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IN-DEPTH REPORT

Social Innovation and the Environment

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Contents

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Executive summary

Social Innovation and the Environment

Social innovation is a powerful and valuable tool in the environmental sector. It involves social groups and communities creating, developing and diffusing ideas and solutions to address pressing social needs. More recently, social innovation has been gaining policy attention, providing a means to stimulate new ideas that address complex issues alongside ensuring citizen participation. Due to its participatory and creative nature, it is well positioned to address environmental challenges, which are multifaceted and often require societal or behavioural shifts towards more sustainable options.

The Copenhagen City Bee Project (bybi) aims to create an urban honey industry that provides employment opportunities for those excluded from the labour market and brings local people in contact with urban nature. (Source: bybi)

This In-depth Report from Science for Environment Policy presents an overview of research into social innovation, with special consideration for its environmental implications. Case studies are also presented which illustrate how social innovation has taken place in real-world settings.

There is a broad diversity of social innovation, making the concept difficult to define, theoretically capture and systematically evaluate. However, despite the challenge of formulating frameworks, developing indicators and conducting evaluations, this does not lessen the value of these activities in supporting the development of this important field.

Various frameworks have been developed to describe and understand social innovation. These highlight the importance of a number of processes, such as the formation of a group identity, the reframing of the problem to provide a new approach, the engagement of stakeholders and the establishment of consistent and motivated leadership by either an individual or core group. Some frameworks also provide valuable insight into the diffusion process and the coupling of social and technical innovation.

Although frameworks and models are useful they need to be accompanied by case studies to portray the real-life processes, challenges and impacts of social innovation in the environmental sector. In this report six case studies are described: an urban honey social enterprise in Denmark, a sustainable inner-city delivery service in France, a community farm in the UK, a social and environmental wetland development in Sweden, an international network of low-carbon communities and a group of social innovations to tackle waste issues in

Italy. Despite working in a range of areas these have several similar qualities, such as the existence of a core leader or group, an ability to adapt to changing economic, social and environmental conditions, a well-coordinated plan of stakeholder engagement, and the use of institutional support from local government. One outstanding and overarching quality of these case studies is their multi-functionality or ability to appeal to a range of groups and stakeholders, for example, by providing social benefits, such as employment and recreational opportunities, alongside environmental benefits, such as biodiversity conservation, as well as boosting the local economy.

Due to the individuality of social innovations, there are of course differences in their development paths, barriers and challenges and their diffusion of ideas and concepts. Encapsulating overarching themes, as well as individual differences, is one of the major challenges in evaluating and researching social innovation. It is difficult to identify standard methods and indicators to assess the impact of social innovation and feed that into its development. This report outlines some different approaches, such as the case-study method using in-depth interviews and literature reviews, scenario creation and backcasting, and comparative techniques. It provides examples of their use with social innovation projects in the environmental sector, such as renewable energy cooperatives and local food networks. It also outlines two blueprints or scoreboards (TEPSIE Blueprint and Social Innovation Europe prototype scoreboard) that can be used to guide research, particularly at a larger scale, in terms of highlighting possible subjects and tools for evaluation.

Knowledge and insight from frameworks, real-life examples and evaluations all help to inform the role of policy in social innovation. Policy needs to strike a balance between providing informed support without influencing the path of the innovative process. Policy has to be clear about its reasons and expectations for engaging in social innovation, which will help establish a firm and genuine basis on which to support projects. One of the major areas where policy is already contributing is in the formation of hubs and incubators that bring social innovations together and help develop and cross-fertilise ideas. There is also considerable input from policy in terms of supporting research to develop evaluative approaches that allow general principles to be drawn whilst recognising and celebrating the individuality of innovation.

This is an exciting time for social innovation in the environmental sector. As well as a growing number of initiatives, hubs and incubators there is also a growing body of research and knowledge. By striking a balance between flexibility and some degree of harmonisation, both policy and scientific research can embrace the diversity of social innovation whilst enabling effective funding, learning and development.

1. Introduction

1.1 Social innovation

Social innovation consists of new ideas and solutions aiming to resolve social needs and problems. The term 'social innovation' covers a diverse range of initiatives and activities: local currencies, new models of healthcare, cycling initiatives, co-housing schemes and online platforms to enable peer-to-peer learning are just some examples. There are many definitions of the term (Caulier-Grice *et al.*, 2012), but what is central to the concept is the involvement and empowerment of citizens.

As part of the TEPSIE (The Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe) project[1] researchers conducted a literature review to provide a working definition of social innovation, which is outlined in Box 1.

> Box 1
> **Definition of 'social innovation'**
>
> **TEPSIE project proposed definition:**
> Social innovations are new solutions (products, services, models, markets, processes etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act.
>
> (Caulier-Grice *et al.*, 2012)

As part of this document on definition, Caulier-Grice *et al.* (2012) propose five core elements that define a practice as being socially innovative:

i. Novelty: Social innovations do not need to be completely original or unique but they should be new in some way to the field, sector, region, market or user, or they should be applied in a new way.

ii. From ideas to implementation: Social innovations are more than promising ideas and must have potential to be practically implemented in a sustainable way.

iii. Meets a social need: Social innovations should be designed to meet a social need which, if not addressed, would cause significant harm or suffering.

iv. Effectiveness: Social innovations should be more effective than existing solutions and provide a measurable improvement in outcomes.

v. Enhance society's capacity to act: Social innovations should empower people to create new roles and relationships, develop assets and capabilities and/or better use of resources.

These core elements can be illustrated by considering one of the case studies of social innovation, which are described in more detail in Section 4. The bybi city bee project in Copenhagen (see Section 4.1) took a new approach to tackle the decline of the honey industry and bee populations. It did this by setting up a **novel** business structure that partners businesses and organisations to establish hives on their premises and then harvests the honey to sell back to them. Although on first consideration the declining bee population may not be deemed to be a 'pressing social need', the ecosystem services provided by bees, such as pollination are vital to agriculture and food production. So far little is being done to **effectively** address these issues, especially in an urban context. Bybi also trains and employs those excluded from the labour market, which meets another **social need** in terms of the lack of employment opportunities for this group. In terms of **implementation** the central aim of the project is to be an urban honey industry and its model tries to ensure financial feasibility and sustainability. The model also has the potential to transfer and establish itself in other cities. Lastly the project has brokered new relationships between various groups and **empowered** those within partner organisations and its own employees by providing them with new skills, roles and environmental responsibility.

With citizens and society at its heart, social innovation is a collaborative and participative process, seeking to address the system rather than its separate parts. It tends to be initiated at a local and decentralised level, but it can be global in its subject matter and its scope. Many recent examples of social innovations have moved from the margins to the mainstream, such as the fair trade movement, zero-carbon housing developments and community wind farms (Mulgan, 2006). In some cases this is facilitated by the rise of the internet and social media and their ability to spread ideas and link individuals and groups. For example, the Freecycle community reuses and recycles second-hand goods through the internet and has expanded from a small group in Tucson, Arizona, to about 4000 Freecycle communities in 80 countries (Nelson, Rademacher and Paek, 2007).

Various actors can instigate social innovation, including community groups, NGOs, charities, governments, businesses, academics, philanthropists or combinations of these (Biggs, Westley and Carpenter., 2010). Due to its fluid nature, social innovation can take a number of structures that vary in their level of formality and organisation. These include companies, social enterprises, NGOs, co-operatives, informal networks, partnerships, voluntary associations and more spontaneous gatherings of citizens recruited through social media to tackle environmental issues.

1.2 Social innovation and policy

In the context of research and innovation policy, innovations are often regarded as 'social' when they use means that engage society and aim at benefits for society rather than private gain for the innovator, i.e. when they are good for society and enhance society's capacity to act[2].

Social innovation can bring a wide range of benefits compared to more structured top-down processes. These include higher levels of public trust, improved decision making on local issues, shifts towards new social norms, values and practices, and a context to conduct innovative experiments (Reeves, Lemon and Cook, 2013).

At the EU level there is increasing policy interest and research into social innovation. In the Innovation Union Flagship Initiative[3] there is commitment to promote social innovation and establish research programmes on public sector and social innovation, looking at areas, such as measurement and evaluation, financing and scaling-up. As part of the IU Flagship Initiative, various measures have already been taken. The Social Innovation Europe (SIE)[4] virtual hub has been created to connect social innovators and provide an overview of initiatives and actions in this area. There has been a strong focus on social innovation in social policy under the European Social Fund (ESF)[5] and the Progress Programme[6], for example, through the Social Change and Innovation Programme[7].

There has been significant support for social innovation research actions and networks under the EU's Seventh Framework Programme, and this has increased in scope and budget over the last three years. Continuing from this, HORIZON 2020[8] will call for support of broader innovations, including social innovation (Reeder et al., 2012).

Although government should not structure social innovation, policy can play a role in encouraging its development and helping it to spread. These processes are often referred to as 'incubation' and 'diffusion', respectively and are discussed further in Section 6.5. Social innovation cannot be meticulously planned, but it can be stimulated by creating the enabling conditions for it to emerge (Biggs, Westley and Carpenter, 2010). As with all forms of innovation, there are various stations along its journey where policy can provide support to ensure it reaches its full potential. Sensitive research that is conscious of the fluid, adaptable nature of social innovation can provide insight into where, how and when policy can play a role.

1.3 Social innovations and the environment

Social innovation can tackle environmental challenges and is proving popular in this domain. There are a number of environmental drivers that are already instigating social innovations, such as waste issues, transport and pollution problems, as well as declines in biodiversity and degradation of ecosystem services, for example, pollination and flood protection by wetlands. Although these drivers are environmental they have social repercussions, such as health problems caused by air pollution, resource depletion due to inefficient waste disposal, exacerbation of flooding from damage to natural defences and food insecurity and agricultural issues exacerbated by poor soil quality or lack of pollination. In other words, societal and environmental issues are often interlinked and mutual solutions are possible. Some examples of forms of environmental social innovation include wood recycling social enterprises, organic gardening cooperatives, low-impact housing developments, farmers' markets, car-sharing schemes, renewable energy co-operatives and community composting schemes (Seyfang & Smith, 2007).

As already mentioned, the qualities of social innovation are compatible with solving many environmental issues that we are facing and which current systems are not addressing. Environmental issues tend to be constantly changing and evolving, requiring adaptive and dynamic approaches that are provided by social innovation. Relatively small social groups have the ability to act as a test-bed for innovative experiments in environmental and sustainable living (Reeves, Lemon and Cook, 2013). If successful in this seedbed stage, they can then be adapted and adopted by other communities.

The application of local knowledge via community and social action can create adaptive and flexible solutions that are appropriate to solving environmental problems (Burgess et al., 2003). The SPREAD Sustainable Lifestyles 2050 project[9] was a European social platform that invited a range of stakeholders to participate in the development of a vision for sustainable lifestyles by 2050. In its research it identified social innovators as one of the gatekeepers that can enable the shift towards more sustainable lifestyles. It proposed that the intentional and voluntary effort of social innovations to change lifestyles is an indispensable bottom-up driver for change, as they often champion new and promising behaviour. As such, it suggested that social innovations should be given the opportunity to test small scale initiatives, which could be scaled up into large scale sustainable solutions and participate in planning and decision-making.

Social innovation and eco-innovation are and need to be strongly linked. Eco-innovation is the creation of products and processes that contribute to sustainable development, and includes innovations in renewable energy, recycling, wastewater treatment, environmental food processing and eco-friendly packaging. In order to be effective, eco-innovations often require a social component to ensure cultural and social acceptance of the environmental technology or innovation. No matter how proficient the technology or the policy idea to tackle pollution, biodiversity decline or resource shortages, it still requires the action of people and communities to ensure success (Sabadie, 2013). Without social shifts to accompany technology, rebound effects can occur, for example, in some places the improved energy-efficiency of vehicles has led to increased use of these cars. Social innovation can complement technological innovation and policymaking to achieve systemic, long-lasting changes in lifestyles and society to tackle environmental issues (SPREAD, 2012). When citizens and communities instigate change themselves and develop the innovation, it is more likely to be successful and endure.

In some sectors social innovation can shape technology, as evidenced by the grassroots entrepreneurs and do-it-yourself builders of wind turbines and solar collectors in Denmark and Austria respectively (Ornetzeder & Rohracher, 2013). These socially innovative groups instigated the commercial development of these technologies and continue to influence their design as they become more mainstream.

1.4 Social innovation and environmental policy

As discussed in the previous section, many environmental problems and issues often require solutions that have the attributes or features

of social innovation. These include collaboration, participation, co-production, grassroots approaches and cross-sectoral working. As such, social innovation is often intrinsically more effective at providing solutions to environmental issues than more traditional top-down policy approaches. This can be illustrated by the example of Kristianstads Vattenrike which is a socially innovative initiative that took a new approach to managing and protecting an area of wetlands in Sweden (see Section 4.4 for more details). In this case, some policy initiatives had already been attempted to regenerate the wetlands area, such as allocating it to the RAMSAR list of 'wetlands of international importance'. However, there was a need for co-ordination of actions and for the local people to embrace the social and economic value of the wetlands as well as its environmental value. By engaging with different groups of stakeholders individually, it then supported them in a range of new and innovative projects to use and protect the wetlands for the good of everyone.

In some cases social innovation can drive environmental policy, either by increasing awareness of the problem, providing a platform with which policy can work or indeed indicating the best ways to address the issue. In the case of Kristianstads Vattenrike, once the initiative was created and developed it was able to have some influence on land planning decisions. For example, when a golf club wanted to buy sandy grasslands to build a course, the project pushed for the course to be built using sustainability principles. As such, the 'multi-functional' golf course provided both recreational facilities and biodiversity protection.

There are also examples of social innovation driving environmental policy in the renewable energy sector. Often these policy shifts can then help to drive an expansion of the existing socially innovative behaviour in this area, producing a positive feedback effect. A REScoop is a group of citizens that cooperate in the field of renewable energy, developing new production, selling renewable energy or providing services to new initiatives. The growth of these REScoops in Europe has helped to prioritise the topic on the political agenda, which has improved conditions to introduce renewable energy policies and legislation. More specifically, Hargreaves *et al.* (2013) investigated grassroots innovation in community energy in the UK and suggested that, although this movement had been in operation since the 1970s, it was only when it had grown sufficiently in the 1990s that policy recognised its potential. With approaches in the UK, such as 'new localism' and, more recently, the 'Big Society', there have been several policy initiatives to enhance the potential benefits of a more decentralised energy system with higher levels of community involvement.

1.5 Social innovation: research and theory

By its very nature, social innovation is a difficult concept to pin down and assess. Indeed its openness to different interpretations may be one of the reasons why such a broad range of organisations and sectors have felt comfortable adopting the term and engaging in the debate surrounding it (Cauler-Grice *et al.*, 2012). Since adaptability and fluidity are central to its creativity there could be concerns that attempts to define it with theory, to guide it with formal rules and to evaluate it with research paradigms could stifle the innovation and spontaneity that make it so valuable.

In a similar vein, the complexity and unpredictability of environmental issues bring their own requirements, requiring a dynamic form of research to fully encapsulate them. To optimise the environmental impacts of social innovation, ensure learning and guarantee effective funding there is a role for science and research in clarifying and understanding the processes at work. Whilst being respectful to the nature of social innovation and paying heed to the freedom it requires, scientific research can bring learning to existing and future projects.

1.6 Aims of the report

This report will consider existing theory and frameworks that aim to guide and inform social innovation with a focus on the environment. Examples of processes and social innovation at work will be described in a range of case studies in the environmental arena. These illustrate the triggers, barriers, enabling factors and effects for social innovation and cover a range of areas, such as farming, transport, waste and recycling, ecosystem services and biodiversity. Some of these are local in nature, but some have spread to the national and international level. Lastly, the report will summarise existing evaluations and assessments of social innovation, outlining current issues with metrics and highlighting some of the exciting developments in this area of research. In conclusion, the report will outline the role of social innovation for policy and the role of policy in social innovation for the environment.

2. Frameworks to describe social innovation in the environmental sector

There has not been a large amount of theoretical or empirical work done in the area of social innovation. This is probably because social innovation as a titled concept is still relatively new. Another contributing factor to the lack of academic research could be the tendency for social innovation to involve organic processes that are difficult to frame in scientific concepts. However, some frameworks have been developed or borrowed from existing models and examples of those referring to an environmental setting are described in this section.

The frameworks range in their approach, but are mainly developed from existing case studies of social innovation in the environment. Pretty and Ward (2001) focus on group processes and social capital, whereas Biggs, Westley and Carpenter, (2010) adopt a social innovation frame as their starting point to develop policy recommendations. Social movement theory is another popular framework, which studies the processes whereby social movements form and develop. Shawki (2013) adopts this framework, focussing on collective action frames, which are beliefs or values that inspire the activities of a group. Lastly, Seyfang and Smith (2007) are also guided by social movement theory to develop a framework to offer practical suggestions for managing the combination of social and technical innovation.

2.1 Stages of social innovation in sustainable farming (Pretty and Ward, 2001)

Pretty and Ward (2001) investigated the rise and effectiveness of local groups and associations to manage natural resources and achieve sustainable environmental and economic outcomes. Focussing on farming initiatives, they applied a social capital framework (see Box 2) to develop a new typology for describing the evolution of these groups with the aim of informing policy support.

Box 2

Social capital

Social capital is a sociological concept that proposes social networks have a value or 'capital' derived from the cooperation between individuals and groups. The worth of this capital depends on four central aspects: relations of trust; reciprocity and exchanges; common rules, norms and sanctions; and connectedness, in terms of networks and groups. Pretty and Ward (2001) propose that accumulation of social capital enhances social innovation to meet the challenges of sustainable development.

