

Designing Interventions for Sustainable Behaviour Change in Business and Communities

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ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

Regulation: *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

Knowledge: *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

Advocacy: *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

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We regulate the following activities so that they do not endanger human health or harm the environment:

- waste facilities (*e.g. landfills, incinerators, waste transfer stations*);
- large scale industrial activities (*e.g. pharmaceutical, cement manufacturing, power plants*);
- intensive agriculture (*e.g. pigs, poultry*);
- the contained use and controlled release of Genetically Modified Organisms (*GMOs*);
- sources of ionising radiation (*e.g. x-ray and radiotherapy equipment, industrial sources*);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

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- Conducting an annual programme of audits and inspections of EPA licensed facilities.
- Overseeing local authorities' environmental protection responsibilities.
- Supervising the supply of drinking water by public water suppliers.
- Working with local authorities and other agencies to tackle environmental crime by co-ordinating a national enforcement network, targeting offenders and overseeing remediation.
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- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

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The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.

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The EPA Research Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in relation to environmental protection. These reports are intended as contributions to the necessary debate on the protection of the environment.

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Executive Summary

Sustainable consumption and production demands individual, organisational and institutional behaviour change. Policymakers and regulators already apply a range of interventions with a view to changing individual and organisational behaviour. This includes fiscal incentives, subsidies, pricing mechanisms and market-based instruments, standards, eco-labels and communication, business support programmes and curriculum development. These interventions have had varying degrees of success and some have been ineffective or, worse, counter-productive.

There is a growing interest among governments in applying innovative practices when developing policies, regulations, non-regulatory interventions and services. These include using design thinking, behavioural insights, foresight and data science. The potential to fully combine insights into human and organisational behaviour with environmental policy ambitions has not yet been realised. While the application of behavioural insights has become increasingly popular, for example “nudge” approaches, these are typically applied to individual decision-making. In the wider discussion on the design of policies and services that enable sustainable behaviour change, “business” and “community” are challenging but important contexts.

Why Focus on Community and Businesses?

Apart from the traditional market failure perspective, one rationale for developing interventions with businesses is that they participate in and impact on the socio-technical conditions that drive long-standing behaviours, habits and social practices among the wider public. This participation can be through the production of products and services but also by shaping the cultural and social context within which people live their daily lives. There are multi-level interactions between production systems and patterns of sustainable consumption among the public.

In addition, there is a growing interest in developing interventions at a community level because of the diffusion effects of social networks and the behavioural effects of social norms. Communities provide the context within which people live their lives

and can influence behaviours and social practices. For pragmatic purposes a community can be understood as a collection or network of individuals that have a degree of identity and cohesion, a common purpose and some degree of participation. It is important to note that communities are complex social systems, take many forms and exist over various levels (local, global) and distances, online and offline, and in various spatial settings (urban and rural).

A key challenge in developing behaviourally informed interventions is that businesses and communities are not typically susceptible to the cognitive biases that underpin the nudge-type interventions. Although biases in business decision-making and social norms in communities do exist, the collective and structural nature of business and community typically means that decisions are taken more slowly. In some cases those decisions are taken co-operatively and strategically. This means that the existing approaches to behaviour change and the transitioning of social practices needs to be augmented with insights into collective and organisational behaviour change.

Research Approach

The research sought to highlight opportunities to redesign existing interventions and support services and the potential application of behavioural insights. In addition to desk research, surveys and semi-structured interviews, the project undertook ethnographic research that combined descriptive fieldwork with theory building. The rationale for this approach was the desire to explore what people think about existing interventions and support services but also to observe what they do in real-world contexts.

Ethnographic research can help us understand social phenomena, such as public services, from the perspective of the people using a service. It can help frame or reframe an organisation’s understanding of how its service is used or not used by the target beneficiaries. In the policy context this provides the opportunity to examine the complexity of the “real world” by better understanding people in the context of their lives or their work.

To fit the purposes of the research, the following ethnographic data collection methods were used: contextual interviews, informal conversational interviews, participant observation, and artefact observation. The data were collected using field notes, reflexivity journals and photographs.

Data transferred from field notes to the digital documents were coded using an open-coding approach. Through this, data were positioned in meaningful portions in a semi-structured fashion in each document. This structure was iteratively

revised, with the researcher developing a more efficient means of eliciting information and developing theories.

The data collected provided insights into the practices within companies and communities, the social world within which people exist and their relationships with other individuals and private, social and public sector organisations. Importantly, the research reflected a variety of circumstances, sectors and regions, and it sought to go beyond the existing understanding of sustainable behaviour.

1 Business Support Services and Behaviour Change

Over the last two decades, the European Union (EU) has implemented a number of policy interventions to enable resource efficiency in industry. There has been some degree of success in that resource productivity increased by 35% between 2000 and 2015 (Eurostat, 2016). Resource efficiency has also been a flagship initiative of the Europe 2020 growth strategy. More recently, the Circular Economy Package has been developed with a view to further increasing resource productivity, reducing waste, reducing reliance on critical raw materials, increasing employment and securing competitiveness.

Through its National Strategy on Resource Efficiency, “Towards a Resource Efficient Ireland”, the Irish Environmental Protection Agency (EPA) intends to “reduce wasteful consumption of material, water and energy resources by changing behaviours in businesses, households and the public sector”.

A key rationale underpinning these policies is that, to ensure continued prosperity and societal wellbeing, there is a need to develop new models of production and consumption that are less dependent on cheap, easily accessible raw materials and energy.

Businesses and social enterprises in Ireland can play an important role in sustainable development through the provision of job opportunities and meeting market and societal needs with innovative and sustainable products and services. They can also actively contribute to sustainable development by investing in resource efficiency, improved environmental performance and eco-innovation, environmental management, social innovation and skills development, lifelong learning and the employability of their staff. Some businesses that have successfully implemented more sustainable practices have reduced costs, built strong brand reputations, attracted investment and driven innovation.

Because of this, increasing numbers of companies have moved towards applying “life cycle thinking” or circular economy approaches with integrated environmental strategies and management systems.

It is clear that these approaches to creating closed-loop, circular production systems have driven resource efficiency and innovation.

While there are many positive examples of companies being more resource efficient, there is little evidence on how widespread these practices are. Some evidence suggests that the practices are not mainstream beyond easy and low-cost options (European Commission, 2011, 2015, 2016).

Barriers to resource efficiency in small and medium-sized enterprises (SMEs) are widely discussed in the literature but the focus is predominantly on endogenous and resource-based factors such as organisational issues and financial resources. To build up a robust understanding, it is useful to present the barriers to resource efficiency from the literature alongside more general barriers to innovation and investment in research and development (R&D) (Baldwin and Gellatly, 2004; Geroski, 1991; González *et al.*, 2005; Tiwari and Buse, 2007). Table 1.1 provides an overview of these.

1.1 Business Behaviour

The barriers to resource efficiency presented in the previous section are important to understand when developing policy interventions and support services. A potential problem with designing interventions that seek to target barriers to resource efficiency is that it leads to an assumption that, if a set of barriers is removed, the organisation will behave “rationally” and invest in resource efficiency. This undervalues the socio-technical drivers of organisational and business behaviour, as well as the potential biases that influence business decision-making.

This is not to suggest that policymakers stop considering “barriers”, but rather than having them as the only focus we need to consider them as functions of the socio-technical “landscape” influencing the behaviour of the business. Policymakers also need to consider the behavioural dimensions that prevent businesses investing in resource efficiency.

Table 1.1. Barriers to resource efficiency

Modality	Barrier	Possible market failure
Strategic	Uncertainty/doubt on benefit of environmental improvements	Public goods
Strategic	A view of environmental activity as peripheral to the core business	Public goods
Strategic	Perceived commercial disadvantage as a result of resource efficiency	Public goods
Strategic	Not a high-value innovation	Public goods
Strategic	Economic short-termism (i.e. quick payback on investments)	Bounded rationality
Strategic	Failure of SME managers to act strategically	Bounded rationality
Strategic	Sunk investments (e.g. technologies, equipment)	Bounded rationality
Operational	Functional barriers (e.g. products)	Incomplete information
Operational	Technical barriers (e.g. products)	Incomplete information
Operational	Substitutability barriers (e.g. materials, chemicals)	Incomplete information
Managerial	Poor access to appropriate knowledge, skills, technology	Information asymmetry
Managerial	Initiative fatigue/overload	Bounded rationality
Managerial	Low perceived value in design investment	Incomplete information
Managerial	Lack of internal expertise	Information asymmetry
Managerial	Lack of internal knowledge	Information asymmetry
Managerial	Lack of managerial and operational resources (including time, cost, skills)	Information asymmetry
Managerial	Lack of senior management commitment	Information asymmetry
Managerial	Lack of awareness, training and motivation of employees	Information asymmetry
Managerial	Fragmented product development processes in SMEs	Information asymmetry
External	Outside scope of responsibility	Information asymmetry
External	Unclear or non-existent regulatory drivers	Incomplete information
External	Unclear market demands for resource efficiency	Incomplete information
External	Insufficient time to implement resource efficiency (supply chain)	Information asymmetry
External	Systematic, interactive and strategic nature of resource efficiency	Information asymmetry
External	Competing policy rationales (e.g. environment and innovation)	Information asymmetry
External	Government information asymmetries (related to interventions)	Information asymmetry
External	Uncertainty and poor appropriability of sustainable innovation	Public goods
External	Misalignment and lack of incentives	Information asymmetry

SME, small and medium-sized enterprise.

