote solar PV were given the flexibility to finance the solar PV through their own budgets so as to benefit from the FiTs and use Arbed funding for other measures. This allowed LAs and HAs to benefit from funding raised through the Tariff. These funds were in many instances re-invested for further retrofits or regeneration initiatives. This development of “expert clients” – housing providers with a clear idea of what they wanted from work undertaken – can be seen as an important outcome. Thirdly, it raised the profile of energy efficiency concerns among social landlords, and a number of private households, creating familiarity. This allowed tenants to become more familiar with new technologies in their homes (see, for instance, Patterson 2012) as social landlords had to provide training and supplemental information on how the retrofitted technologies worked, and for housing providers to become more aware of energy efficiency upgrades as a matter of routine maintenance and upgrade.⁸

Within the WG, scheme managers hope to be better placed not only in designing the second phase of Arbed, which started in May 2012, but also in responding to finalised details and introduction of the Green Deal and energy

company obligation (ECO), representing a learning process. The Green Deal comprises a framework to enable private firms to offer consumers energy efficiency improvements to their homes and recoup payments through a charge on the energy bill. All improvements will have to meet the “Golden Rule”: the expected financial savings must be equal to or exceed the cost of the measure. The ECO will then focus on lower income households and improving solid wall properties (DECC 2010). It is still unclear how this will be implemented, with important questions including the role for LAs and regions in general. As such, lessons gathered from the Arbed programme can be used when designing the Welsh response to UK policy as it develops.

It is worth reflecting here on the significance afforded to learning – in a number of different forms – within the TM framework. As has been noted above, evaluation, monitoring and learning play an important role in the TM process; for Rotmans and Loorbach (2008), the TM paradigm itself can be considered as governance through “joint searching and learning”. This focus on learning stems from the fact that the solutions to the sort of intractable societal problems addressed by transitions cannot be known a priori. Addressing them entails a process of framing, learning and reframing including three components: learning by doing, or developing theoretical knowledge and testing it; doing by learning, developing empirical knowledge and comparing it to theory; and learning by learning, or evaluating and reflexively developing governance processes throughout. These processes take place on the part of both the manager and the managed, hence “joint learning”, with reflexivity a much vaunted feature of the TM literature.

The Arbed scheme, as a “step change” in provision of retrofit and “the largest of

its kind in the UK” (WG 2011), necessarily involved a large degree of learning. Indeed, the development of capacity and building of an evidence base were cited as supporting aims to the project. Successes here include familiarity and capability at managing large-scale retrofit on the part of social housing providers, including LAs, and new relationships between relevant actors such as housing providers and local contractors (examples of learning by doing); and a requirement for delivery partners to undertake evaluation of works undertaken to draw lessons for phase 2 (doing by learning and learning by learning). However, it remains to be seen whether sufficient evidence was collected to evaluate the programme and develop a baseline going forwards. A full evaluation is currently being undertaken.

As argued, most activities have been driven by public funding which targeted mainly social housing. The design of phase 2 of the scheme is set to encourage more involvement of the private sectors raising new questions in terms of the sorts of visions that underpin phase 2 and potentially changing the basis for transition (e.g. through markets rather than public control). Important research questions going forward include: will private sector house owners have a role to play in generating visions or will they be passively enrolled to them; will the scheme be as successful at attracting resources in terms of people and finances without the common frameworks shared across government bodies and social housing; and how will the sorts of visions generated across public and private sector housing differ from those that only consider social housing?

While further research would be needed to answer these questions, investigating the outcomes and experiences of those involved in phase 2, it appears that the area-based approach and the strong drive towards “targeting the right area first” and the “worst-per- forming stock” (namely the most disadvantaged communities and households) still represent a strong guiding vision in informing Arbed phase 2. It is worth considering that phase 2 came into existence simultaneously with the UK government schemes Green Deal and ECO and the approach to retrofit informed by Arbed has had wider implications for preparing for the Green Deal.

The market mechanism of the Green Deal, it has been often argued, might exacerbate disadvantaged communities increasing the numbers of those in fuel poverty in Wales and although the Green Deal is still considered as a complementary action to retrofit at scale, efforts have been put in place by the WG, LAs and social housings to grasp the opportunity to leverage funding (for Arbed phase 2) from the ECO, signalling the still powerful fuel poverty and regeneration discourses employed to encourage local economic sustainability.