Pretty and Ward assessed advances in six areas of sustainable farming: watershed/catchment management; irrigation management; micro-finance delivery; forestry management; integrated pest management

and farmers' research groups. They estimated that in the ten years leading up to their study, over 400,000 new groups that rely on social capital have formed, mainly in the developing world. European initiatives tended to be farmer research groups where farmers' organisations experiment and conduct research themselves to increase awareness of effective techniques in sustainable agriculture.

On the basis of this, they proposed three stages to describe the evolution of social capital, providing insight into the development of social innovation:

i. **Stage one: reactive-dependence**. The group have realised change is necessary, but would still prefer to tackle the challenges using techniques or strategies that are the same or similar to those used in the past. For example, in agriculture, farmers' groups tend to focus on improving efficiency by reducing costs and pesticide doses rather than using alternative approaches.

ii. **Stage two: realisation-dependence.** The second stage witnesses the growing independence of the group and awareness of its capacity. Groups develop their own rules, create new solutions and engage in active experimentation. For example, agricultural approaches will incorporate regenerative technologies that rely on resources within the farming area, rather than imported pesticides and fertilisers. These practices include harvesting rainwater, using manure fertiliser and diversifying crops.

iii. **Stage three: awareness-interdependence**. In this stage, the group has stabilised and is aware of its collective value. It is capable of spreading innovation to others and groups coming together as platforms or federations (see Section 6.5). New agricultural systems are likely to be developed according to ecological principles rather than fitting new practices to old systems.

2.2 Five common factors affecting the development and diffusion of social innovation in ecosystem management (Biggs, Westley and Carpenter, 2010)

Biggs, Westley and Carpenter (2010) explored the transformation processes from centralised, sectorial, expert-centred approaches, to more adaptive, integrated, collaborative approaches in ecosystem management. Taking a social innovation approach, their aim was to identify factors that could inform strategies for stimulating this transformation.

They investigated factors along three dimensions, recognised as central to the innovation process:

i. The trigger, impetus or driver for innovation

ii. 'Bricolage', which is the sourcing and recombination of existing and new ideas and approaches

iii. Contagion or diffusion, whereby new ideas are adopted, implemented and spread throughout society

Using three case studies in freshwater management, they identified common factors along these dimensions that facilitate transition to more collaborative, integrated approaches to address the degradation of local freshwater ecosystems:

i. **Environmental crises.** Ongoing and anticipated degradation of the environment is a major impetus for social innovation. Alongside this are two additional factors: an appreciation of the value of ecological attributes AND a recognition that existing approaches will not adequately address degradation.

ii. **Reframing perspectives.** Existing approaches are challenged by the process of reframing, allowing new solutions to emerge. For example, reframing wetlands as an economic and social asset rather than an environmental problem allows new solutions to develop (see case study, Section 4.4). Reframing often requires some form of education or value-changing experience and can occur at various levels. For example, field trips that take stakeholders, such as farmers or fishermen, to see the rivers first-hand help reframe perspective. At a national or global level, the impact of the media reporting on negative impacts, especially on wildlife, can raise awareness, reframe issues and provide a receptive climate for social innovation to address ecological issues.

iii. **Engaging stakeholders.** This is central to developing socially innovative approaches. Initial engagement of stakeholders requires a simple compelling focus, which is often the environmental crisis. Addressing the stakeholders as one homogenous group does not appear to be effective, but instead close relationships should be established separately with the groups.

iv. **Social entrepreneurship.** The use of entrepreneurial principles is critical to social innovation. It plays an important role in reframing perspectives (see point ii) and engaging stakeholders (see point iii), but also in managing conflict between stakeholder groups or individuals. To be successful, leaders require strong identification with and knowledge of environmental issues (Reeves, Lemon and Cook, 2013). Chiffoleau (2005) used the term 'thematic experts' to suggest this role is broader than traditional leadership, performing intermediary functions both within the social innovation group and with other advisory or supportive groups.

v. **Institutional support.** This refers to support for the day-to-day activities of the organisation. Often this comes in the form of governmental support, for example, the organisations may be housed within local government who provide salaries and office space for a small core staff. Assured funding to cover overheads can be central to the maintenance of social innovation. Due to the nature of social innovation, care must be taken with the support so it does not stifle the innovative processes with rules and frameworks. This is discussed in more detail in Section 6.7.

Biggs, Westley and Carpenter's framework highlights the non-linearity of social innovation and the occurrence of lags before the adoption of new ideas. They suggest there are two important reasons for lags that must be considered when planning. Firstly, it takes time to appreciate the value of the environmental attributes that are lost and for the environmental crisis to be fully recognised. Secondly, initial responses are often still within the 'old mindset' (as proposed by Pretty and Ward's (2001) reactive-dependence stage) and it takes time before more innovative responses are sought.

Biggs, Westley and Carpenter also emphasise that a central quality of innovation is its 'newness', but this quality cannot endure if the ideas are static. For social innovation to remain effective, it must be adaptive, a concept which is appropriate for problems of the environment, which are dynamic and ever changing.

2.3 Social movement development and 'collective action frames' (Reeves, Lemon and Cook, 2013)

Theories of social movements can provide useful frameworks and concepts to understand the development of social innovations. One of the central concepts in social movement theory is 'collective action frames', which are beliefs and meanings orientated to action that inspire or validate activities of the group or community involved in social innovation (Benford & Snow, 2000). This is similar to the reframing process proposed by Biggs, Westley and Carpenter (2010), but with more emphasis on the use of reframing as a call to action.

Reeves, Lemon and Cook(2013) apply collective action frames to their study of Transition Towns (see case study, Section 4.5). They propose the transition town movement provides an alternative framing for the global problems of peak oil and climate change. Previous frames used in media and sometimes politics describe these problems with alarming and frightening language that tends to make people feel powerless and unable to act. Instead, the Transition Town movement applies frames that describe these issues as challenges and opportunities to change the world through building resilient communities. These frames allow people to consider taking action, such as the production of local food and renewable energy, local currencies and environmental education. This increases a sense of agency and manageability.

2.4 Collective action frames in the diffusion process (Shawki, 2013)

Shawki (2013) also emphasises 'collective action frames' in her study of the international diffusion, or spread, of social innovations. She proposes that diffusion relies on the resonance with certain frames proposed by the initial social innovation, i.e. if the frame makes sense to other groups and resonates with existing beliefs and values, it is more likely to spread. This has implications for how to frame a social innovation in terms of making it as inclusive as possible whilst still appealing to a clear and valid set of environmental values. For example, emphasising the financial benefits of a social innovation and the need to make it economically sustainable may appeal to more people, but could dissociate it from the values on which it was established. This could lead to conflict amongst the original initiators of the social innovation.

Shawki suggests that those who adopt social innovations from other countries tend to combine deep investment in their own communities with a global frame of reference so they can look to other countries for inspiration. She calls these people 'translators' and suggests they are necessary if the social innovation is to spread.

2.5 Strategic niche management (Seyfang and Haxeltine, 2012; Seyfang and Smith, 2007)

Seyfang and Haxeltine (2012) propose social or grassroots innovation occurs in so-called 'socio-technical niches'. Socio-technical refers to the relationship between society and technology, encompassing the social organisations required to implement technology and technology's role in mediating social relations (see Box 3 for an example of co-housing). They put forward strategic niche management (SNM) as a practical approach to governing these niches to promote social innovation. The concept of a niche proposes there is some form of protection from mainstream commerce and competition to allow social innovation to develop.

> ### Box 3
> ### Co-housing model as an example of a socio-technical niche
>
> The co-housing model is a community structure where residents live in houses around a common house that contains a large kitchen and utility room for activities, such as shared meals and washing. Cars are kept on the outskirts of the common house and may also be shared, leaving space for central gardens. The aim of the model is to reduce consumption and improve community networks. Seyfang and Smith (2007) describe it as a social innovation that is also conducive to the development of sustainable technologies, such as rainwater harvesting and small-scale renewable energy production.

From analysis of existing social innovations, including the transition town movement, they propose a series of practical recommendations for strategic management of niches to allow new social innovations to develop:

i. Manage realistic and achievable expectations of those involved to combat disillusionment. This can be done by focussing on short-term steps towards long-term visions to provide tangible opportunities for action and subsequent reward and motivation.

ii. Network widely with resourceful stakeholders in order to encourage diffusion and maintenance of the social innovation. This is related to Biggs, Westley and Carpenter (2010)'s emphasis on institutional support. The relationship of social innovations with policy and business can help ensure future security, but the partnership must maintain the independence of the social innovation.

iii. Adopt a community-based, action-oriented model of social learning. Rather than assuming a lack of awareness and a need to educate, this model proposes learning can occur by simply 'doing' sustainable activities. For example, in small local food systems, individuals may be initially motivated to consume local organic food for health and economic reason but these translate into greater environmental awareness.

Seyfang and Longhurst (2013) applied this framework in their analysis of community currencies (see Box 4). Using a strategic niche management approach they confirmed the importance of managing expectations, networking with stakeholders and social learning in the successful development of community currencies. They discovered a diversity of systems, where new models are inspired by existing currencies that are adapted or hybridised into a new form and tend to be initiated in windows of opportunity where there is a financial crisis. However there was little consolidation or standardisation amongst currencies and instead there appeared to be increasing fragmentation with little evidence of formalised learning. Seyfang and Longhurst (2013) do not describe this as a bad thing but an aspect that is different to conventional technical innovations, which tend to experience consolidation.

> ### Box 4
> ### Grassroots innovations and niche development in the community currency field (Seyfang & Longhurst, 2013)
>
> Community currencies take a range of forms. Amongst the most typical are Service Credits where participants earn credits for each hour spent helping someone and then can spend this receiving services from other participants (see Box 5 on time banks) and local currencies which are geographically bound currencies that circulate locally. They offer an alternative to mainstream money and meet needs that regular banking systems do not address, such as liquidity in cash-poor areas, promoting active citizenship and encouraging more sustainable consumption. Seyfang and Longhurst (2013) identified 3418 local projects working with community currencies in 23 countries across six continents. They found a complex picture with a fragmentation into different forms. This did not impede the growth of community currencies but does demonstrate they are different to conventional innovations.

2.6 The Innovation Cycle (Schmitz *et al.*, 2013; TEPSIE project)

As part of the TEPSIE (The Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe) project, Schmitz et al. (2013) developed a model to guide the evaluation of social innovation. It is not specifically intended for social innovation in the environmental arena but provides a valuable framework with which to guide evaluation (see Section 5.11). They harness knowledge and research from technological innovation and base their framework on two existing models of social innovation (a model developed by NESTA[10] and a model developed by the Department of Innovation,

10. Miles, N., Wilkinson, C., Edler, J., Bleda, M., Simmonds, P. & Clark, J. (2009). *The wider conditions for innovation in the UK. How the UK c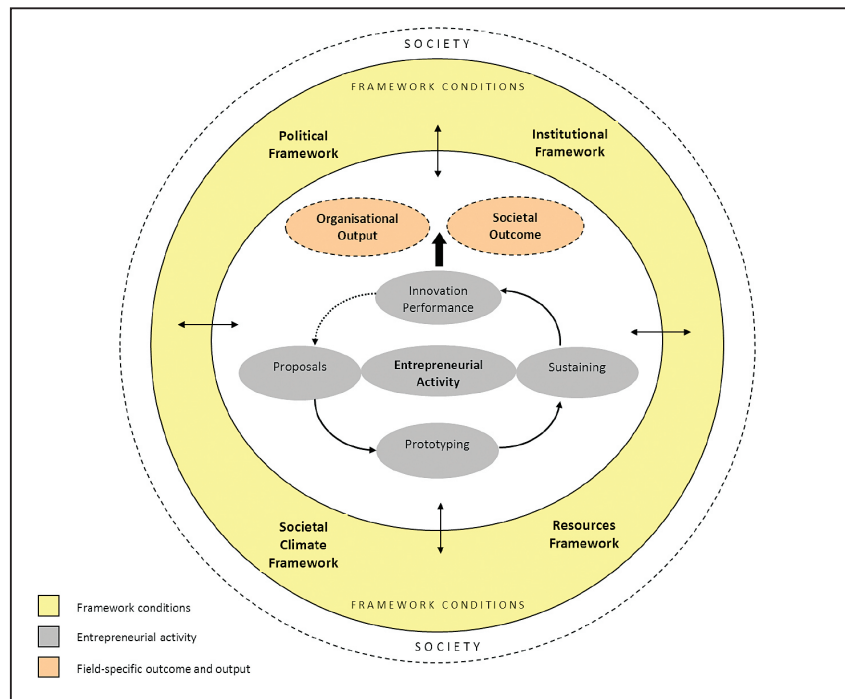ompares to leading innovation nations.* NESTA. Available at: http://www.nesta.org.uk/publications/wider-conditions-innovation-uk

Figure 1. Innovation Cycle. Source: Schmitz *et al.*, 2013.

Industry, Science and Research of the Australian Government[11]). The framework (see Figure 1) consists of three interrelated levels:

i. **Entrepreneurial activities.** These consist of the creation of ideas or proposals, the selection of ideas to be enhanced (or prototyping) and the mobilisation of resources to sustain the innovation.

ii. **Outputs and outcomes**. These are specific to the context of the social innovation and the domain in which it works, for example, environment, education and employment. Outputs refer to the measurable results that can be linked to the innovation whereas outcomes are broader impacts (in this case societal or environmental) that tend to more difficult to measure. For example, in the case of a car sharing community, the number of journeys or rides taken is an output whereas reductions in air pollution or CO_2 emissions are both outcomes.

iii. **Framework conditions.** These represent the main factors that influence social innovation that can potentially promote its development. They consist of the political framework (policy interventions to foster social innovation), the institutional framework (values rules and norms that organise society), the societal climate framework (the general attitude towards change and openness to social innovation) and the resources framework (funding, knowledge, premises, and availability of workforce).

These different levels interact according to the issues in hand and possible solutions. Schmitz *et al.* (2013) provide the example of renewable energy in Germany as an illustration. In this case, there was an increasing demand by citizens for renewable energy (the societal climate framework), which led to the establishment of renewable energy cooperatives or REScoops (see Sections 5.5 and 6.5) as an entrepreneurial process. This produced outputs in terms of increased numbers of turbines and outcomes in terms of savings in CO_2 emissions. This prioritised the topic on the political agenda (political framework), which then established conditions that were favourable for renewable energy policies and legislation (institutional framework) which encouraged more entrepreneurial activities.

2.7 Conclusions on frameworks of social innovation

Various frameworks and theoretical approaches exist that can describe social innovation in the environmental sector. Several of these are based on empirical data from case studies and provide practical recommendations and suggestions for the evolution of social innovation. There are similar themes that arise from these different approaches, such as the importance of reframing, the need for networking and the significance of striking the balance between forming relationships with stakeholder groups and maintaining identity and independence. Although an important part of social innovation is its uniqueness and ability to tailor itself to a specific environmental issue or context, these frameworks help provide insight into the processes of social innovation to inform future development and evaluation. Taken together with examples of individual initiatives, which are presented in Section 4, they can provide a rounded and valuable picture of social innovation and the environment.

3. Trends in social innovation and the environment

3.1 Social shifts that feed into social innovation and the environment

The SPREAD Sustainable Lifestyles 2050 project was a European social platform that invited a range of stakeholders to participate in the development of a vision for sustainable lifestyles by 2050. It has identified several social shifts across Europe that show potential to address the unsustainable impacts of current lifestyles. Many of these are forms of social innovation themselves or behavioural trends that could be channelled into social innovation. These include:

- An increase in collaborative consumption, which is the sharing, swapping, trading of goods and services for example car-pools, co-housing projects and time banks. (see Box 5 for descriptions). This potentially indicates that less value is being placed on ownership of goods and more value on access to goods and services.

- Growing evidence of more sustainable ways of utilising products and services. For example, efficient living (wasting less), different living (focus on high quality goods and services rather than throwaway culture) and sufficient living (reducing consumption).

- Action at a community and city level that takes participatory approaches to sustainable living and mobility options, such as eco-towns, co-housing projects and Transition Towns.

- At the household level there is evidence of behaviour change with greater investment in technology that saves energy and money.

- The development of synergies in health, equity and wellbeing due to a re-examination of the way we live, eat and move.

Box 5

Collaborative consumption trends

Time banks: These are markets (often online) where people can offer their time and help to others and receive time and help in return. For example everyday tasks can be exchanged, such as babysitting, sewing, baking, hairdressing and help with moving house. Time is the currency in which people are paid rather than money where one hour is one time credit and people deal and exchange time credits. There is no hierarchy and everybody's time and work has equal value. The system is based on confidence between the community members and every act of exchange is also an encounter so it provides social benefits. The Time Bank in Helsinki, Finland, is a good example: see http://www.urbandreammanagement.com/2011/11/2-years-of-time-banking/.

Co-housing: A co-housing community is composed of private homes that use shared facilities and services. The community is created and run by their residents. Each household has a self-contained, personal and private home but residents come together to manage their community and share activities, such as cooking, dining, child care and gardening. Common facilities may include a kitchen, dining room, laundry, child care facilities, offices, internet access, guest rooms, access to cars and recreational features. This provides both environmental benefits and social benefits in terms of combating isolation, recreating community support and providing more affordable services. Co-housing communities can take a range of forms but often tend to keep cars to the periphery, which promotes walking through the community, encourages interaction with neighbours and provides a place of safety for children. Another common characteristic is green space, whether for gardening, play, or places to gather. The co-housing movement originated in Scandinavia in the 1960s but there are many examples across the EU, such as in Italy (http://cohosuing.it/), the United Kingdom (http://www.cohousing.org.uk/about) and Denmark (http://www.ibsgaarden.dk).