In the context of this report, business behaviour refers to how an organisation makes decisions and how these are influenced by factors such as socio-technical systems and organisational culture and structure and also by the cognitive level of decision-makers. Although it is typically applied to individual behaviour change, the behavioural economics and behavioural science literature offers some insights into why companies may be hesitant or unable to invest in resource efficiency or embrace sustainability.

The literature highlights how organisations (e.g. businesses, sectoral organisations, community groups) tend towards slower, more rational thinking than individuals. This is driven by a number of factors, not least the processes and procedures for decision-making that are typical of formal organisations. This suggests that businesses are more cognitively

sophisticated than individuals and that taking decisions as a group can reduce the impact of cognitive biases. This implies that organisations are less susceptible to cognitive biases that underpin many “nudge”-type interventions.

However, some evidence suggests that organisations are not immune from cognitive biases. The influence of “messenger”, “incentive”, “saliency”, “priming” and “affect” can result in departures from “rational” behaviour. Experimentally it has been shown that cognitive biases occur in groups depending on the “situational and procedural” context.

Decision-makers in organisations have to work within the context of unavoidable constraints such as information asymmetry or limitations, time constraints, and limited capacity and experience. Organisations

can rely on heuristics and rules of thumb (such as imitating “best practice”) rather than on original evaluation of different and potentially optimal strategies. In addition to this, the maturity of the business will also have implications for how decision-makers are affected by cognitive or cognitive-like biases. For example:

- **Start-ups and early stage entrepreneurs.** When evaluating business opportunities, businesses are influenced by availability, representativeness and anchoring, therefore they often rely on hunches and intuition.
- **SMEs may be more risk averse than larger businesses.** This is not a consistent attribute, but SMEs often lack the capacity to process and analyse information objectively, and this can lead to risk-averse decision-making.

The following four dimensions set out a simplified framework for considering the factors that drive business behaviour:

1. **Capacity:** decision-making processes, skills and competencies.
2. **Culture:** the dominant culture and subcultures within an organisation.
3. **Organisational structure:** the tacit structures of the organisation as set out in its procedures, history and ethos.
4. **Social context:** the sectoral and transactional relationships that the business maintains with other organisations in its supply chain.

1.2 Business Research Design

The Open Practices study set out to explore how government interventions and services in Ireland can create better outcomes in terms of business resource efficiency and how existing services could be redesigned through the application of behavioural insights. The research applied a qualitative research strategy to investigate the socio-cultural structures that shape resource efficiency behaviours in Irish companies, as well as experiences with existing interventions.

The research applied qualitative methods, such as desk research, semi-structured interviews with intermediary organisations, contextual interviews with

businesses, co-creation workshops and participant observation, to explore what people think but also to observe what they do in real-world contexts. The overarching framework was informed by applied design research methods. It also applied design research methods, such as personas, user journey mapping and service safaris, that are typically applied in a commercial context.

Figure 1.1 provides a generalised overview of the research process. While the research was undertaken between February 2015 and September 2015 (8 months), it was delivered on a part-time basis, with approximately 3.6 months of time allocated to data collection and analysis.

1.3 Stage 1: Discover (Understanding Context)

The first phase of research sought to understand the resource efficiency interventions being delivered in Ireland. Desk research and expert interviews with intermediary organisations were undertaken to identify interventions. The interventions were selected using the following criteria:

- **Institutional:** Creation of new institutions (legal acts, regulations, rules) designed to explicitly influence the behaviour of enterprises (these can be aimed directly at administrative simplification, or indirectly, for instance through establishing legal frameworks).
- **Financial:** Provision of financial resources (state aid) directly to enterprises to support one or more elements of organisational behaviour change. This includes allocation of financial resources to organisations providing services to enterprises or acting as intermediaries in the innovation system (between the research system and enterprises, financial intermediaries, etc.)
- **Knowledge networks:** Creating, diffusing and co-ordinating exchange of knowledge among the actors in the Irish innovation system.

Through this initial framework, 200 individual environmental policy interventions (non-regulatory) and support services in Ireland were identified. The range of interventions included national strategies, regulatory instruments, bans, obligations, voluntary agreements, information tools (toolkits, leaflets, websites), fiscal instruments (fines, charges) and

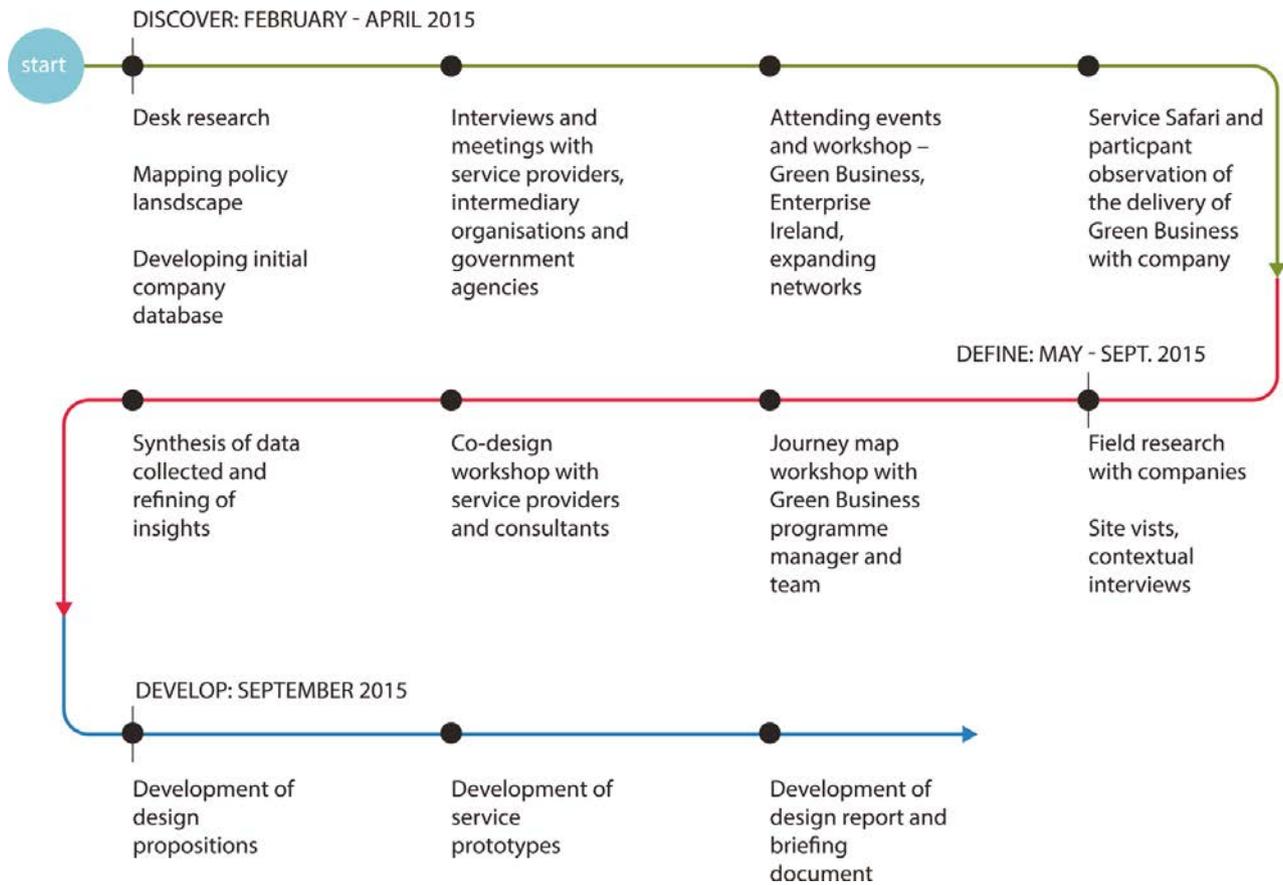


Figure 1.1. Key stages in research process.

grants. A basic database of these interventions was developed to classify interventions by mechanism, target sectors, beneficiaries and lead organisations. The themes that the interventions addressed were classified by theme (Figure 1.2) and intervention type (Figure 1.3).

These interventions were also classified by the type of target beneficiary of the intervention. It must be noted that some interventions may have more than one target beneficiary and that these could be targeted directly or indirectly (Figure 1.4).