Conclusion

Power and politics are an inherent, and potentially intractable, part of governing transitions. Key issues here include the inherent normativity of the very subject of “sustainability” and relative power in negotiations and conflict over the control of resources and policy decisions. This “messiness” means that policy-makers must necessarily be concerned with ways in which to define and communicate issues of sustainable development, as well as finding ways to

successfully implement policy and instigate what will need to be fundamental large-scale change.

One key insight to be drawn here is that governance of a successful transition needs to incorporate the translation and articulation of a problem – often drawing together abstract, intangible discourses into a salient, understandable argument for a broader audience – and the rallying of resources including actors, capabilities and capital. Here there are parallels to be drawn with the notion of the sustainability fix. The construction of a sustainability fix entails the reframing of environmental and sustainability concerns in such a manner as to rally local actors around economic growth objectives. Arguably, then, both processes are a means of rallying actors around a normative agenda.

To this end, visions can offer a mechanism by which policy-makers can influence the way in which pressures are portrayed, experienced and acted upon, and consequently can play an important role in governing change towards a more sustainable society. The literature ascribes a number of roles to visions which can be thought of as distilling into three core areas for intervention: (i) articulating problems, (ii) assembling and aligning actors and the resources they control, and (iii) building a discourse to promote understanding and familiarity.

In the case of the Arbed scheme, an over-arching vision of holistic “triple sustainability” was used to i) distil complex, abstract and disparate sustainability concerns into one compelling and practicable narrative. This was vital to bring together the sometimes contradictory and abstruse aspects of sustainable development into a more communicable vision; ii) bring together

different sources of knowledge, capability and funding in the form of heterogeneous actors. Aligning these actors allowed the project to pursue a range of different objectives; iii) build a regional sustainability discourse, constructing relationships between actors and encouraging them to engage with sustainable development issues (in particular, retrofitting houses for greater energy efficiency).

As such, the articulation of a shared guiding vision allowed policy-makers to navigate the power and politics of governing large-scale change in the face of uncertainty. They were able to bring together a wide range of relevant actors from local governments, WG, NGOs and the private sector and, importantly, to build familiarity within networks and with retrofit processes. Consequently, they were able to significantly upscale the level of retrofit taking place in a relatively short period of time.

The Arbed project can certainly be framed as a sustainability fix in its own right, with powerful fuel poverty and regeneration discourses employed to encourage local economic sustainability. However, a focus on energy efficiency and emissions reduction sets it apart. Rather than using economic arguments to temper environmental concerns, it used a concept of economic, social and environmental sustainability to pursue energy efficiency in the housing stock as a primary concern. It is not merely a win– win situation, then, in that the three tenets of sustainability are each identified as goals in the development of policy, as opposed to a focus on one “sustainability” with wider benefits accrued simply a bonus situation. To explain by means of example: a strategy with a focus on economic sustainability may have environmental benefits if transport infrastructure is improved, but these are a happy accident rather

than a goal attained through purposeful action. In the case of the Arbed scheme, cross-departmental working ensured that economic, social and environmental sustainability were represented as explicit goals. The Arbed project, therefore, distinguished itself in the sense that it encompassed the need to regenerate areas to improve their economic performances but also to improve well-being of communities, social equity and the need to reduce climate change and fuel poverty, making the growth and environmental sustainability concerns complementary. Despite facing some criticisms and still awaiting full evaluation, the scheme can be seen to have marked a step change from piecemeal attempts at retrofitting for energy efficiency to a more strategic approach at a much larger scale. This change was supported by the creation of an inclusive vision of an integrative tripartite sustainability incorporating social, economic and environmental agendas which, as argued in the paper, allowed for the articulation of concerns, assemblage of actors and resources, and opening of a regional sustainability discourse.

While the ARBED project represents a relatively large experiment aimed at combatting poor housing stock and related carbon emissions, it can also be understood as a step towards a low-carbon transition in the built environment. As argued within the sustainability transitions literature, niche success and change in the regimes are often triggered by rivalry among socio-technical configurations and niche developments. Niche success ultimately rests upon the process of enrolling and maintaining commitments from a wide array of actors, more robust expectations, a better articulated supportive institutional requirements and the development of complementary technologies. Retrofit, by its nature, does not fit neatly into any one “regime” or field of transition.