Car and bike sharing: Across Europe there is a growing number of car and bike sharing initiatives. The first documented car-sharing initiative started in Switzerland in 1948 called ShareCom in Zurich followed by ATG (Auto Teilet Genossenschaft) in Lucerne. The two merged into Mobility Car Sharing in 1997 which now has 2350 vehicles at 1200 locations and approximately 93,700 customers (Ornetzeder & Rohracher, 2013). Other schemes can take a number of forms, ranging from the purely commercial to the more informal peer-to-peer projects. Some examples of these are the car-sharing company in Belgium called Cambio (www.cambio.be), the peer-to-peer car sharing in Germany called Tamyca (www.tamyca.de), the public bike sharing scheme in Brussels called Villo (www.villo.be) and the public renting service for shared electric vehicles in the Basque Country called Sarecar (www.sarecar.net).

3.2 Empowering people: trends in social media

An important trend that can facilitate social innovation is the rise of social media. This removes the geographic restriction from the development of social groups and communities and allows virtual communities to innovate collectively. Freecycle has been mentioned as a social innovation that uses the Internet to establish a virtual community that exchanges or donates unwanted goods. However, the participative nature of social media can allow citizens to contribute to the innovation process at a deeper level.

Currently, social media is mainly used to communicate with stakeholders, gain insights from other innovators working in the field and to spread and diffuse ideas to other communities and countries. For example, several of the case studies in Section 4 use social media to communicate to their stakeholders and potentially attract support and funding. In the case of CleaNap (see Section 4.6) social media was central to the gathering of citizens to address waste issues in Naples.

By establishing an open environment that welcomes ideas, collaboration, contribution, and evaluation, social media has the potential to engage citizens and harness collective innovation where groups can create, develop and test ideas. Virtual hubs, such as i-genius (see Box 23) also use social media to connect social innovators across the world, allowing them to form partnerships and work together.

Online social gaming in the environmental sector has been used as an educational tool to teach people about environmental issues. For example, BBC Climate Change[12] is an online environmental game that focuses on policy and sustainable development over a 110-year period, whilst SusClime[13] involves players investing in renewable energy and trading fossil fuels. Other environmental topics covered by educational online social games include biodiversity conservation, fracking, waste management and mitigation of natural disasters.

However, social gaming has a greater scope than education in terms of crowd sourcing or using citizen input to actually solve social and environmental problems. FoldIt[14] was one of the pioneers in this field. It is an online puzzle video game about protein folding, where the best solutions from the public are analysed by researchers and used to solve real-world problems by targeting and eradicating diseases and creating biological innovations. More recently, Al Gore, a former U.S. vice-president, has launched a project that uses the concept of online social gaming to organise and evaluate the media's coverage of climate change. Reality Drops[15] is a tool that curates hundreds of daily online news articles about global warming, and then allows users to earn points if they leave comments on online discussion boards to help differentiate between truthful science and anti-science myths. Due to its interactive format, social gaming has the potential to enhance public engagement and provide input to social innovation.

3.3. Empowering people: citizen science

Citizen science initiatives involve members of the public in science. They often enlist the public to help gather scientific data, but also use public knowledge of local environments or engage them in the design and development of projects to address real-world problems (Science Communication Unit, 2013). As such, they usually involve citizens partnering with scientists with the dual aim of public engagement with a scientific issue and collecting and/or analysing large amounts of data.

There are many examples of citizen science that aim to inform and help solve a range of environmental issues, and these can often have social implications. These include biodiversity conservation, water quality, air and noise pollution and marine litter.

Citizen science and social gaming are excellent ingredients in the social innovation mix to further public engagement. For example, a social innovative project within an area of wetlands in Sweden - Kristianstads Vattenrike (see Section 4.4) - provides a good example of incorporating citizen science into its initiatives by recruiting the public to help monitor wildlife in the area. The collected data contribute to national and European monitoring projects.

Currently, citizen science is rarely known to be initiated by the public, which means it is not a socially innovative process in its own right. The need for citizen science projects to more deeply involve the public throughout the research process is discussed in the Science for Environment Policy In-depth Report on Environmental Citizen Science (Science Communication Unit, 2013).

3.4 Empowering people: personal technology

As well as improving access to social media, the growth of mobile technologies, such as phones, tablets and other networked hand-held devices, is also important in the development of social innovation, allowing citizens to communicate no matter their location and bringing communities together that are geographically distant. A project that exemplifies the potential of mobile technology to potentially trigger social innovation is Green Plant Protection[16] in Slovakia. This aims to bring plant protection in ecological agriculture closer to farmers by using a web platform designed in a standard and mobile version. It provides an online database on plant pests, pathogens and weeds in croplands, alongside methods on how to tackle these in an environmentally friendly way. It aims to enable farmers to contribute to a reduction in the use of pesticides in agriculture and to act as a source of information for students of agricultural sciences and the broader public. The project is run by a consortium of three partners with expertise in relevant areas and funded by a European Commission Leonardo da Vinci Transfer of Innovation project. Although citizens did not directly initiate the project, it does exemplify how innovative technology can assist in the education of dispersed communities and possibly allow them to start their own innovative approaches in the future.

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12. http://www.bbc.co.uk/sn/hottopics/climatechange/climate_challenge/aboutgame.shtml
13. http://www.pbl.nl/en/publications/1995/SusClime_a_simulation_game_on_population_and_development_in_a_resource
14. http://fold.it/portal/
15. http://www.realitydrop.org/
16. http://www.greenplantprotection.eu

4. Case studies of social innovation and the environment

There are numerous cases of specific social innovations that exemplify or work with some of the above trends to provide environmental benefits and work towards sustainable development. There are initiatives in waste management, recycling, transport, energy use, farming and food production. Many work with the concept of ecosystem services, supporting natural resources, such as wetlands, forests and rivers, which provide a range of services to the local and global community.

Successful examples of environmental social innovation tend to provide multiple benefits or functions, appealing to a range of stakeholders with different values. This makes them attractive to a variety of groups and individuals, but it also makes them difficult to encapsulate and evaluate. Most research focuses on individual case studies rather than common patterns or aggregate learning (Evans & Saxton, 2003). However, it is useful to examine individual case studies and compare the challenges they have faced and the factors that helped them succeed.

Several EU and international case studies will be portrayed in-depth in this section using an outline developed from the frameworks described in Section 2. These case studies have been chosen for a number of reasons. Firstly, they are examples that are close to 'pure' social innovation in that they have been instigated by individuals or groups of citizens rather than policy or academia to address social and environmental issues. Secondly, they have been established for some time, demonstrating their resilience and capacity to adapt, as well as their potential to diffuse. Lastly, they have been selected to represent a range of environmental issues and developmental pathways.

The case studies are based on existing literature, project websites and research papers, as well as interviews with representatives from the projects. The featured case studies vary in their location, the subject they address, their approach, their structure, their scope and their stage of development.

The first case, the Copenhagen Urban Bee Project, was established in 2011. By creating a cottage industry in honey products, it has brought environmental and social benefits to the city and beyond. After three seasons it has increased its level of honey production by over five times and trained several new beekeepers. La Petite Reine is the second case study, and was created in France in 2001, initially as an environmental urban delivery service using electric 'cargo-bikes'. Since then it has forged alliances with other partners to become a social inclusion project alongside a highly efficient delivery enterprise. Currently operating in Paris and Bordeaux, it aims to expand into Toulouse, Aix-en-Provence and further afield in the near future.

The Sutton Community Farm provides a recently established example of a city farm producing organic and sustainable goods. Working to the One Planet Living principles, it has established several successful projects supplying healthy, organic food to the community. Focussing on ecosystem services, the fourth case study is now called the Kristianstads Biosphere Reserve, which encompasses an area of valuable wetlands in southern Sweden. Originally established as an Ecomuseum in the 1980s, the reserve houses several sustainability projects and allows stakeholders to work together to protect and provide a variety of ecosystem services, such as ecotourism, grazing for cattle, nature conservation and recreational areas.

In terms of diffusion of social innovation, the Transition Network provides a good example. The first Transition Town was established in 2005 in the UK and reframed the global problems of climate change and peak oil as challenges that can be solved through local community actions and projects. The concept proved popular and, due to the high interest from other communities, the Transition Network was created to provide guidance and resources. There are now transition communities in over 35 countries. Lastly, the example of social innovation in the face of the waste crisis in Naples illustrates how several grassroots organisations can work quickly and effectively to combat a crisis through several approaches, including the use of social media.

4.1 Case study 1: Copenhagen City Bee Project (bybi), Denmark

Image source: bybi

Context and trigger: Recent concern over the decline in honey bees and their provision of ecosystem services, such as pollination and honey supply, was a major trigger for this social innovation. The decline has been caused by a combination of new agricultural methods, exotic bee diseases and climate change, but also by the decrease in traditional beekeepers. Honey bees can no longer survive without beekeepers and, in the current economic crisis, the Danish honey industry is suffering.

Social entrepreneurship: Bybi was founded by Oliver Maxwell in 2010. He has a background in anthropology and international development and has worked to develop social enterprises in Denmark

and the UK since 2004. After the 2009 Climate Conference in Copenhagen, he was inspired by the concept of 'Prosperity without Growth'[17], to address the problems of environmentally unsustainable economic growth and rising long-term unemployment with a concrete social enterprise based on urban honey production. The result was the creation of the Copenhagen City Bee Project, or bybi.

Form: Bybi is a social enterprise driven democratically by its members. All profits are reinvested into its social and environmental activities. At the time of producing this report, it has four core staff and roughly 60 people involved in the project as beekeepers, volunteers, trainees and partners in sister projects, which, for example, build the projects' frames and beehives.

New perspectives and reframing: Bybi was initiated to create a new generation of city beekeepers and address a range of problems: dwindling bee populations, declining honey industry, lack of urban green space and rising unemployment. Bybi aimed to create an urban honey industry that provides employment opportunities for those excluded from the labour market and bring Copenhageners in contact with urban nature.

Before the creation of bybi, the honey industry consisted either of amateurs keeping bees in their garden who had no wish to expand their production, or large industrialised production in the countryside. Bybi filled a niche for the local urban honey industry.

This required reframing the problem as one that was not just about declining bee populations but also about the decline in Denmark's honey industry and the effects on the wider Danish economy. Bybi proposed a solution that creates the conditions to support bee populations, but also allows people to live in a greener city with a higher quality of life and better employment opportunities. As such, it proposed training new beekeepers from groups that tend to be excluded from the traditional labour market. These people are identified by key partners already running social inclusion projects. As the enterprise expanded, there were other employment opportunities in the production of equipment and packaging of honey products.

Engaging stakeholders: One of the main challenges for the project was getting the right people to meet and work together. To be successful, the cooperative needed the support of established beekeepers and Maxwell spent a lot of time engaging these stakeholders and gaining endorsement by the local and national beekeeper associations. The project also needed to balance its social and environmental objectives with financial sustainability. Maxwell brought together groups of development workers from housing associations and employment projects, leaders from businesses and from the municipality who could advise on how to access experts and resources.

> '*Partnerships are an essential part of the organisation and give us a lot of opportunities. Our focus is on creating an urban honey industry – we are not just an environmental project and we are not just a social project. We combine all three and make sure we get results from all three but first and foremost we are trying to create a cottage industry for honey and beekeeping.*'
>
> Oliver Maxwell, Director of bybi

Bybi works by forming partnerships with businesses in Copenhagen who pay the social enterprise to place hives in their grounds or on their rooftops. In the first year the beehives were used to train beekeepers who were recruited through the municipal social services. The partner businesses then buy the honey back at good prices and their employees are involved in various activities around beekeeping and harvesting the honey. This provides excellent PR for businesses and several large companies and organisations have become partners, including the European Environment Agency.

> '*We're getting bigger and developing new products so there are more and more tasks around packing and processing honey, which provides more work opportunities. We've also started selling honey through the honey pusher project and it's working very well. Our honey pushers go out to our partner businesses on a bike, take a team of employees to extract the honey from the partner's hives and then sell the honey directly back to employees while its still warm from hives.*'
>
> Oliver Maxwell, Director of bybi

> '*All sides were equally important in our development. Local government got on board because they could see we could bring in businesses and businesses got involved because they could see we had contacts in local government... and vice versa. I wouldn't say one partnership was more essential than the other but in combination they create a synergy that make it possible to start with very little external funding. Right now the challenge is to consolidate the partnerships we have to make sure they are still there in future. Especially with the municipality, which can be a lot less flexible in some ways than business.*'
>
> Oliver Maxwell, Director of bybi

17. www.sd-commission.org.uk/publications.php?id=914

Bybi uses social media as a communication and educational tool and as a means to build a sense of community around its activities.

Institutional support: In its first year, over 35 organisations and individuals contributed resources in kind to help the project in its initial stages. Support ranged from the graphic design and communication skills needed to produce the enterprise's first materials, to legal skills required to help draft the terms of reference. The support is continuing with business partners sponsoring vehicles and bicycles and providing free printing services. A major contribution was from the Copenhagen Municipality, which provided bybi with free office space in an old municipal workhouse. In exchange, bybi provide work placements for municipal social services users.

Bybi has been involved in discussion groups, panels and the design of questionnaires to inform a national parliamentary committee on social enterprise. On the local level, the initiative has been an influential example of working with municipalities and formalising agreements about the use of premises provided by local government.

'Our relationship with policy is important but it's also important that we continue to be independent. All political parties agree they want more social innovation and social enterprises and we're often used as an example but there is a bit of a myth about what is needed to support social enterprise in terms of a legal framework, better financing and better advice. There are bigger and more systemic shifts that need to occur in terms of labour policies and the welfare state in order to create an economy that accommodates people on the edge of the work market and also be good for the environment.'

Oliver Maxwell, Director of bybi

'There is nowhere in the world where people aren't fascinated by bees or love honey. The way we work is also something that can be fine-tuned according to the different political context. There is nothing we do that wouldn't work in other places – the trick is to get it to work in a way that is focussed on creating industry rather than a charity project.'

Oliver Maxwell, Director of bybi

Diffusion: The Copenhagen City Bee Project (bybi) was launched in January 2011. In the first year, they produced 800 kg of honey from five sites containing 30 hives and three seasons later, they have produced 4.5 tonnes of honey from 150 beehives in 15 sites. In 2013, bybi won the Social Enterprise of the Year Award in Denmark. The model has the potential to be applied in other cities and other countries but before any diffusion the project plans to consolidate and ensure financial sustainability.

Website: http://bybi.dk

4.2 Case study 2: La Petite Reine, France

Context and trigger: There has been an increase in congestion on the inner-city roads of Paris due to the use of oversized trucks to deliver goods, producing traffic jams and air and noise pollution. As well as causing negative environmental and social impacts, the delivery system is inefficient: generally the trucks are half empty and have to return to warehouses that are far from the city centre to collect goods for delivery. In addition, policy initiatives to protect inner cities from congestion and pollution have contributed to incentives to reduce traffic in city centres.

Social entrepreneurship: La Petite Reine started in the 1st arrondisement of Paris (Le Louvre) in 2001, with the aim of providing a more sustainable transport delivery system, by delivering goods using an electric bicycle that tows a large storage cabin (the 'Cargocycle'). In 2009, it became part of the Ares Group (Association pour la Réinsertion Economique et Sociale), which is a not-for-profit association that works with firms to employ people from socially excluded groups. La Petite Reine employed those excluded from the labour market, particularly young people, and in 2011 it became a joint venture of Ares and the Star Service group with the latter providing expertise in delivery logistics.

Form: La Petite Reine is a Société par Actions Simplifiée Unipersonnelle (SASU). Any profit that it makes is re-invested back into the project.

New perspectives and reframing: La Petite Reine was created in 2001 to address both the inefficiency and negative environmental impacts of goods delivery in city centres, which had not been tackled by existing systems. Based in France, La Petite Reine aimed to do this through a combination of new ideas. Firstly, it uses logistic centres to streamline delivery flows so they occur before peak hours and optimise delivery routes to decrease congestion and pollution. Secondly, it designed an electric vehicle called the 'Cargocycle', which is a powerful, light three-wheeled bicycle with a large 1.5 m³ storage cabin that can carry about 180 kg of merchandise. The Cargocycle produces no pollution or greenhouse gas (GHG) emissions. It is also able to use bike and bus lanes and can park easily in city centres.

In 2009, La Petite Reine introduced another important aspect to the innovation when it became part of the Ares Group (Association pour la Réinsertion Economique et Sociale) and started to employ people from socially excluded groups. When they come to La Petite Reine they have a support worker who is in charge of their social issues and who helps them with their career. By employing young people who have been excluded from education and the labour market, La Petite Reine provides social benefits as well as environmental benefits to the areas where it is active.

'A project like La Petite Reine provides excellent opportunities for young people who have little education and professional experience. It brings them into labour market and offers them a first position so they can acquire skills and get a salary every month and then they can look for further work.'

Christophe Gomez, La Petite Reine Directeur délégué

'If you want big companies to work with you, you have to cover a wide geographical area and you have to have excellent logistics. The future of this kind of company will be to mix electric vehicles and cargo bikes so that we can offer a wide range of services.'

Christophe Gomez, La Petite Reine Directeur délégué

In 2011, a delivery company called Star Service invested in the project and La Petite Reine became a joint venture of Ares and Star Service. Star Service is a well-known name in the delivery sector that is recognised and regarded by the business world. Using its expertise and its network of business contacts, Star Service has refocused the activities of La Petite Reine on home delivery where customers purchase goods from supermarkets and stores and the goods are then delivered to their home by La Petite Reine. This has provided a more financially sustainable model while the project consolidates and plans its future development.