A key finding was that there is a large number of organisations delivering services and interventions related to resource efficiency. Each of these organisations shared policy outcomes, but each had niche and specific policy interests, e.g. competing policy rationales, programmes of government that require delivery, funding cycles and immediate business interests, and the interests of the wider public. From this initial dataset of 200 interventions, 64 interventions in which the EPA was the lead partner were identified. The 64 interventions with the EPA as

the lead partner were distributed across a range of themes, with resource efficiency and waste being the dominant themes. Figure 1.5 provides an overview of the types of interventions being delivered by the EPA.

In terms of beneficiaries, the EPA largely conformed with the national trend, in that the key beneficiaries of interventions were businesses (57.8%), with 15.6% of interventions being targeted specifically at the wider public (e.g. households, schools and communities).

Alongside this desk research, semi-structured interviews with key staff in intermediary organisations across Ireland were undertaken. These helped to identify a number of potential policy challenges to, and opportunities for, enabling resource efficiency in business. While the challenges are not unique to Ireland or resource efficiency interventions, they include:

- misalignment or weak links between general business support offerings;
- a weak institutional arrangement between environmental and other business support services;

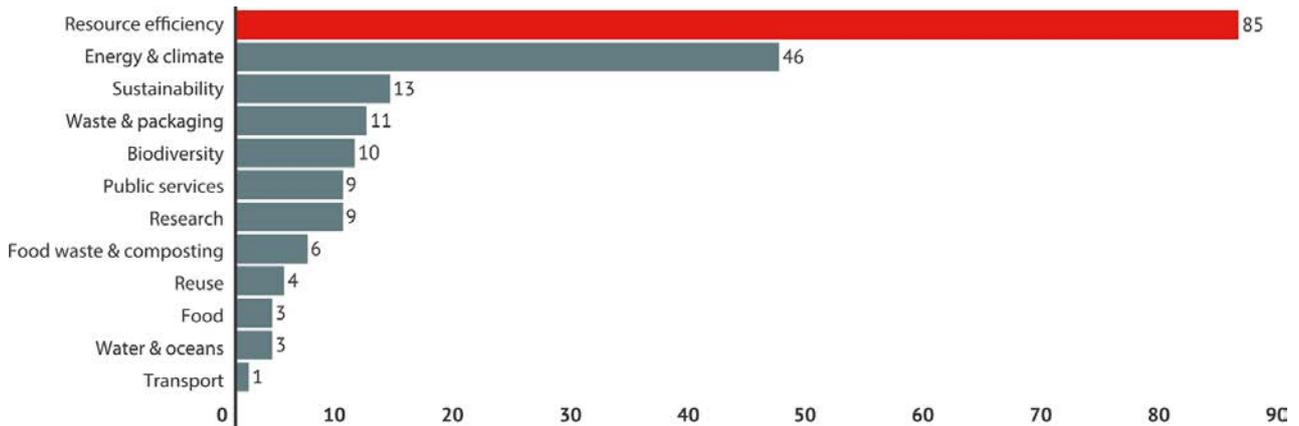


Figure 1.2. Intervention themes (all Ireland).

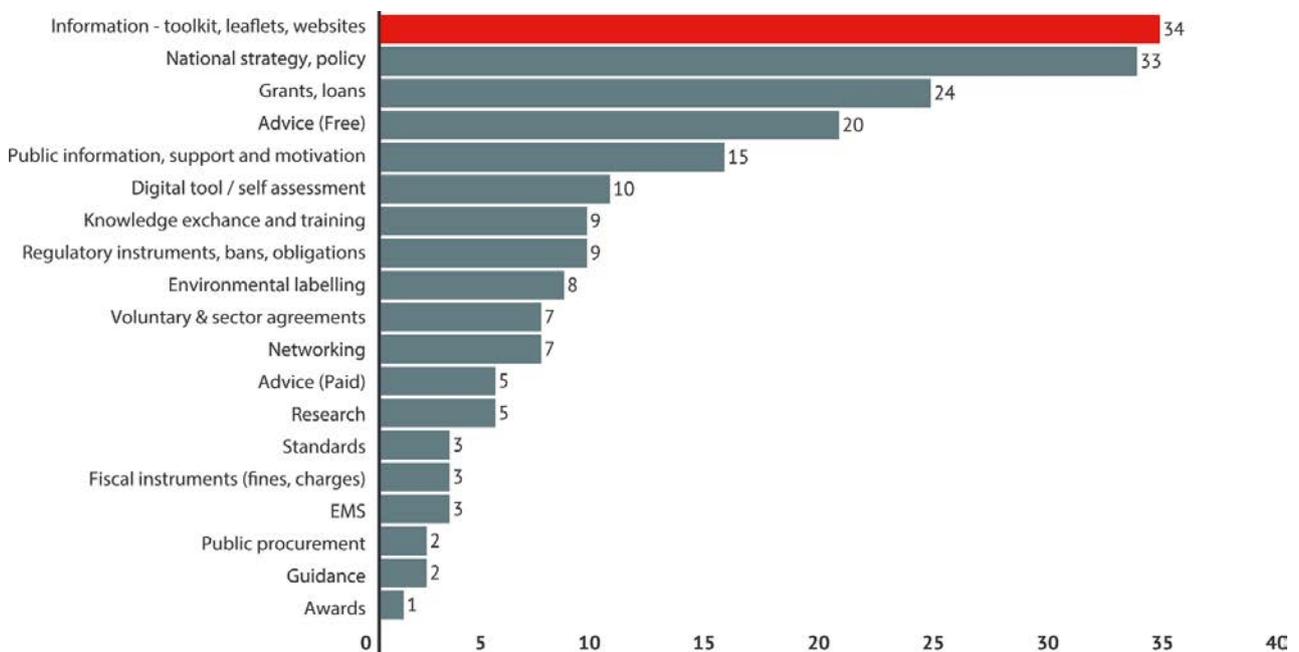


Figure 1.3. Interventions types (all Ireland). EMS, environmental management systems.

- gaps between business support for waste prevention and wider business needs;
- a poor level of resources available to the organisations delivering resource efficiency services;
- a lack of investment in ongoing evaluation combined with a lack of access to consistent data.

A number of positive opportunities were cited. These include:

- a good supply of resource efficiency initiatives with a good return on investment;
- a dynamic and active network of service providers that are engaged in multiple activities;

- relatively short ties between service providers and beneficiaries;
- a high degree of technical competence among service providers.

1.4 Summary of Insights

Although this was a preliminary mapping of interventions, it highlighted a number of key issues. Firstly, the national interventions are dominated by Information – toolkits, leaflets and websites (17%), National strategy and policy (16.5%), and Grants and loans (12%). While these are all important forms of intervention they may be weak in terms of the behavioural dimension. For example, the generic