Rather, it bridges many of the networks that fulfil societal needs including energy, housing, water, etc. It is out of the scope of this paper to engage with a more in-depth discussion of the implications of the relationship between the vision of the Arbed project, regime(s) interactions (e.g. what sort of regime or system is to be reconfigured) and systems transition. Nevertheless, it can be argued that the paper has shown that the vision created by the Arbed scheme stimulated discussion and change around the topic of retrofitting the housing stock for climate change. Arbed allowed for learning processes to occur (both first- and second-order learning), to raise expectations around energy efficiency initiatives and to build up the networks that support innovations, such as supply chains and user– producers relationships. These are all elements that are at the heart of mobilising transition (see, for instance, Hoogma *et al.* 2002, Verbong *et al.* 2008, De Laurentis 2013).

In terms of wider lessons, it can be noted that a persuasive vision can have a powerful role to play in driving change. The vision created around the Arbed project offered a focus for deliberation and learning. This process, according to Berkhout *et al.* (2003), opened up reflexive discussions between actors, creating relationships and allowing for legitimate and effective exploration of societal problems.

It follows that visions have a powerful role to play only if supportive governance is in place. Arbed brought together stakeholders from different levels and departments of government in order to generate information and buy-in, but was coordinated by a small team that was able to increase efficiencies in gaining funds and actors (for example, attracting CERT and CESP funding). Cross-disciplinary working is important to render a vision clear,

translatable and important enough to motivate; however, cross-disciplinary working introduces complexity into governance that needs to be addressed with strong, focussed leadership.

Policy-makers seeking to stimulate transformative change, then, should look to the creations of powerful visions in order to successfully recruit and motivate actors. Indeed, the use of the word visions here is a terminology point, and such motivational visions can already be found among policy and academic literatures under a number of guises with “narratives”, “scenarios” and “visions” used somewhat imprecisely in many policy documents to denote a guiding interpretation of the future. While the use of visions is not new, what this paper has sought to highlight is that well-crafted visions can reframe sustainability issues in more compelling ways so as to overcome dichotomies within the complex concept of sustainable development and bring together economic, environmental and social actors and priorities in order to deliver change.

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Notes

1. More information on the results of the interview process and

secondary data analysis can be found in De Laurentis and Hunt (2012).

2. Sustainable retrofit is here defined as the 'directed alteration of the fabric, form or systems which comprise the built environment in order to improve energy, water and waste efficiencies'. In particular, the main focus is on incremental and disruptive improvements to the built environment – through (inter alia) a combination of systemic technological and social (institutional governance and behavioural) changes – operating across the building, neighbourhood and city-regional scales.
3. First published in 2002, the WHQS sets a minimum physical condition which all social housing providers must achieve and maintain in their housing stock by the end of 2012. Conditions include being structurally stable; safe and secure; properly heated and fuel efficient; well managed; and containing up-to-date kitchens and bathrooms.
4. Fuel poverty is defined as a situation in which a household needs to spend more than 10% of income on fuel use in order to maintain a reasonably warm home.
5. Warm Wales started targeting city areas or large conurbations employing energy assessors, trained by the company. These energy assessors went out into the communities, knocking doors and identifying, on a piecemeal basis, individuals who needed insulation in their properties and who qualified to get grants to provide free installations. The company was funded by Npower and National Grid to assist them in delivering their social objectives and to meet their

government targets in terms of CO₂ reduction. Any surplus money has been re-invested in the community to pay for further efficiency measures following the company ethos of regenerating communities providing local benefits. This has been quite successful in reaching out to the private sector.

6. The Heads of the Valleys programme is a 15-year regeneration strategy (2005–2020) developed by the WG in partnership with Rhondda Cynon Taf, Merthyr Tydfil, Caerphilly, Blaenau Gwent and Torfaen LAs to revitalise areas of economic deprivation in the South Wales Valleys.
7. Both programmes are funded at a national level by obligations on major energy suppliers and electricity generators and seek to improve energy efficiency standards and reduce fuel bills.
8. Some LAs and HAs identify this as a possible problem in the delivery of retrofit projects, while others initiated a sort of training programme with tenants to inform and instruct them on the functionality and efficiency of some of the technologies. Patterson (2012), in an evaluation study of the work conducted by Warm Wales, identifies that energy wardens were successfully employed to undertake home follow-up visits ensuring installations were satisfactory and helping residents understand how to use any new equipment and/or adjust behaviour appropriately to make the most of the new technologies adopted.

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