'The economic model has been completely changed and we have reduced parcel delivery. We are now working on the home delivery from supermarkets and other businesses. At the moment this provides a higher added value for the organisation and is better for the financial situation. It does not mean we will stop parcel delivery forever but in today's economic conditions it was not feasible.'

Christophe Gomez, La Petite Reine Directeur délégué

Engaging stakeholders: La Petite Reine has many benefits that appeal to a range of groups: it provides environmentally sound transport that is more efficient in terms of delivery times and costs and helps support socially excluded groups find employment. Nevertheless, in order to be more successful La Petite Reine needs to engage a number of stakeholder groups, such as local and international businesses, citizens and municipal government. Gaining recognition of the potential of the 'Cargocycle' from logistics experts was particularly demanding at the start-up of the project, involving technical expertise and demonstration. To achieve this, La Petite Reine has optimised its vehicles and logistic flows to reach the standards required by the logistics sector.

Forming relationships with municipalities has also been an important part of La Petite Reine's development. Local government supported the project with the initial provision of premises and, more recently, policy initiatives to curb congestion in city centres are also helping to encourage greater use of La Petite Reine's services. The partnership with Star Service has provided greater opportunity to build relationships with businesses.

Diffusion: La Petite Reine has been rolled out into the 6th arrondisement of Paris (St Germain de Pres) and in Neuilly-sur-Seine, which is just west of Paris. This means it can cover 75% of the Paris and Neuilly-sur-Seine area. The organisation is also active in Bordeaux and there are plans to establish it in Toulouse and Aix-en-Provence. Both these latter cities are introducing restrictions on conventionally-fuelled vehicles in the city centre, which makes La Petite Reine a particularly attractive alternative delivery system. However, the model does require adjustments according to the geographical and political context. For example, in Toulouse, the restricted area is quite large and customers often live far away from the city centre, which means the distance for delivery is not feasible by Cargocycles and La Petite Reine will focus on using electric vehicles in this city.

At the time of this report's production, La Petite Reine has about 80 Cargocycles and 12 electric vehicles, but it plans to increase the numbers to about 100 Cargocycles and 30-50 electric vehicles by the end of 2014 to meet a range of needs. The model could be transferred to other cities, especially those with existing or planned congestion zones, such as London, or where city centres are difficult to access, such as Amsterdam.

Institutional support: When the project was created in 2001, the city of Paris provided premises in the form of an underground car park. Existing and future policy initiatives, such as the creation of inner city zones that restrict entry by conventional vehicles, also provide encouragement for businesses to use La Petite Reine.

'The major concern we have today is regarding the location. It is important for us to be located inside the city but the costs of renting premises here is very expensive, especially as we need to be open from 9 am to 10 pm, Monday to Saturday. So I would say the major support that local government could provide to help us develop would be to make the rates cheaper within the urban logistical area.'

Christophe Gomez, La Petite Reine Directeur délégué

Although it may not have directly influenced policy, La Petite Reine has an excellent image at a local policy level, particularly Paris City Hall. This is mainly due to the environmental aspects of the project in terms of reducing traffic and air pollution, although, of course, these have social effects in terms improving health and quality of life in inner cities. The project has been involved in several workshops organized by Paris City Hall representatives.

Website: www.lapetitereine.com/fr

4.3 Case study 3: Sutton Community Farm within One Planet Sutton, United Kingdom

Image source: Sutton Community Farm

Context and trigger: The production of food for an increasingly urbanised population is a major challenge, particularly within the context of climate change. Agriculture is a source of GHG emissions, not just from livestock and land use change, but from the production and use of chemical fertilisers and pesticides. Globalisation of trade has meant that food is transferred long distances, which has implications for emissions from transport, as well as from packaging, processing and disposal. Cultivating land within city limits for food production, or urban agriculture, offers a means to reduce GHG emissions from agriculture. The most common form is the urban fringe farm, which is generally located on local government land and farmed by citizens from the local community.

Social entrepreneurship: The project was initiated by Bioregional, an entrepreneurial environmental charity, which works with partners towards a sustainable future using the One Planet Living framework (see Box 6). The London borough of Sutton became a One Planet Living region in 2008 and when Bioregional conducted a survey of the sustainability needs of the local people they identified that access to local and fresh food was an important issue. The farm was an outcome of a borough-wide initiative called One Planet Food and is now an independent organisation with its own management team and financial plan.

'I think one of the key things is having a person or people who are absolutely dedicated to driving an initiative forward. You can throw all the resources you like at it but if it doesn't have those passionate people who are adequately resourced then it will be much harder.'

Stephen Edwards, Community Engagement Co-ordinator, Bioregional

Box 6

Bioregional, 'One Planet Living' and One Planet Sutton

Bioregional is an international entrepreneurial charity that works with partners and establishes sustainable businesses to help reduce over-consumption and environmental degradation. In 2004, the charity developed the One Planet Living framework with the WWF, which presents a positive vision of a sustainable world, in which people can enjoy a high quality of life within the productive capacity of the planet. The framework aims to help people and organisations work towards this vision using ten guiding principles to plan, deliver, communicate and mainstream sustainable development. Using the framework the community or organisation makes an action plan and can set sustainability targets under each of the principles in order to ensure progress and effectiveness of initiatives.

The borough of Sutton was the first 'One Planet community' who are developing and delivering a programme of sustainable activities and projects, such as adapting homes to climate change, sustainable educational activities in schools and a green business network. One Planet Food is one of their initiatives to supply sustainable food to the community and the Sutton Community Farm is central to this.

The ten principles of the One Planet Living framework are:

1. Zero carbon	6. Sustainable water
2. Zero waste	7. Natural habitats and wildlife
3. Sustainable transport	8. Culture and heritage
4. Local and sustainable materials	9. Equity and fairtrade
5. Local and sustainable food	10. Health and happiness

www.bioregional.co.uk
www.oneplanetliving.net
www.oneplanetsutton.org

'The One Planet Living principles are very useful and we have drafted a One Planet Action plan which captures all of the farm's activities that are related to sustainability. We care a lot about the environment and we aware that farming has a huge impact so we feel it's important to act sustainably and to show people how we do it. It's a useful framework to think about our impacts.'

Sam Smith, Managing Director, Sutton Community Farm

Form: Sutton Community Farm is an 'Industrial and Provident Society for the benefit of the community'. This legal co-operative structure fits with the farm's ethos of community-supported agriculture as it allows the farm to become community-owned and to launch a not-for-profit community share offer. This means supporters from the community can become stakeholders in the farm by purchasing not-for-profit shares, helping support and shape its devlopment.

New perspectives and reframing: Sutton Community Farm was set up in 2010 and is London's largest community farm. It grows fresh fruit and vegetables, using organic principles and employs a local community workforce. Although it is not the first community farm, it is the first to combine ideas from two frameworks: Permaculture and One Planet Living. Permaculture is a sustainable development framework that helps people work with nature to create integrated spaces that promote multiple uses and it is guided by three ethical principles: care for the planet, care for people and fairshare. One Planet Living was developed by BioRegional and WWF and has ten principles to guide the planning and delivery of sustainable development (see Box 6).

Using these two approaches, the project is framed not just as an organic farming initiative, but one bringing social and economic benefits. Fresh, organic food grown locally uses fewer chemicals and requires less transportation, reducing the environmental impact on land and the GHG emissions produced by transport, packaging and processing.

It also brings social benefits, in terms of providing apprenticeships and teaching skills to the local community, as well the potential health benefits of eating organic food and volunteering on the farm. The farm has a number of projects: it provides 'away days' for businesses, an after-school activity group and volunteering opportunities for those on probation. Last but not least, the project provides economic benefits in terms of selling the produce through schemes, such as the 'Veg bag home delivery scheme'.

Engaging stakeholders: The concept of an urban community or city farm is relatively well-known, so does not require large amounts of education and awareness-building. However, there is a need to engage the community with the environmental, social and economic benefits of the farm. The support of funders and partners is integral to the success of the farm. One of Bioregional's areas of expertise is incubation of social innovations, helping them to network with

'Much of our work at Bioregional is about building partnerships and developing partnerships with local government, organisations, private businesses, voluntary organisations and so on. The beauty of the (One Planet Living) framework is that it is very adaptable and it fits in with a lot of different mechanisms of organisation.'

Stephen Edwards, Community Engagement Co-ordinator, Bioregional

appropriate organisations and form partnerships. The charity still provides this support to the Community Farm. The farm also spends time engaging with businesses, such as local restaurants and those interested in becoming part of the network of pick-up points for the veg bag scheme. It uses social media to share news and images with its community and also to communicate to a broader audience. Occasionally social media has also helped in networking with relevant people and enterprises.

'At the farm we've put a lot of effort into how to make the veg bag scheme run more efficiently so we can attract more customers and have security in our income. That scheme has grown over the last 2 years and we now have about 150 customers. We try to keep prices affordable and more recently we have set up a network of pick-up-points, such as health food shops and cafes where we deliver the bags in the morning and the customers pick them up in the afternoon. For us this is logistically easier than home delivery and we are always trying to innovate to be self-sufficient and not rely on grant funding.'

Sam Smith, Managing Director, Sutton Community Farm

'I guess Bioregional and the One Planet Living framework provide capacity building. So we're obviously out there to support projects that are coming through the community, but also to inspire people with information on projects that are being done elsewhere. The fact that we are working in several regions and internationally gives us a broad range of experience with which we can inspire people and support people in perhaps developing the project that might have been inspired from somewhere else but might be adapted to fit into that particular location or environment.'

Stephen Edwards, Community Engagement Co-ordinator, Bioregional

Institutional support: A local charity, Ecolocal, that develops environmental sustainability services helped find the land on which the farm is based. As mentioned, Bioregional, who were responsible for establishing the farm, continue to provide advice on the One Planet scheme and networking opportunities, whilst the local borough of Sutton is supportive through the One Planet Sutton programme. The farm now receives its own funding and there is also support through partnerships with organisations, such as a charity providing 'recycled tools'.

At a local level, the Farm has influenced the food component of the One Planet Sutton Action Plan[18], which is a local council community-led vision that aims to help citizens lead healthy lives within a fair share of the Earth's resources. As the farm becomes more established it hopes to play a larger role in influencing the urban food and community food sector.

> *'Some of the research on the farm is really beneficial but it depends on the researcher and whether we can define an interesting study together. In the past a study produced a local economy indicator, which provided a statistic saying £1.00 spent on our produce generates £1.60 for the local economy whilst £1.00 spent in a local supermarket only generates 30p for the local economy. That was a really useful result that came out of the research.'*
>
> Sam Smith, Managing Director, Sutton Community Farm

Diffusion and evaluation: The concept of urban community farms is not new but Sutton Community Farm does bring together principles and frameworks in a novel way to provide a new perspective on the issue of sustainable food.

The Sutton Community Farm aims to be an inspiring model of small-scale farming, demonstrating environmental, social and economic feasibility. To contribute to this, the farm is keen to evaluate its work and impacts to progress and provide data for others. The farm has good links with a local university and a number of research projects have been conducted, for example, a life-cycle analysis to estimate the reduction of GHG emissions from food and an evaluation of the social, economic and environmental impacts of a local food market stall (the 'Veg Van'). There is also research underway to investigate the replicability of the One Planet Framework in other farms.

Website: http://suttoncommunityfarm.org.uk

4.4 Case Study 4: Kristianstads Vattenrike Biosphere Office (previously Kristianstads Vattenrike Ecomuseum), Sweden

Context and trigger: Kristianstads Vattenrike is a 35-km-long wetland area surrounded by cultivated landscape in southern Sweden. The project area covers more than 100,000 hectares and includes the lower catchment area of the River Helge and the coastal areas of the

Kristianstads Vattenrike. Image source: Biosfärkontoret, Sven-Erik Magnusson

bay of Hanöbukten, a part of the Baltic Sea. The River Helge flows from upstream forests through agricultural land, lowland lakes, and wetlands and passes straight through the town of Kristianstad.

The area provides important ecosystem services, such as flood control, water purification, biodiversity support, recreational space and grazing for cattle. For many years, farmers had used the wetlands for grazing and making hay but economic pressures had caused farmers to relocate to land that was easier to manage. This meant the wetlands became overgrown, losing their value in terms of providing habitat for wildlife, recreational spaces and other ecosystem services. There was eutrophication, loss of flooded meadows for haymaking and a decline in bird populations. The town itself had previously been a military centre and needed to revive its identity and economy. Although the wetlands had been allocated to the RAMSAR list of 'wetlands of international importance' in 1975, the management of the area remained uncoordinated.

> *'You can't be only a conservationist and you can't only be dealing with information, you must have a little of each and then you can have experts in your staff to highlight special challenges. You must understand the perspectives of different groups and imagine how they think about nature, whether they are farmers, hunters, businessmen or politicians. And once you can communicate to them using their terms you can turn to the language of conservation and nature.'*
>
> Sven-Erik Magnusson,
> Co-ordinator Kristianstads Vattenrike Biosphere

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18. http://www.oneplanetsutton.org/projects/one-planet-food/

Social entrepreneurship: The growing concern about the demise of the wetlands spurred Sven-Erik Magnusson to establish the Ecomuseum Kristianstads Vattenrike in 1989 to act as a bridging organisation to co-ordinate sustainable management of the wetlands. Magnusson was involved in making an inventory of the cultural landscape of the area for the municipality and could see the potential value of the wetlands if they were once again used and protected in a sustainable way. In 2005, the 104,000 hectare Kristianstads Vattenrike Ecomusem area was formally designated as a Biosphere Reserve under the UNESCO Man and Biosphere Programme and Magnusson became the co-ordinator.

Form: The Ecomuseum was made part of the Kristianstad Municipality, reporting directly to the municipality board. In 2005, the Kristianstads Vattenrike area was formally designated as a Biosphere Reserve under the UNESCO Man and Biosphere Programme. Biosphere Reserves are designated by the United Nations to promote and demonstrate a balanced relationship between people and nature. They are areas where conservation and sustainable development go hand in hand. The Ecomusem had been running according to the Biosphere principles since its inception but the formal recognition in 2005 brought additional value. As such, the Kristianstads Vattenrike Ecomuseum is now known as Kristianstads Vattenrike Biosphere Reserve. The Ecomuseum office is now a Biosphere office and continues to play an important role in managing the wetlands.

> *'I said we have to look at this value in more than ecological and botanical terms so we have to include tourism and the value that the wetlands provide in terms of cleaning the water coming from the river Helge into the Baltic Sea.'*
>
> Sven-Erik Magnusson,
> Co-ordinator Kristianstads Vattenrike Biosphere

New perspectives and reframing: The UNESCO Biosphere Reserves were an inspiration to Magnusson from the start. When he established the Ecomuseum Kristianstads Vattenrike, this reframed the wetlands as an asset rather than an environmental problem, appealing to a range of values by integrating conservation with economic and social development and creating a new identity for the town of Kristianstad. By doing so, the goal of management was no longer simply wetland protection but also supporting ecosystem services that contributed to social and economic wellbeing. The Ecomuseum formed a bridging organisation that co-ordinated the fragmented efforts to manage the wetlands and facilitated more collaborative management of this area with high environmental, social and economic value.

The concept highlighted the recreational value of the wetlands but also their value in terms of providing a natural cleaning system to remove the nutrients from the river water that flows into the Baltic Sea so the water was healthier and didn't require expensive treatment. It installed living museums in the area, where information and knowledge was located at site museums in different parts of the wetlands so people could learn and experience at the same time. This has provided tourism opportunities, which alongside the return of farming, has brought employment and income to the area and revitalised its identity.

> *'My philosophy has always been that the best way to make a project is to run small individual projects in parallel to provide practical examples and then build them into a bigger project and network between the different actors. So we started with bringing back the farmers along the wetlands and then we had the boat tours and the fishing association and then we had people from different companies and conservation groups. We call it a biosphere area rather than a reserve because the term 'reserve' implies restrictions and although we have nature reserves within the area there are buffer zones and unrestricted zones that we recommend the municipality uses in a beneficial way.'*
>
> Sven-Erik Magnusson,
> Co-ordinator Kristianstads Vattenrike Biosphere

Stakeholder engagement: Magnusson identified and approached receptive individuals in key organisations to develop trusting and long-lasting relationships. These included farmer organisations, nature conservation projects, landowners and local associations. Rather than using a one-size-fits-all approach to stakeholders, he approached groups individually to identify their specific needs and interests and match these to the parts of the project proposal they would find of interest. Ideas were gathered from key individuals and incorporated into the Ecomuseum proposal to nurture the ideas. Once the concept of the Ecomuseum was more established, a broader spectrum of stakeholders was approached. In particular, the Ecomuseum had to engage the residents and establish the links of the wetlands to their values and needs.

The area is used by many different groups with different perspectives. The project uses a zoning tool to prioritise and create resources for working together with local residents and financial backers, among others, to avert threats and develop the natural assets of the core areas and buffer zones. At times during the project's development there has been occasional conflict between different groups and Magnusson and his team were instrumental in steering a peaceful route through this. For example, when a golf club wanted to buy sandy grasslands

> *'It takes time. Sometimes a project starts in confrontation and we try to find solutions with concepts. You have to look at the problem and try to see where groups have the same objectives and where they have differences. Sometimes a really good idea or project can grow out of initial confrontation.'*
>
> Sven-Erik Magnusson,
> Co-ordinator Kristianstads Vattenrike Biosphere

to build a course there were concerns this would affect the ecology of the area, but Magnusson pushed for the golf course to be built using sustainability principles. As such the 'multi-functional' golf course provides both recreation and biodiversity protection. Although the golf club was reluctant at first to invest in an environmental course, they are now very proud of it.