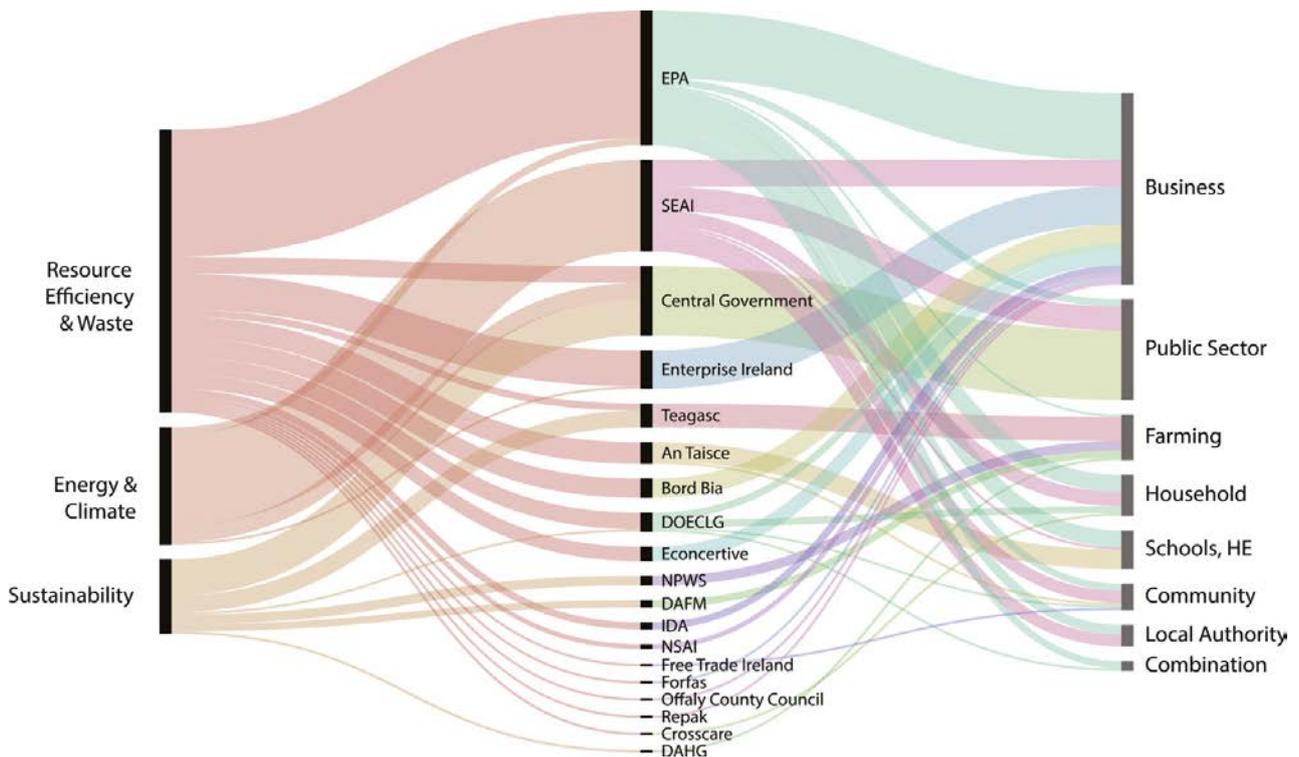


Figure 1.4. Delivery organisations and beneficiaries. DAFM, Department of Agriculture, Food and the Marine; DAHG, Department of Arts, Heritage and the Gaeltacht; DOECLG, Department of Environment, Community and Local Government; HE, higher education; IDA, Industrial Development Authority; NPWS, National Parks and Wildlife Service; NSAI, National Standards Authority of Ireland; SEAI, Sustainable Energy Authority of Ireland.

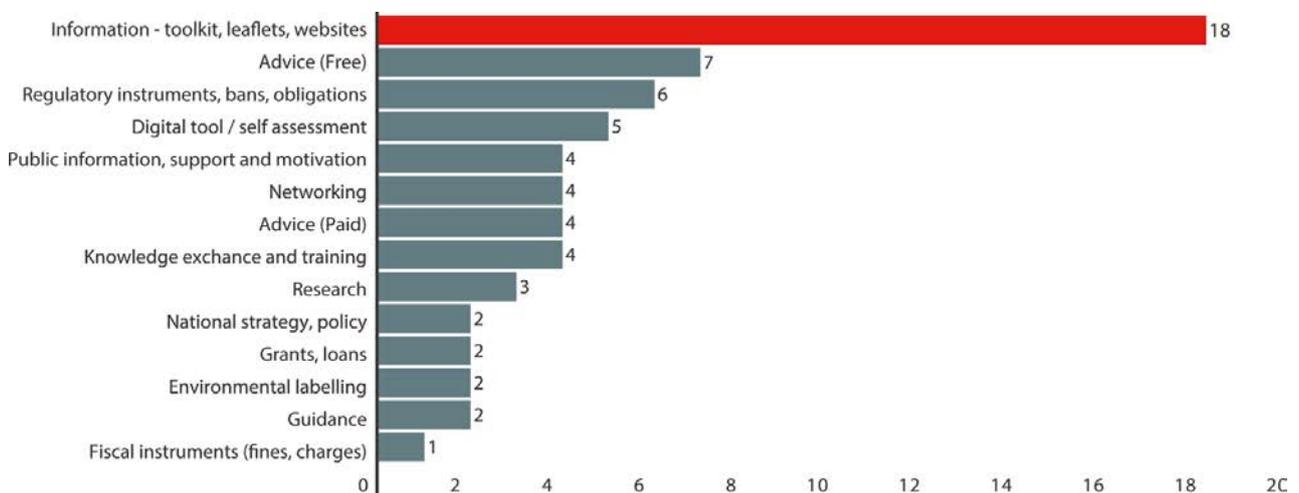


Figure 1.5. EPA intervention types.

one-to-many model of information provision can be too generic to guide investment decisions.

Across the three dominant areas for interventions (Resource efficiency and waste, Energy and climate, and Sustainability), there is a significant level of overlap between the services provided by the various

agencies and intermediary organisations. This may be problematic from a number of perspectives, such as duplication of effort, incoherent touchpoints for beneficiaries and double counting of impact metrics. It also may be positive in the sense that each of the organisations is operating with minimal resources and

staff and that a more diverse set of delivery bodies can provide more sector-relevant interventions.

Many of the existing interventions and services are not radically different from each other in terms of design and delivery model. This suggests that there are a number of opportunities for collaboration and alignment across Irish government programmes. The expert interviews highlighted how there were initial structures for collaboration between agencies. It was not clear what the depth of these collaborations was or if they extended beyond rhetorical collaboration such as sharing of logos on websites and co-financing of events.

In terms of intervention and support service design, the wider Irish innovation system needs to be considered, but a refinement of existing interventions could occur in the short to medium term and new, more radical interventions can occur in the medium to long term. The aim should be to strengthen existing actions to support businesses and to clarify the level of opportunity to deliver the newly designed interventions and how practically these might be implemented.

1.4.1 Focusing on EPA support services – Green Business and Green Enterprise

Although the EPA delivers a number of interventions targeting businesses, it was decided that the Green Business and Green Enterprise support services would provide an analytical focus for the research. The rationale for this is that the Green Business intervention model is multi-dimensional and provides a framework for EPA collaborations with other intermediary organisations [e.g. Ibec, the Clean Technology Centre (CTC), Bord Iascaigh Mhara (BIM), Macroom E]. There are also common characteristics between these programmes and interventions delivered by other government agencies and intermediary organisations. By providing an analytical focus, these programmes helped to determine the companies that were selected for the field research.

Data were collected through desk research as well as dialogue with the Green Business Programme Manager, the Green Business and Green Enterprise funder (the EPA), and the contractors and intermediary organisations responsible for delivering the support services.

1.4.1.1 Rationale for the Green Business approach

The provision of publicly funded advice, mentoring and support to businesses, and particularly to SMEs, is a common model internationally. From a market or system failure perspective, the public financing of this type of advisory services has two key justifications. Firstly, they are justified because of the presence of information failures (information asymmetry, variable quality). These information failures lead to underinvestment in resource efficiency, and in some cases where investments are made they can be sub-optimal. Typical information failures include:

- a lack of awareness of the best available information and advice;
- poor access to information and advice (uncertainty);
- queries over quality of information and advice;
- business resource constraints (financial or time) exceeding the perceived benefits.

Secondly, these interventions are justified because of the wider potential for economic development through building the capacity of existing businesses. For example, the advisory service can have spillover effects and positive externalities such as business growth, job creation and more general innovation. The evidence on the effectiveness of the model internationally is limited. The available evidence on its effectiveness in relation to behaviour change or behavioural additionality and on its cost-effectiveness is particularly limited, and systematic reviews and meta-analyses are rare.

1.4.1.2 Green Business process

Green Business is a free confidential resource efficiency support service that aims to support Irish SMEs to become more resource efficient through the provision of subsidised consultancy services, knowledge exchange and networking opportunities. The service is funded through the National Waste Prevention Programme and as such it aims to deliver resource efficiency improvements and cost savings for participating SMEs. The thematic focus of the service is waste prevention and reductions in water and energy consumption.

The central focus of the Green Business support service is a resource efficiency assessment (REA).

A Green Business advisor and a professional environmental consultant undertake this. Following an assessment, a report is then produced that provides recommendations for resource efficiency savings. These are typically a mixture of “no-cost” or “low-cost” opportunities. Green Business also holds regional workshops and can broker connections to other resource efficiency support agencies and funding

programmes. Figure 1.6 provides an overview of the generic user journey map of the service.

1.4.1.3 Green Business intervention model

While the above information presents the overall process and rationale of Green Business, these aspects can be combined to present an overall

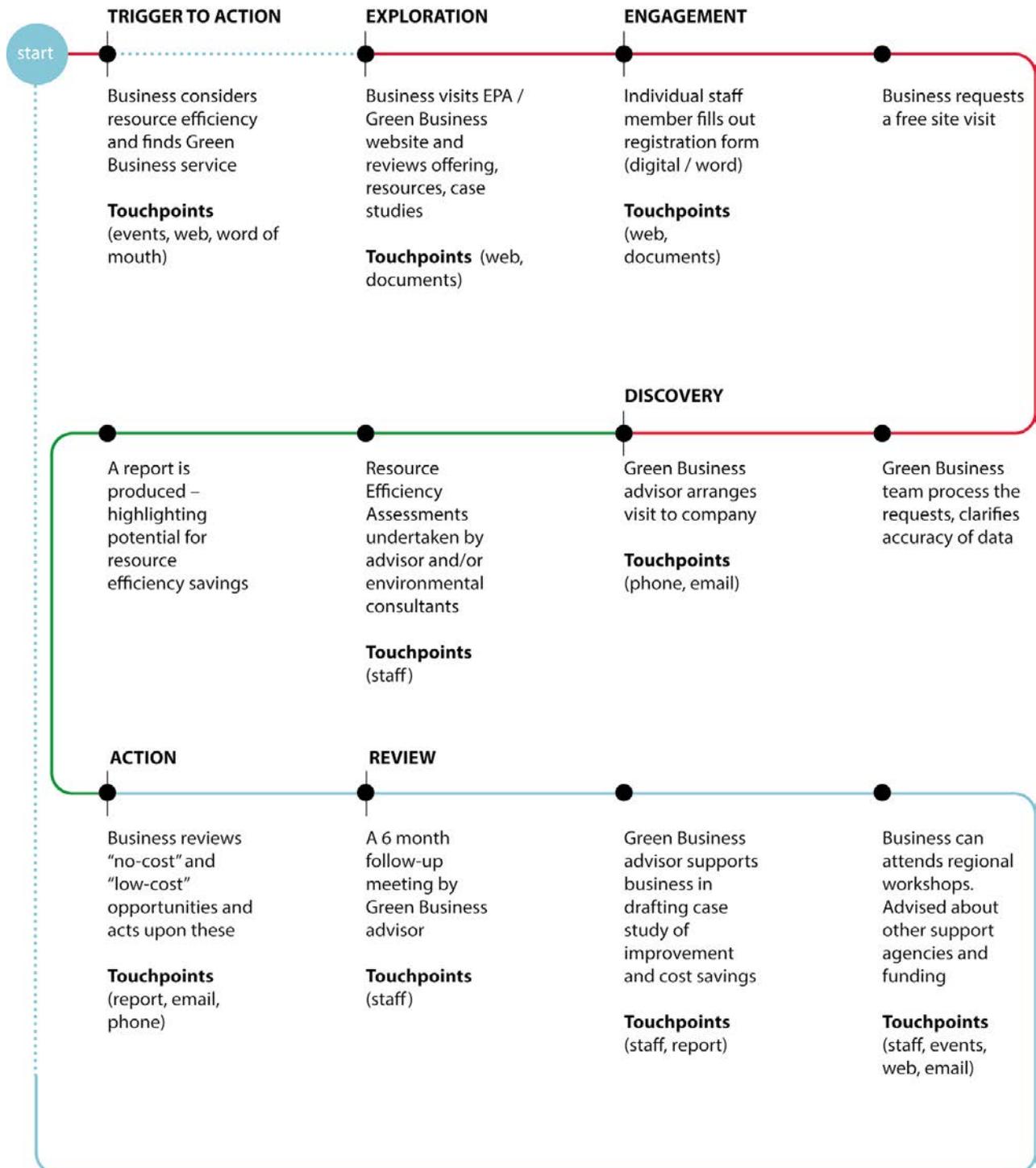


Figure 1.6. Green Business process. GB, Green Business.

intervention model. This describes the overall strategy, inputs and process (Figure 1.7).

1.4.2 Green Enterprise

Green Enterprise is a business support programme delivered in the context of the EPA-led National Waste Prevention Programme, which provides grant aid (co-finance) to businesses that are undertaking eco-innovative and resource efficiency projects across a range of sectors. The Green Enterprise programme has its origins in a previous programme called the Cleaner Greener Production Programme, which ran in various forms from 2004.

The initial Cleaner Greener Production Programme was funded through the EPA Environmental Research, Technological Development and Innovation (ERTDI) and Science, Technology, Research and Innovation for the Environment (STRIVE) research programmes, and therefore it had a strong applied-research orientation. The development towards Green Enterprise has been iterative and there have been more than eight stages of development, with more than 120 demonstration projects supported and more than €9.1 million worth of funding provided.

1.4.2.1 Rationale for the Green Enterprise approach

The provision of direct public finance for R&D (e.g. environmental R&D) has been a common model internationally for many decades. The rationale is typically driven by the assumption that R&D will,

directly or indirectly, stimulate innovation that leads to the production of new or, in this case, more resource-efficient, products, processes or services. The rationale is also driven by the concern that businesses are underinvesting in resource efficiency because they may lack the financial resources to do so. It is worth noting that this assumption has been criticised in the literature, as it is based on the linear model of innovation (Chaminade and Edquist, 2007; Edquist, 2011; Lundvall, 2007).

The popularity of direct finance has diminished in recent years and this has been due to a number of factors, such as new alternative finance models (e.g. repayable loans, shared equity), as well as the creation of a more generally supportive environment for sustainable innovation, e.g. through fiscal incentives (tax credits) or alternative access to credit.

In contrast to the Green Business programme, one advantage of a model such as Green Enterprise is that the support can be targeted at specific areas or topics of interest, and it has the potential to focus on where the intervention can make a difference. The efficiency of the programme can be strengthened by ensuring that impacts could not have been more efficiently derived through other interventions. The data presented previously on the proportionally low investment in environmental R&D in Ireland would strengthen the case for Green Enterprise.

While the direct provision of finance can be relatively simple compared with other innovation support schemes, the evaluation of impacts can be

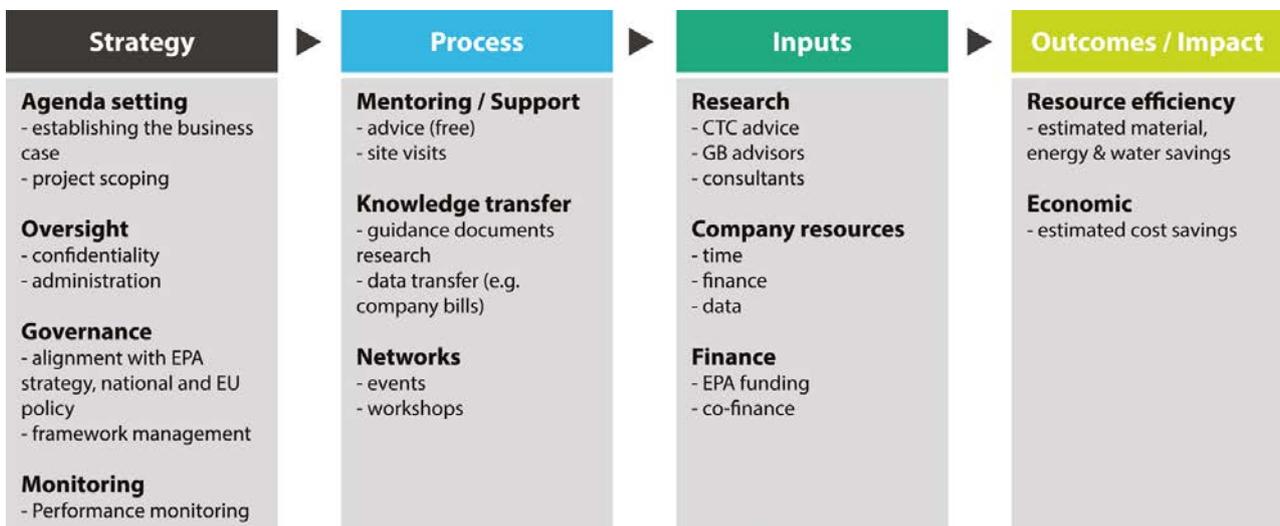


Figure 1.7. Green Business intervention model. CTC, Clean Technology Centre; GB, Green Business.

problematic. For example, the timing of impacts is variable and not typically aligned with programme evaluations. This is particularly true if the desire is to launch new products to market, as opposed to prototypes or proofs of concept.

The evaluation of direct impacts from direct financing can be supported by quantitative indicators that are generally easily obtained. These indicators include total R&D expenditure, business growth, resource efficiency (e.g. material productivity per unit output), profitability and employment.

Challenges arise when trying to measure spillover effective and intangible impacts (skills, innovation capabilities and capacities). In addition, organisational and behavioural additionality will happen over a longer period of time. These forms of additionality will typically take time to generate and become embedded within businesses, and the evaluation of the sustainability of these will require even longer timeframes.

1.4.2.2 Green Enterprise process

The Green Enterprise programme is delivered through a single annual call for projects. This call is advertised on both the EPA website and in national media, and there is typically a 4-month duration between application and notification. This period allows for peer review and administration of the funding allocation. The final award is typically allocated 5 months after submission, once any technical or budgetary queries identified during the evaluation process have been reconciled by the applicant.

1.4.2.3 Green Enterprise intervention model

While the above information presents the overall process and rationale, these aspects can be combined

to present an overall intervention model. This describes the inputs, output, outcomes, result and impact (Figure 1.8).

1.5 Stage 2: Define (Field Research)

To build on the insights from the “discover” stage of the research, in-depth field research with 20 Irish businesses was undertaken. This included contextual interviews (semi-structured), informal conversational interviews and site visits.

The aim of this phase of research was to provide insights into businesses, and specifically staff with environmental responsibilities, going about their daily lives at work as well as interviewing them about the business behaviours associated with resource efficiency and their experiences of interacting with the public sector. It sought to develop meaning from the field and to make sense of activities and phenomena in Irish businesses and individuals within these businesses.

This section reports predominantly on the findings from the company interviews and site visits.