An important aspect of the initiative is the involvement of the public in monitoring and research. Kristianstads Vattenrike hosts a number of projects where the public can record their sightings of wildlife, including otters, cranes and white storks. The Biosphere is part of a European network of crane monitoring and uses public input to provide information on this species. Data collected by the public on the arrival of spring (in terms of flowers, insects and birds) is used by the National Research Institute.

The initiative uses social media, such as Facebook, YouTube and Flickr to communicate news from its various projects and activities. This also allows dialogue with stakeholders through these channels. Alongside this, a website hosts a webcam of various points of interest within the wetlands and constantly updated information on temperature and weather.

Institutional support: At the start, the Ecomuseum was formally housed by local government, who provided salaries and office space for a small, core staff. In its new form as Kristianstads Vattenrike Biosphere Office, it continues to be financially supported by the local municipality, alongside national funding and funding from a range of conservation and research organisations. The area's status as a UNESCO Biosphere Reserve has raised its profile among potential supporters.

Initially there was some resistance to adopting the Biosphere model in Sweden but, as it has grown and developed, Kristianstads Vattenrike has demonstrated the value of the model to policymakers. This has facilitated its adoption in other parts of Sweden so there are now a total of five Biosphere Reserves. By providing examples of good planning, such as the multifunctional golf course and other building projects, the initiative has also managed to demonstrate to policymakers how to incorporate sustainability into planning and building projects.

Diffusion and evaluation: As part of the Biosphere network, Kristianstads Vattenrike applies the three interconnected functions of conservation, development and logistic support[19] to guide its work, but applies them to the specific context of the wetlands and other areas in the Biosphere Reserve, as well as the sandy grasslands and the coastal areas of Hanöbukten bay. The vision and values of Kristianstads Vattenrike have been diffused to various projects within the Biosphere. There are numerous social innovative projects, such as biogas for municipal buses, wetlands ecotourism, the multifunctional golf course and the development of products from the wet grasslands. One of the major achievements is the 'Naturum Vattenriket visitor centre' which helps communicate and promote the work of the Kristianstads Vattenrike Biosphere.

The Kristianstads Vattenrike Biosphere is in contact with other Biospheres and organises visits by members of its major stakeholder groups to promote knowledge exchange

Website: www.vattenriket.kristianstad.se/eng/index.php

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19. See http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/main-characteristics/

4.5 Case study 5: the Transition Network, International

A community garden in the Transition Town of Portalegre, Portugal.
(Source: Luis Bello Moraes)

Context and trigger: The double crises of existing climate change and looming peak oil were triggers for the Transition movement in 2005-2006. Although both issues had existed for some time, there was more widespread awareness, alongside recognition that existing systems were not addressing these challenges. The main aim of the movement was to build local resilience to climate change and peak oil in the near future using strategies that reduce energy use, improve green infrastructure and waste management and lessen reliance on long supply chains. As the concept spread in the UK and internationally, the Transition Network was set up to respond to the demand for information, guidance, training and materials from communities engaged in the transition process.

Social entrepreneurship: The Transition concept emerged from the work of permaculture designer Rob Hopkins with his students of Kinsale Further Education College. The idea was adapted and expanded by Hopkins in 2005 with co-founder Naresh Giangrande in Hopkins' hometown of Totnes. Towards the end of 2006, they were running awareness-raising events and creating the core elements of the Transition Model. Other towns started to show interest and the Transition Network was formed to respond to the needs of the Transition Initiatives in their preliminary stages.

At the level of the individual Transition Initiative, these are usually started by a core group of people who are vital to its development and sustainability. The Transition Initiative usually creates a number of projects to address various challenges, such as sustainable food, energy, water, transport or waste management. Different people may run the projects, but the core group remains central to the various activities. Although the members of the core group may change, it is important that there is continuity with its values and commitment.

New perspectives and reframing: By acknowledging the joint pressures of climate change and peak oil, the Transition movement is

'For a Transition Initiative to have a significant impact on a place the core group does really need to stay vibrant. We offer training and resources that are designed to help people establish and maintain an effective core group, for example looking at how to manage conflicts, make decisions and emphasising the importance of collective celebrations. There are all kinds of capacity building resources we are trying to offer to the core group because we know this is important.'

Sarah McAdam, Transition Network Delivery Director

positioned in both an environmental frame and one referring to resource depletion and economic contraction, which is particularly relevant in the current context of the financial crisis. Rather than using fear-inducing language and oppositional campaigning, it uses the language of resilience and positive local solutions. It stresses that individuals who come together in local communities have the capacity to address these large issues and offers support to help them. It takes the approach of asking citizens to think about what they would like their community to look like in the future and work backwards from that. Again, this uses a positive framework that highlights possibility without denying the existence of climate change and peak oil. This new framing holds potential to increase public engagement with sustainability as a result of the increased sense of agency and manageable scale associated with long-term local action.

The Transition Town concept applied permaculture principles to develop a 12-step approach, which can involve making an Energy Descent Plan to move towards the low carbon, resilient way of working. As the number of Transition communities grows, the Network has acknowledged the need for a range of flexible frameworks or models so communities can choose which best suits their way of working. More recently the concept of pattern language has been used to describe the patterns of interaction and thinking around a recurring environmental problem, for example, maintaining momentum or strategic thinking. The Transition Streets programme, which started in Totnes and has been taken up by many initiatives in the UK and beyond, invites people to come together as a group of neighbours, friends or family to go through a practical workbook and support each other to make changes to the way they use energy, water, food, packaging and transport. This is delivering reductions in household bills and carbon footprints, creating community and, often, attracting people to other Transition projects.

As the number of Initiatives increases, the Network is looking to streamline and simplify its information, frameworks and resources to make them more accessible to the wide range of individuals and initiatives that are looking for support.

Stakeholder engagement: The Transition Network invites communities to sign up to become Transition Initiatives. Each Transition Initiative needs its own group of social entrepreneurs.

20. http://www.reconomy.org

They then engage with stakeholders within the community, which can include the public, local businesses, farmers, transport officials etc. The Transition Network organises networking and knowledge-sharing opportunities. It provides supporting materials, such as the Transition Handbook and advice on its website, as well as training on relevant areas, such as awareness raising, building partnerships, working with local businesses, involving the local council and social entrepreneurship.

The Network itself is also involved in various engagement activities with stakeholders. As it grows, it aims to form more connections on a national and international level with policymakers, businesses, NGOs and other networks.

'We're looking at developing a clearer policy on our partnering with other organisations and to what extent we put resources into trying to influence at a policy level. The feedback from the initiatives suggests that they would like to see us doing more of this type of engagement as it gives them more credibility when approaching local authorities and local businesses. They would like to see Transition talked about more within the mainstream and see some evidence of us influencing at a national policy level. One of the challenges for us is that we are now operating globally so we have to think about how much of our resources to dedicate to trying to influence policy within other countries and working with global partners.'

Sarah McAdam, Transition Network Delivery Director

The Transition Network uses Twitter to encourage the dissemination of information about transition in general, activities, resources and events. The Network also produces a regular round up of stories from Transition Initiatives across the world, which are gathered largely via Twitter. There is a Transition Network Facebook page and a separate page focused on its REconomy project[20], which aims to build the capacity of Transition Initiatives, and other community organisations doing similar work, to grow a new kind of local economy. Some of the national hubs and many individual Transition Initiatives also have their own pages. Facebook is used more as an informal means of sharing news and encouraging feedback and discussion.

Form: The Transition Town is referred to as a social movement that is adopted by communities all around the world in different formats, according to context. The Transition Network is a charitable network that connects these communities and provides support and training. The individual Transition Initiatives and the projects they create can become social enterprises or other forms of organisation if they wish.

Institutional support: Seed funding was provided by one organisation to set up the original Network base and individual and institutional donors continue to provide some core support. The Network has bid for and received funding for particular roles within the organisation, for the development of training courses and support materials and for individual projects in areas, such as local economies and education. Many individual Initiatives receive no formal funding, are staffed by volunteers, generate some limited income through their own activities and, in some cases, receive in-kind support from local government and businesses.

> '*Core groups can find small amounts of funding to help them sustain themselves but the drying up of that funding is a problem. If local authorities can provide continuing support to the core group then the projects they develop often have the capacity to be self-financing as social enterprises and deliver significant benefits to the local area. We would like to see local government doing more to support core groups through funding, recognition and in-kind support.*'
>
> Sarah McAdam, Transition Network Delivery Director

The Transition Network has been involved from time to time in helping to shape UK government policy. For example, it was one of a small group of organisations that advised on the development of the community energy strategy of the Department of Energy and Climate Change (DECC). The Transition Network was also consulted prior to the launch of the recent DECC initiative supporting peer-to-peer mentoring for community energy companies and it has influenced the design of some funding programmes. More broadly, the Transition Network and the Transition movement is increasingly visible at an EU level and they are now receiving regular invitations to contribute to discussions around new models of governance and citizen engagement with energy policy, for example.

The Transition Network is not resourced to carry out sustained lobbying work so its interaction with policy tends to be opportunistic and focused on issues where there is a clear possibility that it can enable communities to access funding streams or other support.

A number of Transition Initiatives within and beyond the UK are working in partnership with local authorities on issues, such as community economic development, transfer of assets to community ownership and improvement of public spaces. As such, there are examples of Transition Initiatives prompting changes to local procurement policies and local plans.

Diffusion and evaluation: This is at the very heart of the Transition Network and already the spread of this social innovation is impressive. The principles and framework provide a balance of guidance and flexibility for communities around the world to develop and adapt their own Initiatives. There are now Initiatives in over 35 countries worldwide. The Network aims to bring together learning and

experience from different initiatives, so as to diffuse best practice and continuously develop ideas. Care has been taken to ensure the structure and framework provided by the Transition Network does not undermine its core beliefs of bottom-up, localised and creative Initiatives.

> '*There is no way that we can tailor resources to different countries so the only way is to provide some simple stories and principles about transition and then the hubs that are emerging at a national level can apply these by taking into account the government structure, politics and culture locally. It is really exciting and empowering for initiatives to know they are taking action locally but also connected to a network of people who are doing similar things across the world with the same vision.*'
>
> Sarah McAdam, Transition Network Delivery Director

There has been growing interest from the research community into the growth of the transition movement. The Transition Network encourages research at both the level of the individual initiative and the network but always with the priority of informing the initiatives so they can develop further. It has created a research website[21], which provides guidelines, resources, a research directory and a research marketplace, where researchers and transition communities can partner up for evaluation. In the future, the Network is aiming to establish an overarching framework for evaluation that provides suggestions for possible methods and areas for monitoring and evaluation.

Website: http://www.transitionnetwork.org

4.6 Case study 6: Ambiente Solidale, Italy (Kaye, 2011)

Context and trigger: The Italian city of Naples and surrounding areas have struggled with the proper disposal of rubbish for some time. There were several triggers that contributed to a number of socially innovative responses. For example: the excessive use of landfills, building new incinerators to burn rubbish, and the contamination of soil, farmland and parks. When municipal workers refused to collect garbage due to overflowing landfills in the summer of 2008, a range of social innovations rose up to meet the challenge, including Ambiente Solidale.

Social entrepreneurship: Ambiente Solidale took leadership in addressing the waste disposal challenge. Along with other organisations it bypassed the official rubbish collection system of the city and took it into their own hands to distribute recycling bins to homes and businesses throughout the region.

Form: Ambiente Solidale is a local civil society organisation.

New perspectives and reframing: Instead of using conventional systems of waste disposal where rubbish is collected and dumped in

landfills, Ambiente Solidale reframed the problem of waste disposal as a lack of recycling and reuse opportunities. Alongside this, it addressed social issues by employing marginalised citizens, such as members of local Roma communities, to help sort through glass, metal, textiles, and plastics so they can be recycled. It distributed recycling bins to homes and businesses directly, bypassing the municipal collection system.

Stakeholder engagement: Ambiente Solidale aimed to embed recycling into the psyche of young people so it becomes second nature in adulthood. One of its first projects, in 2007, was a collaboration with another organisation to teach elementary schoolchildren how waste materials can be reused or recycled. At the same time, it engaged with parents, who operate businesses in Naples, to start a micro-targeted waste collection system to remove waste that had gathered under shop windows.

It has links with other social innovations working in the area of waste and recycling. For example, it works with CleaNap, which uses social media tools to bring together a range of groups in one place to clean up the city's piazzas. Another group is Friarielli Ribelli (Rebel Broccoli), which unites young and elderly people to revitalise the city through gardening, including recycling food waste into compost.

Diffusion: Ambiente Solidale is now extending its activities to the recycling of textile and electronics waste to divert the unwanted items from incineration or landfill. Again, it is partnering with other organisations to collect unwanted computers and other electronic gadgets.

Website: www.ambientesolidale.it

4.7 Conclusion on case studies

Individual case studies provide valuable and practical information on the development of social innovation for the environment. The variety of the form of social innovations and the scope of the problems they seek to address demonstrates that these initiatives have huge potential. They also demonstrate that there is no fixed pathway of development for these social innovations and they cannot be planned in advance according to a set of detailed stages.

Interestingly, it appears that the drivers for these cases of social innovation and the environment are often multiple, leading to multi-functional solutions. For example, bybi addresses the demise of the honey industry, declining bee populations and employment problems, whilst Kristianstads Vattenrike addresses declining biodiversity in the wetlands, loss of recreational opportunities and a lack of identity for the town. At some level, it does appear that to be successful, social innovation must seek to address several problems so as to not be over-reliant on one function and to be able to engage with a wealth of stakeholders.

The importance of institutional support is evident in all cases, especially at the beginning of the innovative process. It can often take the form of in-kind support, such as providing premises, educational resources or access to potential partners or stakeholders. However, there is often a need for continuing support in order for social innovations to sustain their initial success. The case of the Transition Network is an interesting example as this provides support and resources to its member initiatives, allowing them freedom to develop their own approaches, but the security of belonging to a networked organisation. There could be potential for other social innovations to adopt this model as a means to diffuse their ideas.

As social innovations mature, they often need to be flexible in order to adapt their model so that it continues to be innovative and can remain sustainable, especially in changing economic conditions. Although evident in all cases, this is particularly demonstrated by La Petite Reine, which has adapted its business to temporarily focus on home delivery in the current economic climate. Similarly, in order to remain financially sustainable, the Sutton Community Farm has lowered its overheads by replacing its vegetable delivery scheme with a network of drop-off points where customers can collect their produce.

The use of social media to engage stakeholders was demonstrated in several of the case studies. It also has the potential to help attract potential funders, especially if the social innovation has members and followers on social media, which the funder could potentially access. The use of citizen science to potentially engage the public in the socially innovative initiatives is also interesting and exemplified best by Kristianstads Vattenrike. The monitoring of wildlife in the Swedish wetlands does lend itself particularly well to citizen science and this model might be more appropriate for some projects than others. However, the potential to fully engage citizens with all aspects of social innovation and its research could be considered in more initiatives.

Currently there is an absence of sustained and systematic analysis of cases to draw out patterns and lessons that could be holding back the practice of social innovation. A lack of data makes it harder to see the main gaps in current provision of funding, advice, and support, which is likely to result in fewer potential innovations being initiated. More knowledge about common patterns is almost certain to make it easier for innovators themselves to be effective and for ideas to be improved into a sustainable form. Developments in open source databases, especially in networks and umbrella organisations, could help bring individual case studies together for more in-depth analysis.

5. Evaluation of social innovation and the environment

Assessment or evaluation has a vital role to play in encouraging and strengthening socially innovative solutions to environmental challenges. Better knowledge can support the development of existing social innovations through action research (Reeves, Lemon and Cook, 2013) and inform future innovations. Evaluations can also inform policy support and investment decisions in this area to ensure the most effective results (Schmitz *et al.*, 2013). The potential contribution of research to social innovation has been described as a 'virtuous circle', whereby the learning from effective evaluation can lead to better innovation, which then encompasses further evaluation and learning (Reeder *et al.*, 2012).

5.1 Issues and opportunities to achieve good evaluation

What makes social innovations so valuable in terms of their adaptability, creativity and inclusivity can also make them challenging to evaluate. It can be difficult to define what constitutes a social innovation (Caulier-Grice *et al.*, 2012) and to assess whether it has fulfilled its goals when they are often broad and changeable. This is especially the case for social innovations in the environmental arena where the problems and needs they seek to address are changing and require an evolving innovation. In their report on Strengthening Social Innovation in Europe, Reeder *et al.* (2012) identify a number of issues that need to be considered to achieve effective evaluation (see Box 7).

Although social innovation is unquestionably difficult to evaluate, it also provides opportunities to develop more creative approaches to evaluation and assessment. Seyfang & Smith (2007) suggest a 'twin track approach' where research contributes to the creation of diverse innovations that promote a variety of sustainable practices, but also provokes learning by identifying patterns and using harmonised (but not standardised) indicators so social innovation can become embedded into the mainstream.

Smith & Seyfang (2013) identify three main forms of knowledge or data that can be used to assess social innovation:

- Instrumental or technical research which addresses practical issues of how 'to do' sustainability.

- Ethnographic research, which uncovers how the innovation interacts with people's lives and what it means to people. This is perhaps one of most interesting forms of knowledge in that it can provide data to guide policies at a range of levels.

- Critical knowledge, which looks at challenges and limitations of current political and social contexts.