1.5.1 Field research with enterprises

The initial sample of companies was selected through a non-randomised purposive sampling approach. This included desk research on companies that had participated in the Green Business and Green Enterprise programmes, alongside snowball sampling to identify companies that had not participated. The initial desk research also involved a review of sustainable business events that had taken place in Ireland over the last 5 years.

An initial database of 50 possible companies was developed. From this, an invitation to participate in the

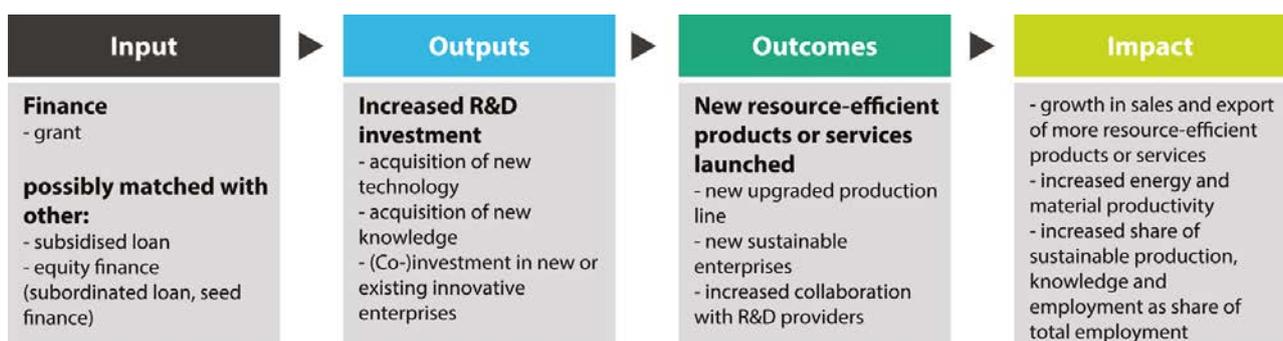


Figure 1.8. Green Enterprise intervention model.

research was distributed by email to 45 companies, with the intention of selecting 20. Table 1.2 provides an overview profile of the companies that were included in the field research.

Of these companies, 11 had previously applied to participate in Green Business, Green Enterprise or a combination of the two. Nine of the companies had not applied, for a number of reasons, such as low interest, perceived challenges with accessing finance or being at the wrong stage of development. Fifteen of the companies were SMEs. Of the non-SME companies, only one was a multi-national.

The contextual interviews with businesses were augmented with:

- data collected through participant observation of the delivery of REAs and Green Business seminars;
- workshops with the Green Business service providers;
- secondary data from existing surveys of business attitudes towards resource efficiency.

1.5.2 Key insights from the field research

This research was a deep enquiry to attain understanding of Irish businesses and their requirements regarding resource efficiency. While the research sought to understand all interactions with public sector interventions, the focus was on the EPA-funded support services. The research explored the extent to which companies are affected by competing signals, and whether existing policy and services help or hinder them in making investments in resource efficiency.

1.5.2.1 Environmental roles

Of the companies interviewed, 75% had an individual that was assigned to an environmental management role in some form. In only one of the companies did this individual suggest that 100% of their time was dedicated to this role. In some cases, the environmental role was secondary to their key role within the organisation (up to senior management level). In other cases, the individual had other informal roles that were unrelated to the environmental role.

Table 1.2. Overview of companies involved in field research

Sector	EPA application	Location	Size	Interviews	Site visit
Consulting	Yes	Dublin	SME	Yes	Yes
Energy	Yes	Kildare	Non-SME	Yes	Yes
Digital/software	No	Dublin	SME	Yes	Yes
Energy services	No	Dublin	SME	Yes	No
Farming	No	Carlow	SME	Yes	Yes
Farming	No	Kilkenny	SME	Yes	No
Food	No	Offaly	SME	Yes	Yes
Food	Yes	Offaly	Non-SME	Yes	Yes
Energy services	Yes	Kildare	SME	Yes	Yes
Manufacturing	Yes	Shannon	SME	Yes	Yes
Food	Yes	Clare	SME	Yes	Yes
Retail	Yes	Dublin	SME	Yes	Yes
Healthcare	Yes	Limerick	Non-SME	Yes	Yes
Social enterprise	Yes	Dublin	SME	Yes	Yes
Pharmaceuticals (branded and generic)	Yes	Dublin	Non-SME	Yes	No
Hospitality	No	Cork	SME	Yes	Yes
Manufacturing	No	Limerick	Non-SME	Yes	Yes
Social enterprise	No	Dublin	SME	Yes	Yes
Manufacturing	Yes	Dublin	SME	Yes	Yes
Energy services	No	Dublin	SME	Yes	No

1.5.2.2 Assessment of benefits of resource efficiency

Identification of strategic or commercial value of resource efficiency, in terms of bringing about competitive advantage, is often the outcome of qualitative assessment and subjectivity and is rarely determined by the organisation's strategic mission and vision. None of the companies cited a consistent or commonly applied framework or method for evaluating the return on investment or cost–benefit assessments for plans to invest. “Payback” was the most widely cited metric for evaluating the financial benefit of resource efficiency savings.

1.5.2.3 Visibility

A frequently cited issue was that often resource efficiency issues (opportunities or risks) are not visible to senior managers because they are the responsibility of staff or divisions that are often some distance from senior management. This is linked to the issues of salience and the principle–agent problem. For example, the staff responsible could be operations and facilities managers, environmental managers, technical managers or dual-role staff that have an environmental function.

1.5.2.4 Discretionary costs

Although only one senior member of staff with financial responsibility was interviewed, a commonly cited issue was that resource efficiency expenditure is typically classified as a discretionary cost (e.g. maintenance, repair) rather than as a strategic investment in productive capacity. Nonetheless, this classification appears to be formalised only rarely. This classification can make it more difficult to raise capital or make the case for an investment in efficiency over other projects seen as more core to the business's activities.

1.5.2.5 Non-environmental and non-cost benefits

There is significant research showing that many non-environmental benefits can be associated with resource efficiency, such as improved employee morale and productivity, improved environmental awareness of employees, positive investor and stakeholder perceptions, and increased brand equity or business reputation (Bastein *et al.*, 2014; DEFRA and Oakdene Hollins, 2011; Schulte, 2013; Tukker,

2015). While these non-environmental benefits do exist, they are rarely framed clearly in interventions or programmes.

1.5.2.6 High rates of return

The companies interviewed suggested that investments in resource efficiency typically require high rates of return, possibly greater than the return from investment in other areas of the business. This is due to a range of factors such as perceived risk, sunk investments, lack of strategic or short-term prioritisation, hidden costs, and uncertainty regarding the value created through resource efficiency (i.e. savings).

In addition, some businesses will use periods of capital expenditure as an opportunity to explore options for resource efficiency. In these cases the capital expenditure is driving the resource efficiency agenda rather than the other way round.

1.5.2.7 Access to capital

Access to capital was found to be a key barrier for resource efficiency investment. This was particularly evident for smaller companies. It would be possible to argue that, if resource efficiency investment was repositioned as having strategic value, it would be easier to have investment allocated to these activities. There is a dilemma here in that the dominance of financial instruments has given rise to the perception that resource efficiency is always associated with cost. There is possible scope in restructuring the financial incentives to target higher value activities.

1.5.2.8 Reasons for underinvestment

Some of the other persistent explanations for underinvestment in resource efficiency include hidden costs and bounded rationality. While these terms were not specifically used by the interviewees, they were cited during the research and observed informally.

- **Hidden costs** are typically defined as the costs of capital or the loss of productive capacity while a process or technology is upgraded. There is a risk that these hidden costs will erode any potential savings from resource efficiency to the point where it makes no sense to invest unless returns are very high.

- **Bounded rationality** typically refers to the fact that people make decisions while being constrained by factors such as resources, salience, attention and ability to process information. This issue of bounded rationality is important in the resource efficiency context because the business may have access to information but is unable to process it in a way that allows it to make optimal decisions.
- In addition, businesses may not be able to optimise their information searches given resource constraints and must rely on partial accounts of the resource efficiency opportunities available to them.

1.5.2.9 Building the business case

Some of the interviewees cited a challenge in building a business case for taking action. In the majority of companies interviewed it was the member of staff with an environmental responsibility that was the key contact point for the interventions (attending events, completing forms, reading available information). This member of staff would then need to develop and present a business case for taking action, either to the board or to other senior management. This can be a challenge if the resource efficiency project is competing with other priorities and the staff member is not confident of their capacity to “sell” resource efficiency internally.

1.5.2.10 Appropriability

One issue of concern to the larger companies was appropriability. This refers to the appropriation of the benefits from investment in resource efficiency or R&D. If the benefits or value accrued outside the business are seen to be greater than those accrued by the business, investments are unlikely to be made. A relevant manifestation of this is where companies are unwilling to apply for R&D grant aid if they feel that their intellectual property is not protected.

While factors such as hidden costs, appropriability and bounded rationality can help to provide some explanation of why an intervention is more or less effective, they are not complete explanations in themselves. There is a greater understanding and appreciation that business behaviour can be an

outcome or partial outcome of a broader set of “socio-technical” factors.

1.5.2.11 Language

One of the issues of interest that also emerged from the discussion with experts and policymakers was the normalisation of language around resource efficiency, and its integration into reporting requirements and funding applications alongside financial and organisational criteria. None of the companies used the word “green” to describe their own businesses or would use the term to describe resource efficiency actions.

1.5.2.12 Different intervention needs

It is well understood that businesses, and SMEs in particular, are a heterogeneous group that defies simple classification and generic intervention models. There is often a desire to create segmentation models as a means to better target interventions. The segmentation approach is often criticised from a number of perspectives. For example, it assumes that segment classifications are static and unproblematic, does not account for organisations that fit across multiple segments, and rarely factors in more dynamic socio-technical perspectives in business behaviour.

A number of studies have attempted to segment businesses in relation to their apparent attitudes and motivations for resource efficiency. In principle, businesses can be segmented in several ways, and existing typologies tend to place businesses along a continuum such as sector, size or position in value chain.

Table 1.3 provides a simple classification of the companies interviewed as part of this research. While it is not possible to generalise this model to the entire business population, it provides insight into some common practices, the problems facing companies in that segment and some possible intervention needs.

This segmentation in Table 1.3 highlights how, in addition to the behavioural factors, businesses may approach accessing support in different ways. Understanding this can help to improve targeting of particular companies and modify interventions accordingly.

Table 1.3. Simple segmentation of companies

Type	Main problems	Intervention needs
Type 1: Strategic scalers Companies successfully pursuing a strategy that includes resource efficiency. Apply for funding based on strategic needs	Coping with the risks and the costs of sustained R&D	Market intelligence Technological foresights Venture finance Support for developing new products/services Support for securing intellectual property
Type 2: Ad hoc persisters Companies successfully exploiting funding and public support but without a structured plan or strategy	Dependence on small numbers of key individuals with specific skills Comparatively weak management resources/skills Poorly developed long-term strategies	Improving their development strategy Strategic planning Rationalising activities Strengthening their organisation/management Avoidance of rent seeking
Type 3: Stalled starters Companies that have attempted to apply for or request support. The outcomes were ineffective or unsuccessful, so they are continuing to develop own products and technologies	Can have negative experiences Can become complacent regarding potential of support Fail to see new opportunities	Personalised support Structured planning Financing of R&D Securing intellectual property rights Quality control systems to be set up or enhanced
Type 4: Cautiously disengaged Companies that have not engaged with any specific support from the EPA. Reasons can include lack of desire or status as classic subcontractors with no, or very few, products of their own	Hard to engage May be missing opportunities May be influencing other businesses	Consultancy Business/resource efficiency assessment

1.5.3 Journey maps

Typically a user journey map will seek to understand what happens before the service is accessed, what happens during use and what happens after the user is finished with the service.

Each moment during which the user interacts with the service or is expected to do something is called a “touchpoint”. When designing services it is important to consider the entire customer journey and to design all touchpoints as effectively as possible.

To better understand the experience of businesses that access support services, user journey maps were created. These journey maps highlight the stages each company went through from the point they considered resource efficiency, to accessing support services, developing projects and in-company initiatives, and what happened after they exited services. These journey maps were created based on data collected from the following two sources:

- **Enterprise interviews.** During the company interviews, those companies that applied for Green Business or Green Enterprise were asked

to explain their journey through the service. Not all companies interviewed went through every stage of the services. There was a need to explore where the friction points are and how the design of some stages of the service prevents companies from progressing.

- **Workshop with the CTC.** A workshop was held with staff of the CTC and a user journey mapping exercise was undertaken. The workshop involved the programme manager and other key staff.

The user journey maps were then synthesised into a single meta-journey map that presents the combined journey map and touchpoints for two key EPA services. This journey map has the following four broad phases.

1.5.3.1 Stage 1: Trigger to action

Each company outlined the various triggers for action on exploring the value of resource efficiency or sustainability. These triggers were clustered into external, internal or a combination of both. The most frequently cited external triggers for considering resource efficiency were regulations and licensing, and

information provided by intermediary organisations, trade bodies and sector organisations.

The most commonly cited internal triggers were introduction of new management, capital investment, the creation of new roles (e.g. environmental health and safety) or attendance at an event (e.g. Green Business events) resulting in new information relating to possible benefits of resource efficiency. There were also a number of ad hoc triggers. These included actions undertaken without any explicit intention to achieve increased resource efficiency, e.g. waste management and lean manufacturing.

1.5.3.2 Stage 2: Formalisation of possible actions

Following the initial trigger there was a process of formalisation of ideas and identification of opportunities for resource efficiency. It was clear from the interviews that, while there were common characteristics, the specific process was unique to each company.

- **Explore opportunities.** This is generally an ad hoc phase of exploring the opportunities for resource efficiency. In many cases this was the first step towards building a business case. It was often the role of an individual, e.g. the person with an environmental management role. At this stage there was typically a combination of web searches, informal dialogue with experts, report reading and webinar viewing.
- **Generating ideas.** Once possible opportunities had been identified there was a process of generating ideas around these opportunities. This would often focus on specific resource efficiency hot spots, e.g. water use, energy consumption and waste. There was often a lack of readily available data to support the process.
- **Researching options.** Once ideas had been generated there was a further stage of research into the specific characteristics of the opportunity. This would often require additional research, contacting suppliers for data, and preliminary tests on existing processes and equipment.
- **Building the business case.** These previous stages typically fed into some form of business case development. While many of the companies use board and team meetings as the space within which these business cases are presented, discussed and deliberated on, there was no

common or consistent form to the business case. In many cases it was a verbal or PowerPoint presentation, and in some cases more formal documents were presented.

In some cases the process was bottom up (environmental manager presenting to senior management) but in other cases it was the reverse, i.e. a top-down approach. In the cases where the initiative did not come from senior management there was a potential problem in the capacity to successfully build the business case. This could be due to a lack of skills and knowledge on how to make the business case or to a restricted awareness of wider planning issues occurring across the company.

1.5.3.3 Stage 3: Accessing and using services

Once the business case has been met and agreed upon, the process of accessing support is initiated. This is a relatively complex process, as it occurs through many stages and is often a non-linear process. In the case of Green Business and Green Enterprise, there is a series of stages required to develop an application or project proposal. This involves a number of touchpoints (e.g. websites, emails, phone calls, meetings). There can be a high degree of uncertainty in the process, especially in the cases of first-time applicants.

Once the company applies there is a process of waiting for approval that again causes uncertainty. Once the project has been approved there are a number of additional processes and steps required to build the infrastructure and resources required to deliver the project (e.g. teams, project management materials, additional finance, match funding, consultants).

For some companies the time-lag between idea development and project approval means that the commercial circumstances and context have changed. This can mean a restructuring of the original proposal. Once the project has been finalised, formal project completion reports are submitted.

1.5.3.4 Stage 4: After service

Once a business has left the service there is often no direct follow-up, continued dialogue or longer

term evaluation. Companies indicated that the service relationship is ended once the project has been completed. This is often the case with similar interventions, as the service provider has limited financial resources.

Figure 1.9 provides a summary of the user journey maps. This was created by synthesising the journey maps of those companies that had applied to the Green Business and Green Enterprise services.

1.5.4 Key friction points

Friction points are “sticking points” in a service, and evidence suggests that even small levels of friction can cause issues for people using or accessing a service. In addition, friction that prevents someone from performing a desired behaviour can influence whether that behaviour takes place or not. The following key friction points were identified through the contextual interviews.

1.5.4.1 Trigger for action (frictions)

An overarching challenge is the perception of the EPA as a regulator. Businesses in general are unlikely to access public sector support, and the EPA may not be the first source of support the businesses would think of. In two of the cases in which companies were unlikely to apply for support, they specifically cited unwillingness to be visited by the EPA.

Some of the companies cited a lack of understanding about how themes were established for funding programmes (not specifically the EPA) as a challenge. If themes changed or spanned across potential projects, this added to the cost and time of developing proposals.

1.5.4.2 Formalisation of possible actions (frictions)

Some companies stated that they had been eligible to apply for funding but reported problems with the bureaucracy of accessing these funds (not specifically EPA Green Enterprise). This could be a particular difficulty for SMEs, as they are rarely able to allocate the necessary resources (time, money) to what can be time-consuming and complex application processes.

In relation to EPA funding specifically, the companies had a positive view of the feedback provided following

a Green Enterprise application, even in the case of unsuccessful applications.

1.5.4.3 Accessing and using service (frictions)

Although this is difficult to address given existing resources, the lengths of time between making an application, notification of success and receiving funding were cited as an issue. Although the information on timeframes is clearly communicated, it does not always align with how businesses planned projects and investments or with reporting cycles.