They suggest that evaluations and research into social innovation needs to recognise and tap into this so-called 'plural knowledge' in order to provide useful and effective assessments.

Reeder *et al.* (2012) suggest that a change in the culture of evaluations is needed that incorporates more user feedback on the evaluative tools and uses open data on core outcomes of social innovations. This would not deny the value of existing evaluative techniques, but apply them

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Box 7

Issues in assessing social innovation (Reeder *et al.*, 2012)

- Social innovation involves several complex relationships with different aspects of the community, making it difficult to attribute impacts to specific activities or group qualities. This is exemplified in the case studies and requires qualitative assessments to provide insight on this complex picture.

- Particularly in the early stages, social innovations tend to change as they react to the context. Evaluation must consider this flexibility so as not to misjudge the progress of the social innovation.

- The concept of social innovation is still not in widespread use and many social innovations take place without being labelled as such. This can cause difficulty when referring to the term in surveys or interviews with participants in the evaluation.

- Social innovation does not fall into a specific sector and so there is no agreed statistical approach on its evaluation or the indicators needed for evaluation.

- There is a diverse range of possible measures, frameworks and tools that could be used to evaluate social innovation. Unlike in the private sector, where the generally accepted measure is profit, there is no general agreement on which is the best approach to take. It is recognised that there will not be one single indicator to measure social innovation, but there is a need to strive for more co-ordination and dialogue.

in a more appropriate way and build on them with new tools. For example, work to examine initiatives to address social problems has used randomised control trials to compare outcomes of people who received the programme, to the outcomes of those who did not[22]. Along similar lines, it may be possible to compare outcomes for those who are part of social innovations (i.e. a research group) and outcomes for those who are not (a control group). However, it may be difficult to randomly allocate participants to the research group and the control group as, by its very nature, social innovation is an organic development and not 'imposed'. In addition, those involved in social innovations tend to be different to other groups in terms of their passion and motivation to instigate change.

5.2 Levels of evaluation

In the TEPSIE project's Blueprint for Social Innovation (see Section 5.11 for more information) Schmitz *et al*. (2013) describe two very general levels of evaluation and metrics. The micro level considers social or environmental impacts at the organisational or community level, whilst the macro level is the more complex, aggregated impact at the national level. In the following section a range of different and overlapping approaches to the research of social innovation will be described with examples of their application at the micro level. Section 5.10 and 5.13 outline two recently proposed guidelines for evaluation at the macro level from Social Innovation Europe and the TEPSIE project respectively.

5.3 Quantitative vs. qualitative research

Attempts have been made to quantitatively measure the impacts of social innovations on the environment to provide figures or statistics to represent their effects. This has often been done in terms of CO_2 savings. For example, an evaluation of the Ashton Hayes Going Carbon Neutral initiative (a community-led initiative that aims to make the village of Ashton Hayes the first carbon neutral community in England) indicated that a 20% cut in household carbon emissions had been achieved after the first year (Alexander, Hope and Degg, 2007). Similarly, a recent life-cycle analysis of Sutton Community Farm in the UK (see Section 4.3) by Kulak, Graves and Chatterton (2013) indicated that urban food supply systems from the farm had reduced greenhouse gas (GHG) emissions in Sutton by up to 34 tonnes of CO_2 equivalent per hectare per year, compared to conventional farming and food supply.

Reeves, Lemon and Cook, (2013) suggest that, in general, it is difficult for social innovations to quantify their impact on the environment and instead evaluations can measure changes in attitudes to environmental issues and the perceived impact of socially innovative projects. Seyfang and Smith (2007) propose that short survey research can help map the extent, characteristics, impacts and outcomes of social innovations, which can help inform the initiation of new innovations. Surveys can quantify their results when respondents provide yes/no answers or enumerate their response on a scale, for example when they are asked to respond how much they agree with a statement.

However, Seyfang and Smith (2007) suggest that to truly understand the necessary conditions for incubation and diffusion of innovative processes, an in-depth qualitative analysis is required to examine the role of social networks, commercialisation, scaling up, reproduction, and policy. This can use methods, such as in-depth interviews, observation and focus groups to assess the dynamics, attitudes and behaviour of groups involved in social innovation. It does not provide figures or numbers but analyses themes in the participants' behaviour, attitudes and experiences. Seyfang and Smith (2007) also recommend a policy analysis of institutions that support social innovations to better understand of how to incorporate innovation policy.

Several researchers have applied qualitative methods to evaluate and investigate social innovations in the environmental sector.

Seyfang and Haxeltine (2012) considered documentary, survey and experiential data in their evaluation of the development of Transition Towns in the UK, whilst Shawki (2013) analysed interviews with those active in the Transition movement, to investigate its diffusion to the US. Interviews are generally a popular way to collect data on social innovations; Vickers and Lyons' (2012) assessment of growth strategies of UK environmental social enterprises (see Box 8) conducted in-depth interviews with leaders or managing directors.

Box 8

Identifying the growth strategies of environmentally-motivated social enterprises (Vickers and Lyons, 2012)

Vickers and Lyons (2012) used interviews and documentary evidence to assess the growth strategies of eight environmental social enterprises in the UK by considering the factors that contributed to their environmental, social and economic value. It identified three distinct approaches to growth:

- 'Small but beautiful' ventures focus on the needs and impacts on the specific communities within which they are embedded and tend to use bottom-up modes of development. Although they may have the potential to grow, they choose to remain small to avoid the demands and compromises of growth. Examples included local organic small-holdings and bicycle maintenance initiatives.

- 'Green Knowledge Economy' ventures seek a wider impact by dispersing their knowledge and advice. They want to challenge mainstream approaches by spreading their ideas and expertise and often have links with universities to influence the practices of public and private sector organisations. An example is an environmental graduate placement agency working in partnership with universities and colleges, and with a sustainability focus.

- 'Green Collar Army' initiatives prioritise employment and/or training. An example is an initiative that provides training in recycling and reuse options to those who are excluded from the labour market.

The evaluation stresses that activities of social innovations will often span more than one of the above categories of growth strategy and that the state and its agencies play a major role in providing the conditions for growth (see Section 6).

5.4 'Case-study approach' to evaluation using combination of techniques

Some studies apply a 'case-study approach' to analyse the whole innovation process using a range of techniques. Chiffoleau (2005) used a longitudinal case-study method to evaluate a small wine co-operative, which had introduced environmentally-friendly techniques to produce grapes (such as using less pesticides and more efficient farming techniques). Using a combination of interviews with producers and observations of the co-operative's activities, the research identified the social practices and learning processes of the co-operative (see Box 9).

Box 9

Assessing important social practices within sustainable wine-making co-operatives (Chiffoleau, 2005)

Using a case study approach to evaluation, Chiffoleau (2005) identified two central forms of social practices that contributed to the success of a social innovation: a sustainable wine-making co-operative. The first form is daily dialogue between the farmers in the co-operative, where there is a general exchange of experience, such as from trial and error experimentation and observation of pest attacks. The second practice is seeking advice on specific problems from 'experts' external to the co-operative. In some ways, this supports the results of the evaluations of transition towns, whereby success requires an approach that is both grounded within local expertise, but can also bring in knowledge and 'advice' from more distant and possibly international sources.

Reeves, Lemon and Cook (2013) used a case study approach to assess the regional 'Community Cutting Carbon' project in the UK, which aimed to address climate change through several grassroots groups that were supported by local government. Taking the six 'local green groups' as cases, they applied a survey and an action research methodology that incorporated reflection and feedback from those involved in the groups into its development. This helped identify the groups' interests and their needs to aid progress. Nevertheless there were mixed results on their achievements, highlighting the importance of a consistent and motivated core group in effective action (see Section 6.7 for more detail on the findings).

As part of an ongoing evaluation (until 2014) of a nationally funded Local Food Programme that distributes grants to food-related projects, Kirwan *et al.* (2013) took a case study approach to gain insight into 29 funded projects (see Box 10). Using desk research and interviews they evaluated the impact of local food networks in terms of five dimensions of social innovation. The dimensions were adapted from the work of Moulaert *et al.* (2005) and Adams & Hess (2008).

Box 10

Grassroots social innovations and food localisation: an investigation of the Local Food programme in England (Kirwan *et al.*, 2013)

The Big Lottery Local Food programme in the UK distributes grants to a variety of food-related projects to make locally grown food more accessible and affordable to local projects. As part of the programme's evaluation, Kirwan *et al.* (2013) considered 29 projects and conducted 150 interviews with those involved and benefiting from the projects. They evaluated the impacts in terms of five dimensions of social innovation:

• Satisfaction of human needs, in terms of cultivating land, employment (voluntary and paid) and organising events.

• Changes to social relations by increasing and improving social interaction between members of the community.

• Socio-political capability by encouraging people to grow food for themselves, alongside increasing the inclusion and empowerment of marginalised groups.

• Asset-building at a community and individual level. This includes building organisational capacity and encouraging greater cooperation across organisations, as well as increasing individual skills and education around food.

• Community acting as an agent of change and promoting more widespread shifts in sustainable living.

The research found positive impacts at the level of the individual project in areas such as healthy eating, social inclusion and community development. However, there was minimal impact on mainstream processes outside the project in terms of producing a wider shift in eating and consumption patterns.

The researchers suggest that in order for Local Food Networks to have more impact at a mainstream level the actions of individual projects need to be better co-ordinated and aggregated and their benefits need to be communicated to policymakers.

Box 11

Middelgrunden/Hvidovre Wind Turbine Co-operative

Middelgrunden was the first offshore wind co-operative established in Denmark in May 1997 by a group of wind turbine enthusiasts. Twenty turbines were established as part of a collaboration between the Middelgrunden Wind Turbine Co-operative and Copenhagen Energy, with each installing 10 turbines.

Local citizens can buy shares in the Co-operative and approximately 8,600 citizens have invested.

Middelgrunden has taken the form of an 'open' Renewable Energy player, i.e. it informs everybody of the day-to-day operation, maintenance and costs. Due to this open-minded attitude, members of the board have made presentations all over the world about the organisational structure, i.e. involvement of citizens, and experiences in running an offshore wind park. During the past decade several top politicians, NGOs, individuals have visited the co-operative to listen to the story about the Co-operative.

Middelgrunden has also been influencing the establishment of three offshore wind cooperatives and has been the co-founder of one of these in the southern area of Copenhagen. Approximately 2,300 citizens have bought shares in that project.

www.middelgrunden.dk

5.5 Action research and importance of feedback

One of the main aims of evaluating and researching social innovation is to inform and improve the processes of innovation, either in an action research format or by providing general recommendations or toolboxes based on research findings for other socially innovative initiatives. For example, the EU funded project REScoop 20-20-20[23] aims to use research to promote the Renewable Energy Sources co-operative (REScoop) model. A REScoop is a group of citizens that cooperate in the field of renewable energy, developing new production, selling renewable energy or providing services to new initiatives. A good and long-standing example is the Middlegrunden Wind Turbine Cooperative (see Box 11). By gathering information and experiences on existing cases, the project aims to share practical knowledge about setting up and running REScoops using a number of methods:

- Establishing an inventory of existing cases of REScoops, including information on their renewable energy projects, the people behind them and an analysis of their added value in fostering renewable energy in Europe.

- Collecting best practices on how to create new citizen-initiated REScoops, in terms of co-operative organisation, financial organisation, relations with stakeholders, grid connection and sale of energy.

- Supporting emerging REScoops with a toolbox that integrates the learning of more than 400 existing RES-co-operative approaches and the involvement of at least 25 volunteer mentors, trained in best practice.

- Providing recommendations to EU and national governments on fiscal, legal and authorisation policies to increase the success rate of RES-projects.

This research project has the additional value of providing data and analysis at the EU-level, potentially allowing comparison and knowledge-sharing between different countries and regions as well as sharing EU-level recommendations.

5.6 Comparative research

Although studying innovations instigated by local and national government rather than citizens, van den Bergh *et al.*'s (2007) research on sustainable transport innovations provides an interesting insight to evaluation techniques by comparing successful and non-successful innovations (see Box 12). Using literature reviews on the projects, interviews and workshops, they identified a series of factors that were instrumental in the success of the innovations.

Box 12

Social learning by doing in sustainable transport innovation: ex-post analysis of common factors behind successes and failures (van den Bergh *et al.*, 2007)

van den Bergh *et al.* (2007) conducted a retrospective analysis of eight ambitious cases of innovation in sustainable transport in the Netherlands, comparing successful examples that have endured to examples that had failed. Most involved cooperation of multiple agents or stakeholders. Typical 'successes' were projects that involved public transport travel information, traintaxis and catalytic converters. Typical 'failures' were electronic road pricing and an alternating carpool lane.

The research indicated that it was mainly the political, process-related, socio-cultural and psychological factors that determined the success of a project. Examples of socio-cultural and psychological factors are involvement and affinity with project on the part of stakeholders, perceived risks and interests, and degree of required behaviour change. Technical/content-related and economic factors appeared to be much less important, such as availability of the innovation and required knowledge and expertise.

Further afield, Maruyama, Nishikido and Iida (2007) used a comparative technique to investigate the rise of community wind power in Japan and acceptance of this social innovation by surveying both those who invested in the innovation and those who showed interest in investing but eventually declined. This provided insight into what boosted the acceptance of the social innovation (see Box 13). In their study of three forms of environmental social innovation, Ornetzeder & Rohracher (2013) call for more research on 'missed opportunities' and discontinued initiatives to explore the necessary conditions and settings for successful social innovation.

Box 13

Evaluation of the role of social innovation in the acceptance of community wind power (Maruyama, Nishikido and Iida, 2007)

After a series of unsuccessful policy initiatives to encourage the uptake of renewable energy, public investment in community wind power in Japan has started to grow since 2001. Maruyama, Nishikido and Iida (2007) describe this development as a social innovation that applies new ideas, such as providing certificates, engraving wind turbine with the investor's name, as well as using the turbine as a venue for local interaction and events with fellow investors.

The research assessed what encouraged investors to take action by surveying those who had invested and those who had shown interest but decided against the investment. This indicated there were three central factors: an environmental movement factor, a commitment or ownership factor, and an economic factor. Interestingly, their analysis showed that the environmental motivation was just as strong for both investors and non-investors and that it was the uncertainty of financial incentive that swung the decision against investment. Maruyama, Nishikido and Iida (2007) highlight that it is the combination of factors that make it appeal to a diversity of values and that successful innovation should generate a variety of benefits over the range of these three identified factors.

5.7 Evaluation using frameworks, plans and targets

Some social innovations are instigated according to general frameworks or principles. For example, the Transition Network (see Section 4.5) invites communities to become Transition Initiatives and follow a framework for development that can include the creation of an Energy Descent Action Plan that outlines the desired future and steps to achieving this. In a similar way, the One Planet Living framework, adopted by the Sutton Community Farm (see Section 4.3) and other organisations, provides a set of guiding principles which can be used to set targets as part of an action plan. These frameworks, plans and targets can be used to monitor the progress of the initiatives, to identify success but also to highlight where more action is needed.

5.8 Future scenarios, backcasting and roadmaps

Biggs, Westley and Carpenter (2010) suggest scenario planning or the mapping of alternative futures as a means to foster dialogue between stakeholders involved in social innovation (see Section 6.1). This can also involve 'backcasting' whereby the desired vision of a sustainable future is used as a starting point to develop a scenario or scenarios that would achieve this future and an action plan or road map on how to get there. The Transition movement featured in case study 4.5 exemplifies this process in practice in terms of the proposal to create an Energy Descent Action Plan for the community, which backcasts from a vision of a low-energy future.

These techniques are also used more formally in research projects. Scenarios are created from research and surveys of important stakeholders and backcasting can be employed to establish how to reach these scenarios via further surveys and workshops. This technique exposes the discrepancies between current realities and desirable futures. It also helps to understand the barriers and challenges that need to be overcome, recognise where changes are needed the most and identify possible gatekeepers, such as EU regulators, local governments and social innovators that can facilitate this change.

The SPREAD Sustainable Lifestyles 2050 project applied these techniques to explore how to improve the quality of life whilst reducing current levels of energy, transport and resource use. It invited stakeholders from business, research, policy and civil society to develop a vision for sustainable lifestyles in 2050. The aim was to provide a roadmap for strategic action by policymakers and deliver ideas for business, society and research to enable sustainable lifestyles. The project defined a sustainable European lifestyle for 2050 as a material footprint of about 8000 kg. A material footprint of a lifestyle is the use of renewable and non-renewable material resources (excluding water and air) plus the erosion caused by agriculture and forestry. It includes household goods, food, mobility and tourism, electricity, heating and housing. An 8000 kg material footprint lifestyle would include virtually zero-emission electricity, reduction of energy for heating and cooling existing buildings, decreased need for mobility and reduced consumption of meat.

The project clarified the main societal challenges and barriers to sustainable living and created scenarios of sustainable lifestyles in 2050 where these challenges had been overcome. This involved a two-day workshop with 60 experts, the use of desk research and a second survey to quantify and qualify the scenarios, and the identification of gatekeepers or triggers for lifestyle change in each of the four scenarios. The four scenarios are described in Box 14.

Using a backcasting methodology from the scenarios in Box 14, the SPREAD Sustainable Lifestyles 2050 project produced a concrete action and research roadmap. The backcasting techniques included workshops on the scenarios, meetings and interviews with experts on key topics, such as health, energy, education, information and communications technology, business and policy. In the research on the scenarios, social innovation was identified as one of the major gatekeepers for shifts to sustainable living and the policy recommendations for this are outlined in Section 6 with a timeline for these suggestions.

Box 14
SPREAD Sustainable Lifestyles 2050 scenarios

i. SINGULAR SUPER CHAMPIONS

In this scenario Europe has made the leap to a new type of sustainable, competitive and equitable economy through radical market reforms. Sustainability has become the business opportunity of the century. This is a society that celebrates an ethos of learning, achieving and self-mastery.

ii. GOVERNING THE COMMONS

A new digital reality in this scenario helps people to break free from many cultural constraints to reach sustainability. Ubiquitous computing enables the smart use of resources and redirects people's behaviour from material consumption to abandon many institutions of the 20th century, liberate themselves to more meaningful lives driven by new collaborations.

iii. LOCAL LOOPS

Society has re-evaluated its ideas of well-being in this scenario and resource systems are organized through 'local loops'. People build their lifestyles around their work, while technology is focused on local design solutions. A new ethos of craftsmanship and professional communities shape the way people live, organize their work and spend their leisure time.

iv. EMPATHETIC COMMUNITIES

The failure of the global economy leads to new forms of collaboration, and governance grows at the level of cities and towns making them the most powerful level of public decision-making. The many fruits of global advancements are enjoyed, although people in general focus on communicating and developing solutions on the local level.

5.9 Areas of evaluation

Metrics and evaluations of social innovations are valuable for several reasons and Reeder *et al.* (2012) identify four main areas: supporting policy development, supporting investment decisions, assisting the progress of innovations and supporting knowledge and learning. These will be explored in more depth in the following sections.

5.10 Evaluation and metrics to support policy development

In terms of supporting policy development, Reeder *et al.* (2012) suggest a scoreboard to guide evaluations. This does not stipulate specific indicators but does propose three broad areas where indicators need to be developed to support policy. For one of these ('extent of

social innovation') it proposes three sub-categories (policy awareness and policy take-up, user driven innovation and procurement policy supporting innovation). Evaluating user-driven innovation is important to assess the extent to which citizens are really at the heart of the innovation.

Alongside the extent of social innovation, the scoreboard also proposes assessing the drivers, by which it means the existence and effectiveness of hubs, incubators and intermediaries to diffuse the social innovation and disseminate best practice. The wider context aims to assess the broader impact in terms of social relationships and community identity. The report also provides general descriptions of possible indicators for the three areas, several of which relate to achievement of Europe 2020 targets (see Table 1).

Purpose	Possible existing indicator
Extent of social innovation – policy awareness and policy take-up	Europe 2020 employment target (as per proposed measure put to the European Parliament and Council)
	Europe 2020 innovation target
	Europe 2020 climate change target
	Europe 2020 education target
	Europe 2020 social exclusion target
Extent of social innovation – user driven innovation	Importance of citizens as clients or users for the development of innovations in the public sector
	Introduction of customer-driven innovations in social enterprises
Extent of social innovation – procurement policy supporting innovation	Procurement of potentially innovative solutions
Drivers of social innovation – hubs and incubators	Extent of specialist hubs and incubators to encourage entrepreneurship and disseminate good practice
Wider context – higher quality relationships and networks to meet social needs	Ability to ask a relative, friend or neighbour for help
	Participation in informal voluntary activity

Table 1. Prototype scoreboard for social innovation (core indicators) from Reeder *et al.* (2012)

In addition, Reeder *et al.* (2012) suggest the use of a rapid assessment tool for major regions and cities. This scores cities and regions on their awareness of social innovation, their strategy and metrics, their capacity for social innovation and their financing. As part of the assessment, it also requires examples of these different descriptors.

5.11 Evaluation and metrics to support investment and assist progress of social innovations

Metrics to support investment decisions have different requirements from those to support policy. Data to inform investment into the development of social innovation requires the assessment of outcomes and changes in outcomes by the use of indicators.

There are several parties that have an interest in shaping and driving the evaluation of social innovations (see Figure 2) and in order to persuade them to adopt a single methodology or single set of metrics, a bottom-up approach based on feedback is required. As mentioned, there is a need for more harmonisation of indicators to measure outcomes, whilst avoiding over-standardisation. By defining success too narrowly with a confined set of indicators, the presence of more subtle and elusive benefits may be missed. Climate change indicators have been flagged as requiring development, but there is a need to supplement these alongside a range of social and financial indicators. Reeder *et al.* (2012) suggest drawing on the 'wisdom of crowds' by encouraging those involved in social innovation to provide feedback on evaluative tools so that the most useful can be identified. They also propose the development of databases to provide open access data on the outcomes and baseline measures of various social innovations.

5.12 Metrics and evaluations to promote learning and knowledge

In order to ensure learning, there needs to be feedback on the effectiveness of evaluations in terms of their provision of useful information to those involved in the social innovation itself. Adequate infrastructure is needed to make this knowledge available for other social innovations, for example, through open source databases (see Section 5.1) but also
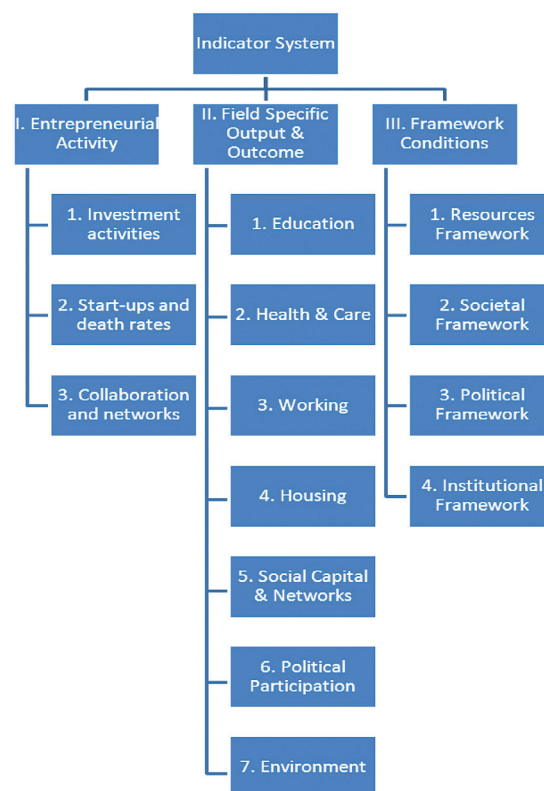

Figure 3. Blueprint for data gathering and analysis of social innovation
Source: Schmitz *et al.*, 2013.

good peer networks to disseminate the information. Reeves, Lemon and Cook, (2013) recommend the formation of coalitions and federations of social innovations and the use of intermediaries to improve dissemination of findings (see Section 6.5).

5.13 Blueprint for Social Innovation Metrics (TEPSIE project)

Building on their framework model of social innovation (see Section 2.6) Schmitz *et al.* (2013) identified various categories of potential indicators or metrics to evaluate social innovation at a macro or regional/national level. On the basis of this they devised a Blueprint for Social Innovation Metrics. This is more general than the scoreboard proposed by Reeder *et al.* (2012) described in Section 5.10, which is for policy purposes. However, in a similar way to that scoreboard, Schmitz *et al.*'s (2013) blueprint does not propose specific indicators. In order to respect the multi-faceted and complex nature of social innovation, the scoreboard analyses the different aspects separately and does not attempt to aggregate them into a single index (see Figure 3). In the case of the field specific output and outcomes these could focus on the environment but also include other co-benefits in terms of education and health domains, which are generally inherent in social innovation.

The Blueprint would use two different types of data. Firstly: established metrics that are directly connected to innovation measurement and dedicated to topics. Examples include Innovation Union Scoreboard[24], Global Innovation Index (INSEAD)[25] and Innovation in Public

Figure 2. Groups with a stake in shaping and driving forward the assessment of social innovation.
Source: Reeder *et al.*, 2012.

24. http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf
25. http://www.globalinnovationindex.org/content.aspx?page=GII-Home

Sector Organisations (NESTA)[26]. Alongside this, the Blueprint would collect measures on the social, normative or environmental dimensions. These include OECD Better Life Index[27], European System of Social Indicators (GESIS)[28] and Civil Society Index (CIVICUS)[29]. The Blueprint also takes into account the need for these more conventional data sources to be complemented by new data sources that have not been applied before. It suggests one possible tool could be a 'Google trends' search that reflects the interest of internet users in certain topics. This would of course be a proxy but could give an understanding of awareness or concern about current needs and issues amongst citizens.

Like previous examples, this scoreboard is only a guide. Some of the proposed categories of indicators may not be appropriate to evaluate all innovations and some indicators may overlap or repeat data gathering. For example, assessing 'Social Capital and Networks' may be very similar to assessing 'Collaboration and Networks'. As such, the scoreboard must be tailored to the type of social innovation and the purpose of the evaluation, for example whether it is to inform policy development, investment or knowledge gathering as identified by Reeder *et al.* (2012).

5.14 Evaluating social innovation for the environment

Suggestions outlined in this chapter provide some good guidelines for evaluating social innovations, but there is a need for work in specific fields. In the case of social innovation that benefits the environment, methods from natural and social sciences may need to be combined to assess the joint effects on the environment and society. Impacts on biodiversity, air and water quality and climate change should be measured alongside impacts on health, quality of life and community cohesion. Examples of possible environmental and social indicators (and indicators that combine the two) are listed in Box 15. The Ecolizer and SIS toolkit described in Box 15 are tools to integrate sustainability principles into innovation and design and aim to measure the impacts of the innovation in a range of different areas. Although intended to inform the design phase of an innovation, they can also be used for evaluation and providing feedback on development.

5.15 Conclusions on evaluation of social Innovation and the environment

In the future, the principles of social innovation, such as working collaboratively and in a participative manner, should also be applied to the evaluation of social innovation. Good evaluation will require constant feedback from those involved in social innovation and should be flexible enough to capture the subtle nuances of its impact. Although general principles and evaluative tools can be applied, such as Reeder *et al.*'s (2012) scorecard and rapid assessment tool, there is a need for more detailed work in specific fields, such as the environment, to firm up recommendations and assessment methods. Although it is challenging, the evaluation of environmental social innovations is an exciting prospect for researchers, providing them with the opportunity to develop new methods, approaches and indicators. Projects, such as TEPSIE (see Box 16), are strengthening the knowledge base on social innovation indicators, encouraging more consistency and providing guidelines on evaluation. It must be ensured that their results and outcomes are utilised and applied to their full potential.

Box 15

Examples of environmental, social and combined indicators

Environmental indicators (Goris, 2012)

- Water footprint (impact in terms of water use expressed in kilograms of water)
- Carbon footprint (impact in terms of climate change expressed in kilograms of CO_2 equivalent)
- Avoided fossil fuel consumption (expressed in megajoules)
- Ecological footprint (impact in terms of amount of land needed to provide resources and deal with the waste of an activity, project or region expressed in hectares)
- Life-cycle analysis comparison

Social indicators (Reeder *et al.*, 2012)

- Subjective measures of wellbeing, such as happiness, physical pain and self-esteem
- Objective measures of outcome, such as life expectancy and literacy rate
- Estimates of monetary value of outcomes

Combined indicators (Goris, 2012)

- Ecolizer 2.0 aims to provide a measurement of the combined impacts on ecosystems, human health and raw materials
- Sustainable Innovation System (SIS) toolkit aims to provide a measurement of the combined impact in terms of human capital (users' quality of life), intellectual capital (knowledge), financial capital, social capital (relationships and networks) and natural capital

Box 16

TEPSIE (The Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe) Project – Growing Social Innovation

The TEPSIE research programme is aimed at developing tools, methods and policies to help inform the EU strategy for social innovation. It involves six European institutions and its purpose is to strengthen the foundations for researchers, policymakers and practitioners so that they can analyse and plan with greater confidence. The work involves mapping the field of social innovation, reviewing theories, models, methods and identifying gaps in existing practices and policies, as well as pointing towards the priorities for future strategies. This will help identify what works in terms of measuring and scaling innovation, engaging citizens and using online networks to maximum effect. It is funded through the Seventh Framework Programme for Research and Technological Development of the European Commission, under the topic 'New innovation processes including Social Innovation' and runs from 1st January 2012 to 1st January 2015.

Website: www.tepsie.eu

26. http://www.nesta.org.uk/publications/innovation-public-sector-organisations
27. http://www.oecdbetterlifeindex.org

28. http://www.gesis.org/en/services/data-analysis/social-indicators/portal-euro-pean-social-indicators/
29. https://civicus.org/csi/

6. Role of policy in social innovation and the environment

There is increasing acknowledgement of the role of policy in supporting social innovation. The number and wealth of social innovations is growing, but the concept is still in its infancy and initiatives must be nurtured to have a wider impact (Pulford & Addarii, 2010).

Due to the uncertain nature and risk involved in social innovation, sufficient investment does not often occur of its own accord. Policymakers can help create the enabling conditions needed for social innovation to evolve through legal and regulatory frameworks, economic assistance, commissioning research and stimulating markets (Davies *et al.*, 2012). More specifically, this can involve training individual entrepreneurs, providing funding at all stages of the innovation process and showcasing social innovations through awards, such as the Naples 2.0 International Social Innovation Competition[30].

Legislation can also provide a constructive context for social innovations to thrive. For example, policy on congestion zones or limiting traffic in inner-city areas may be influential in helping social innovations that involve pro-environmental transport (see case study Section 4.2). However, to be effective, legislation and policy must be implemented within the right context, culture and conditions, otherwise it can inadvertently stifle social innovation, despite aiming to be supportive. For example, Biggs, Westley and Carpenter (2010) described a situation in South Africa where the government mandated the establishment of river Catchment Management Agencies to make decisions about local water allocation and manage local river systems. However, the organisational culture of the government did not facilitate the establishment of these agencies and actually led to the disbanding of pre-existing social innovative groups. This highlights the importance of ensuring the appropriate infrastructure or organisational context is in place to allow policy to have the required effect.

In its research into the achievement of sustainable living by 2050, the SPREAD project highlighted the important role of social innovation and the supportive function of policy. From the use of scenarios and backcasting it outlined a number of policy implications and recommendations on facilitating social innovation in this area (see Box 17). More generally the report suggested the need for an open transparent governance system with local participation to create ownership of decisions and ensure implementation.

Box 17

Policy implications and recommendations on supporting social innovation to achieve sustainable living from the SPREAD project (SPREAD, 2012)

- Using effective policy instruments, which could include regulation, economic incentives and public participation.

- Acknowledging that one size will not fit all. Instead, allowing for combinations or hybrid models and accepting provisions for dynamic structures that allow for change in order to fit the diversity of contexts across Europe.

- Up-scaling promising practices like Transition Towns, cycling cities, local currency systems, car sharing, and neighbourhood gardening. Providing institutional support to those initiatives, as well as to social entrepreneurs.

- Facilitating breakthrough and creative thinking by establishing free thinking 'designLabs' which are physical and intellectual spaces that encourage and facilitate cooperation and the co-creation of meaningful and innovative solutions to complex problems.

- Providing opportunities for societal actors, businesses and policymakers to leave their own 'comfort zone' and experiment and test new solutions in collaborative open-sourced platforms.

- Creating partnerships with other sectors, such as the health sector, to change environments into those facilitating more active and healthy lifestyles.

Box 18

Social innovation and behaviour change timeline from the SPREAD project (SPREAD, 2012)

2012–2015: Promising and proactive shifts to more sustainable lifestyles through social innovation and citizen movements result in policy reforms at the local levels of communities and cities that promote more participatory approaches to policymaking and budget decisions.

2015–2020: Smart information communications and technology (ICT) advancements.

2015–2020: Regulatory frameworks now in place in all EU countries incentivise sustainable living and sufficiency in production and consumption – 8000kg sustainable lifestyle footprint targets enforced.

2020–2025: Transparency and continuous improvements in sustainable living through improved policy assessment tools and (external) audits – launch of personal resource use quota cards.

2025–2050: National and EU policies demonstrate the effectiveness of sustainable lifestyle footprint, equity and well-being targets globally - boosting the worldwide competitiveness and leading role of the eurozone.

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30. www.euclidnetwork.eu/files/Naples_booklet_web_version.pdf

On the basis of the findings from the SPREAD project and to provide a suggested temporal structure for policy recommendations, the researchers also produced a timeline for social innovation and behaviour change (see Box 18).

6.1 Strategies to support social innovation for the environment

Biggs, Westley and Carpenter (2010) identified five factors that are influential in the development of social innovations (see Section 2.3) with the aim of informing policy on how best to support social innovations in the area of ecosystem management. On the basis of these, they suggested four strategies to enable social innovation to foster collaborative and integrative ecosystem management. Policy can play a role in all these strategies but perhaps it is most instrumental in the final one.

i. **Foster environmental awareness and attachment to local ecosystems.** At a local level, one of the best means to achieve awareness and attachment is through informal experiential activities, such as field trips and social activities. At a national level, policy can increase awareness through campaigns, programmes, educational initiatives, leading by example and procurement.

ii. **Build capacity for social entrepreneurship.** This could be achieved through programmes to develop leadership and entrepreneurial capacity, specifically for problem solving around environmental issues. These programmes could be targeted at established social entrepreneurs with existing networks and links. Financial and institutional support could be provided to hubs and incubators (see Box 19), which bring social innovations together in the same physical and mental space to promote co-working and co-ordination of activities.

iii. **Foster dialogue between key stakeholders.** This is essential for effective social innovation. In addition to supporting and promoting hubs and incubators, Biggs, Westley and Carpenter (2010) suggest the use of two tools to facilitate this process:

a) *Social network analysis* (Scott, 1991; Freeman, 2006) maps and measures the individuals and groups within a network and the relationships between them.

b) *Scenario planning* (van der Heijden, 1996; Peterson, Cumming and Carpenter, 2003; Scearce *et al.*, 2004) is a useful tool to manage dialogue. This requires the consideration of several alternative futures for a region, stimulating the generation of a diverse set of management options. Scenario planning has the additional benefit of moving the focus from potential current conflicts to a collective desired future.

iv. **Provide institutional support.** Once groups are formed, their sustainability can be hindered by institutional and financial constraints. Local government can provide a durable base for the social innovation group and financial support. However, funding often requires evaluation and suitable methods and procedures of evaluation need to be developed (see Section 5). There is also a need for acceptance of failure. Not all funded initiatives will succeed and, as in any innovation process, intolerance of failure is likely to stifle innovation. Policy can provide support in terms of incentives to stimulate social innovation and the formation of

groups. For example, in the 1980s, Sweden passed legislation to enable the formation of local fishing associations with access to funding and powers to set fishing quotas. In some areas this has stimulated socially innovative activities to manage ecosystems and improve environmental conditions. Government can also provide support by creating markets for ecosystem services.

> Box 19
> **Social innovation incubators (definition from Social Innovation Europe)**
>
> Social innovation incubators aim to help social innovations develop and grow and include business clusters and networks, social innovation parks, universities, technological institutes, private research institutions and bodies.
>
> Social innovation incubators work in a similar manner to technology incubators, by bringing together the resources, skills, and expertise needed to assist entrepreneurs and innovators seeking to build a social enterprise or to address a societal need. They may also take on entirely new tactics and processes.

6.2 Fostering effective citizen engagement

In their report on engaging citizens in social innovation for the TEPSIE project, Davies & Simon (2013) identified a range of benefits provided by citizen engagement in social innovation. These include providing new perspectives and better understanding on challenges in environmental sector alongside access to a greater range of ideas. It also creates stronger networks for those participating and provides them with greater confidence to take action. Lastly, it provides more suitable and targeted programmes and responses as well as a sense of ownership over the initiatives and decisions. In summary, Davies & Simon (2013) proposed there were three general roles of citizen engagement in social innovation:

- Providing information and resources e.g. crowdsourcing

- Problem solving e.g. co-design

- Taking and influencing decisions e.g. participatory budgeting

Over the last decade there has been a growth in methods and approaches to citizen engagement. From idea banks and competitions to crowdsourcing and co-design, governments, public services and businesses are increasingly keen to gather insight and knowledge from citizens. However there are some risks and limitations associated with citizen engagement. These can include exclusion of some sectors of the community, power asymmetries where processes are captured by local elites or groups, which use the process to further their own interests and negative experiences leading to further disengagement. As such, Davies & Simon (2013) suggest policymakers, funders and practitioners should consider a series of questions (see Box 20) before supporting, funding or developing citizen engagement activities.

Box 20

Questions to ask about citizen engagement activities (Davies & Simon, 2013)

What is the purpose of the engagement activity?

It is important to identify the purpose and function of the engagement activity and alongside this, how to define (and perhaps measure) its success. This includes thinking about key objectives and why engagement is critical to fulfilling these. It can be that too many engagement activities are undertaken without a clear idea of their purpose, leading to lack of co-ordination.

Who do you want to engage?

In order for participation activities to be successful there needs to be a clear sense of the group or groups of citizens involved. Alongside this, there needs to be an understanding of the possible barriers to participation and how to motivate people to engage. In addition, practitioners need to be aware of the characteristics and dynamics of the group of citizens in order to plan for and mitigate the risks of under-representation and co-option.

Can you tolerate uncertainty of outcomes?

In many cases, engagement activities will only be successful if citizens are genuinely able to shape the process and its outcomes. This means that practitioners, funders, policymakers and participants need to be comfortable with a certain level of uncertainty and open to the possibility of unexpected outcomes – both positive and negative.

Who is best placed to deliver this project or approach?

Activities that engage citizens often require considerable skills, expertise and knowledge to be delivered effectively. In most cases it will be important to recruit individuals or find partners with experience working with citizens.

Do you have the resources to make engagement effective?

Bringing citizens into the design or development of an initiative can be time-consuming and require investment. Time is needed to build up necessary relationships to facilitate valuable input from citizens and funding is required over the medium to long term.

Can you manage stakeholders' expectations effectively?

There can be a mismatch between a government description of a project and the reality of what it requires from citizens. Terms like 'empowerment' or 'local control', when citizens are actually only taking part in consultation exercises, can raise expectations. These more shallow forms of engagement, which involve individuals contributing information or opinions, can contribute to the development of social innovation, but they should be described accurately and in a way that participants will understand.

6.3 Policy integration and policy gaps

Pretty and Ward (2001) provide instances of how a lack of policy reform can actually disrupt progress by groups towards sustainability. For example, in the Philippines, tenant farmers' groups made progress towards adopting sustainable practices, but these encouraged landlords to take back the land without paying compensation for improvements. Without regulation to prevent this happening, the socially innovative farmers' groups were unable to flourish. Although these examples are not based in the EU, they give insight into how lack of policy can impede the development of social innovation by not providing the right support or even protection. This is reflected in Seyfang and Smith's (2007) and Seyfang and Haxletine's (2012) use of the concept of strategic niche management, which infers social innovation needs to be managed within a niche protected from competitive and market influences.

6.4 Dialogue between policy and social innovators

In their reports for the European Commission, Social Innovation Europe (Davies *et al.*, 2012; Reeder *et al.*, 2012; O'Sullivan *et al.*, 2013; SIE, 2012) highlight the need for greater and deeper dialogue between policymakers and social innovators. They recommend that the European Commission keeps lines of communication open between grassroots and policy levels in order to successfully deploy social innovations and address major societal and environmental challenges. However, it is also the responsibility of social innovations to organise themselves so they are accessible to policymakers.

Pretty and Ward (2001) developed a typology of stages to inform policy on creating conditions to favour the emergence and sustenance of group-based programmes for environmental improvements (see Section 2.1). Their research indicates that the group should have a sense of collective identity, independence and capacity in order to form alliances and communicate with others. Ensuring this state of independence also ensures the social innovation develops along lines that local people desire.

6.5 Federations, hubs and incubators

Pretty and Ward (2001) suggest the stability of groups can be strengthened by encouraging them to work together and form federations. An example is the European Federation of City Farms[31], which is a central body that represents and provides members with materials, events and conferences. Similarly, the Transition Network connects, supports and trains communities as they develop around the Transition model, and also engages with policymakers (see case study, Section 4.5). The importance of co-ordination of initiatives is highlighted by Kirwan *et al.* (2013) in their research on UK Local Food Networks, which are collaborative, locally-based, self-reliant food economies. They suggest more co-ordination of the projects' activities would improve mainstream impacts and widespread shifts in eating and consumption patterns. Similarly, in their study of grassroots initiatives in wind power, solar collectors and car sharing, Ornetzeder & Rohracher (2013) propose that formal institutionalisation and organisation is a critical step in the development of social innovations. They suggest it strengthens the commitment of participants and provides a more stable basis to consolidate previous activities.

31. www.cityfarms.org

The emergence of federations and networks makes it easier for government and NGOs to develop direct links with social innovations and can result in more empowerment and support. Policy initiatives to encourage federations, whilst ensuring the social innovative groups maintain their individuality and independence, could be useful. An example of this is the REScoop (Renewable Energy Sources COOPerative) 20-20-20 network[32], which is co-funded by the EU's Intelligent Energy - Europe Programme[33] (see Box 21).

One means to do this could be to provide support for the creation of hubs and incubators, bringing together social innovations and nurturing their development and interaction. In its research into achieving sustainable living, the SPREAD project highlights social innovations as an important enabler of sustainable lifestyles and suggests they should be encouraged to share space and resources and communicate their practice to others to facilitate a learning process. The level at which these hubs and incubators work can range from the simple provision of a collective space, to a more pro-active approach that facilitates the dialogue and brainstorming of social innovations to move towards mutual ideas to solve environmental challenges. Hubs and incubators can be focussed on the same geographical area, such as the UNESCO Biospheres in Kristianstads Vattenrike and the Lake Vänern Archipelago, which contain a range of social entrepreneurial projects, such as ecological textiles, renewable energy, responsible tourism and ecological food products (Biggs, Westley and Carpenter 2010 (See case study, Section 4.4); Bergstrand, Björk and Molnar, 2011). Incubators can also be arranged around sectors or subjects, for example, the Social Innovation Park in Bilbao focuses on mobility, sustainable mobility systems and health (see Box 22).

Box 21
Renewable Energy Sources COOPerative (REScoop) 20-20-20

A REScoop is a group of citizens that cooperate in the field of renewable energy, developing new production, selling renewable energy or providing services to new initiatives. REScoop 20-20-20 aims to increase the social acceptance of new renewable energy installations by sharing practical knowledge about setting up and running local, citizen controlled Renewable Energy Sources (RES) cooperatives (or REScoops) across Europe. The overall goal is to speed up the creation of RES projects and related cooperatives in various EU Member States. It will do this by gathering the experience of more than 400 local and regional groups and cooperatives of citizens, joining their forces, and by raising financial and technical support for new projects. This goal will be achieved thanks to a research programme (see Section 5.5) that will produce an inventory of existing REScoops and a toolbox that showcases best practices and learning.

Box 22
Social Innovation Park, Bilbao

The Social Innovation Park in Bilbao, Spain, aims to be the first 'social silicon valley' by providing the infrastructure and the space for charities, NGOs and businesses focussed on social innovation to have the opportunity to work together, learn from each other and develop new joint enterprises. The Park contains a range of projects, from a palliative care company, to a company producing a robotic arm to help people recover mobility and a business producing sustainable buildings made with wood and sound ecological systems. It focuses on large-scale projects, rather than small piecemeal innovations, and has developed various tools to foster dialogue and support:

i. A 'Social Innovation Laboratory' that allows those in the park to work together to generate social innovations that will be incubated in the park with access to training, mentoring and evaluation.

ii. A 'Social Innovation Academy' that provides specific training for upgrading the quality of services.

iii. A 'Social Enterprise Generator' that allows those with employment and social security benefits to work for the park and test entrepreneurial ideas.

Website: http://socialinnovationpark.com

There can also be virtual incubators that bring social innovations together in an online community and instigate the work using networking technology. Along these lines, Social Innovation Europe has created an online community of social innovations, highlighting their work and articulating their impact as well as facilitating exchange and learning. This has been built upon by a sequence of events and the production of a series of reports[34]. I-genius is another example of an online social incubator that helps establish a global community of social entrepreneurs (see Box 23).

The importance of social innovation incubators has been recognised by the European Commission, which has funded two new networks of incubators under the Seventh Framework Programme: BENISI (Building a European Network of Incubators for Social Innovation)[35] and TRANSITION (Transnational Network for Social Innovation Incubation)[36]. Both of these projects aim to identify and highlight 300 promising, high-impact and employment-generating, local social innovations that are yet to be scaled up, either significantly within their originating country or internationally. They will then create the conditions for these solutions to be strengthened locally and transferred to other European localities. BENISI involves six hubs in London, Amsterdam, Bucharest, Vienna, Stockholm and Milan, whilst TRANSITION involves six 'scaling centres' in Finland, France, Ireland, Italy, Spain and the UK.

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32. http://www.rescoop.eu
33. http://ec.europa.eu/energy/intelligent/about/iee-programme/index_en.htm
34. https://webgate.ec.europa.eu/socialinnovationeurope/

35. http://www.benisi.eu
36. http://transitionproject.eu/about-transition

Box 23

i:genius social innovation incubator

i-genius is a global community of social entrepreneurs in over 200 countries. It helps 'incubate' the work of its members using three methods:

i. Promoting social entrepreneurship by interviewing and profiling members and encouraging them to connect with each other.

ii. Providing training and tips through the i-genius Academy, which is a business school for entrepreneurs.

iii. Organising events, conferences, seminars, study tours and competitions.

It aims to be a 'one-stop-shop' for social entrepreneurs, where people can bring ideas and find the support to develop them.

Website: www.i-genius.org

6.6 Role of intermediaries in development and diffusion of social innovation

With the growing recognition of the value of social innovation there is an increasing role for intermediaries to help innovations diffuse and become more robust. This can be done by connecting individual projects with other social innovations, organisations and audiences. The role of intermediaries has become increasingly important for grassroots innovations in community energy in the UK and Hargreaves *et al.* (2013) have studied them in-depth. Intermediaries in this sector include organisations, such as the Centre for Alternative Energy[37] which offers energy and environmental consultancy, the Energy Savings Trust[38] (a social enterprise that offers impartial advice to communities and households on how to reduce carbon emissions) and other independent consultants and professional service providers, such as the charity Carbon Leapfrog[39], which provides legal support to community energy initiatives. Their investigation revealed four key roles of intermediaries:

i. Aggregating lessons from multiple projects and producing general lessons for social innovations in this area. This could include the production of Toolkits, Handbooks and How-to-Guides to provide detail on the processes and challenges involved.

ii. Establishing an institutional infrastructure for the innovation niche as a whole. This could include providing web-based repositories for resources and information, running conferences and networking events.

iii. Framing and co-ordinating action on the ground by building confidence, capacity and resources within the projects.

iv. Brokering and managing partnerships with outside influences, such as industry and policymakers which could potentially include lobbying.

Hargreaves *et al.*'s (2013) evaluation of intermediaries in community energy highlighted several challenges in performing these roles. In general, these tended to be about representing the variety of social innovations in the field of community energy, whilst also trying to draw general lessons and frameworks, and to present a united voice. In performing these rules, intermediaries may risk homogenising the various projects and not accounting for their diversity. As such, intermediaries need to strike a balance between creating a 'voice' for social innovations without diminishing the individuality that makes them so valuable.

6.7 Striking the balance of support without control

Finding the balance between providing support and nurturing independence and collective ownership of social innovation can be difficult. Smith (2011) warns that a community group should not become too involved with local government as politics may take centre stage. The Transition Network encourages initiatives to develop effective working relationships with their local authority, but stresses that the role of local councils is to 'support, not lead' the process. As such, it discourages local government institutions from seeking to set up Transition Initiatives themselves (Reeves, Lemon and Cook, 2013).

Reeves, Lemon and Cook (2013) explored this further by analysing groups started by local government in the UK to establish several new community-led climate change initiatives. They were initiated and subsequently supported by local authorities, where support included attending planning meetings, organising public events, providing start-up funding and creating a webpage for each group. By the end of the two-year project, only three of the six groups that had been established were still active.

The main challenges they had faced were recruiting an active membership and the limited capacity of volunteer members to plan and deliver projects and events. This indicates that for social innovations to be self-sustaining, they require an existing set of core members who strongly identify with sustainability issues and are willing to step into a leadership role. Therefore, local government is unlikely to meet with success if it seeks to establish a new grassroots group from scratch. Instead, it would be more effective to provide a point of contact to assist the development of already existing projects and activities.

There was great variation in the support needs identified for the groups in terms of scale and type. This indicates that the delivery of support must be flexible and should be better targeted to the specific needs of the groups, for example, assistance with funding bids, helping with launch activities, provision of premises and follow-up meetings.

In their research on grassroots innovations in community energy, Hargreaves *et al.* (2013) indicated that policy and governmental departments found the number of intermediary organisations and community initiatives confusing, and wanted one organisation with which to communicate. In response, the Communities and Climate Action Alliance[40] was established to help generate increased impact through more co-ordinated and coherent activity. However, there was debate over whether the Alliance would simply become a means by

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37. http://www.cat.org.uk/index.html
38. http://www.energysavingtrust.org.uk/About-us/About-us
39. http://carbonleapfrog.org
40. http://ccaanet.wordpress.com

which government could more closely control the community energy sector. The research indicates that attempts to simplify and impose strategic objectives on the field of social innovation can be difficult to achieve.

6.8 Conclusions on role of policy in social innovation and the environment

Policy has an important role to play in the development of social innovation within the environmental sector. Without its support, social innovation is unlikely to reach its full potential or successfully overcome barriers, but the inappropriate type of support can stifle or even prevent social innovation. There is thus a need for better understanding of the processes of social innovation and how policy can provide effective and flexible assistance.

Similar to the social innovative processes themselves, policy in this area has no set format and will have to be creative, adaptive and cut across several sectors. Policy should recognise that there can be no 'one size fits all' when it comes to supporting social innovation and there needs to be a degree of tolerance for failure since this in inherent to the innovative process and learning.

Policy can provide support, even before the initiation of social innovations, by helping to create a receptive climate for new ideas in terms of better awareness of environmental issues and more connection to the environment. There is also a role for policy in helping innovations to seed and flourish by supporting individuals and groups alongside hubs and incubators where resources, skills and expertise can be shared. Careful commissioning of research and the development of evaluative techniques to inform policymakers can allow them to apply their support effectively.

Helpful policy support can be achieved through greater dialogue between policy and social innovators. In some cases this could benefit from the formation of federations or networks that help to provide one voice to represent a form of social innovation. In addition, it could involve intermediaries to help broker and nurture the relationships between social innovators and policy, and facilitate processes of scaling-up and diffusion. However, it must also be realised that not all social innovations have the goal of growth and some may wish to remain as community-level solutions to community issues.

Social innovation holds a great deal of potential to address environmental and social issues that have not been resolved by more traditional policy approaches. However, there does need to be some forethought and planning in the roles of social innovation and policy in this potentially beneficial relationship. For example, there needs to be consideration of how to ensure social innovations maintain the independence that makes them so valuable. On the policy side, there must be continuing initiatives to address more systemic problems that are central to our current environmental, social and economic problems in order for social innovation to flourish. With this combination of mutual support and clarity of responsibility then social innovation can help provide novel, adaptable and acceptable solutions to environmental issues.

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