A regularly cited issue was the personal contact and relationships built with key individuals in intermediary organisations. This personal contact was a key motivating factor, in particular if the intermediary was proactive and consistent in their visits and messaging.

1.5.4.4 After service (frictions)

None of the companies interviewed suggested that they had a formal way of feeding back to the service if an action had been undertaken. There are 6-month visits but these may not capture impact from the intervention. One company cited a gap of almost 18 months between receiving support (e.g. an REA) and the implementation of all the actions.

1.6 Implications for Policy Intervention and Service Design

Resource efficiency behaviours are diverse, but there are generalised and aggregated patterns that are systematically linked to factors such as the size of an organisation, its sector and subsector, and local and national context. These behaviours can be modelled and better segmented in order to support the effective targeting of interventions and service touchpoints. Some of the key issues emerging from this research are outlined below.

1.6.1 Salience

The salience of resource efficiency can be a key issue to consider when determining whether or not it becomes a strategic or investable issue for a company. In the context of this report, salience refers to the prominence of the issue in relation to the wider activities of the business. The research suggests that

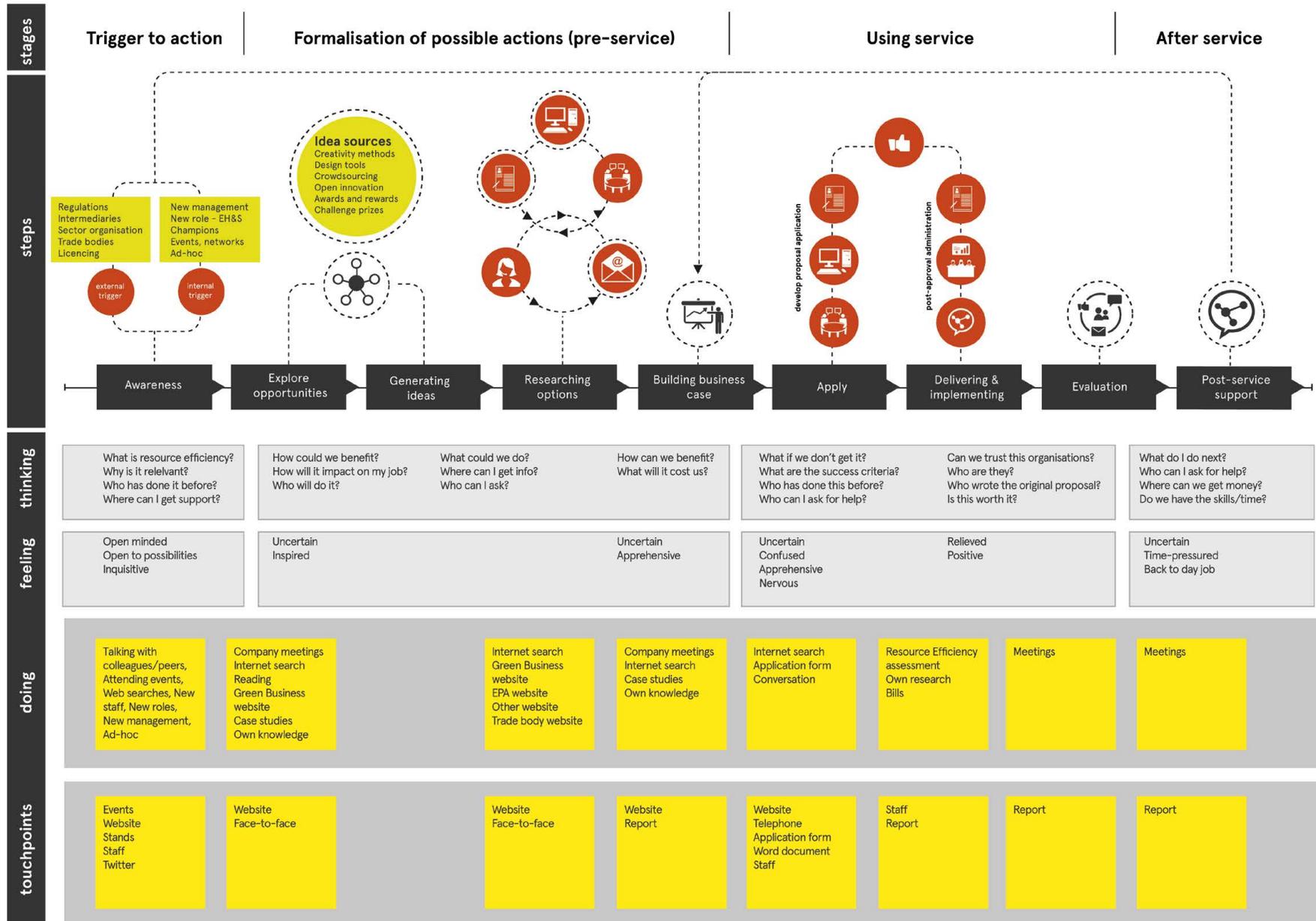


Figure 1.9. Summary user journey map.

making resource efficiency salient is an important factor and can help resource efficiency become a strategic objective that can compete with other spending priorities. This means that intervention and services should enable new monitoring and reporting practices and, if appropriate, combine resource efficiency messaging with a broader innovation agenda.

In addition, emphasising the strategic characteristics of resource efficiency investment, rather than the cost-saving or profit-maximising characteristics, could create more effective application of existing services and open new service opportunities.

1.6.2 Frictions

The interviews with businesses highlighted how seemingly small frictions in the process of applying and using a service can have implications for how successfully a company will engage with the support service and apply outputs. Some key frictions cited through the user journey mapping include the search for appropriate advice, the application process and post-support implementation. There are many low- or no-cost options for designing these outside the service system, such as pre-populating forms, simplifying messaging and creating collaborative networks of businesses.

1.6.3 Measuring value

There is a dominant focus on the later stages of decision-making, e.g. evaluating alternative resource efficiency strategies with cost metrics. There may be scope and potential to focus on the earlier stages of identifying opportunities and assembling possible actions.

This shift in emphasis may help develop clarity on the journey between addressing the “low-hanging fruit” and higher level resource efficiency actions. The user journey map presented in this report helps to identify these areas of opportunity.

1.6.4 Framing

Resource efficiency is often framed or “sold” to industry as a cost, in the sense that the most prominent interventions are fiscal incentives, free services or grant aid. The language of resource

efficiency is typically framed around payback and cost saving rather than, for example, net present value. In addition to this, resource efficiency is typically classified as a cost rather than an asset or investment in productive capacity.

The framing of resource efficiency can be modified to move from framing investment in resource efficiency as a cost to framing it as an asset and investment in productive capacity. This reframing would also include the language used to describe resource efficiency (e.g. by referring to net present value as opposed to cost saving).

Additionally, efficiency savings are framed as a “gain” compared with the theoretical counterfactual case (of not investing in efficiency). This is important because some, typically smaller, organisations are found to devote proportionally more resources to avoiding losses rather than making gains. In some cases the savings sold may be minimal compared with the overall cost base, thus offering a weak incentive.

1.6.5 Messenger

A key behavioural insight is that individuals can be heavily influenced by who communicates information as opposed to the content of the message. The literature review highlighted how companies will seek out trusted sources of information, which tend to be other businesses or sector organisations. There is scope for establishing a network of resource efficiency “champions”, who would commit to promoting the benefits of resource efficiency within the business community.

1.6.6 Optimal moments for working with organisations

The research suggests that there is the possibility that interventions may be more effective at particular times during the business cycle, e.g. when investments are being made in capital, when a new product development process is being initiated or when a company is starting up. These windows of opportunity may provide greater scope for influencing the behaviour of businesses.

In the cases where businesses are making some investment or organisational change (e.g. investment or new product development), the likelihood of an

intervention being successful will depend on the credibility of the individual or organisation intervening.

1.6.7 Who to target for organisational change interventions

The interviews highlighted the interactive nature of intervention delivery within businesses. The success of interventions can depend on the individual in the company responsible for interacting with the organisation delivering an intervention. For example, the role of senior staff (chief executive or owner manager) and the role of the board in decision-making and organisational structure all affect how an intervention will bring about change in the organisation.

The field research sought to interview the individual with an environmental role, as they are typically the person responsible for applying for support and funding. Targeting these particular individuals can help frame the type of support that is delivered through the intervention, e.g. how the support helps this individual to develop a business case, and to champion the relevant issues within the business.

1.6.8 Skills and competencies

A major challenge is the possible lack of internal skills for interpreting technical information, and the time and capacity to take more innovative actions around resource efficiency, especially for smaller SMEs. The smaller SMEs interviewed were also found to perceive a "cultural" barrier to participation in resource efficiency, in that they consider their contribution to be small and that resource efficiency is more of an issue for larger companies.

1.7 Stage 3: Develop (Prototyping New Services)

To build on the insights from the "define" stage of the research, the project designed new support service prototypes based on the design opportunities identified. This phase involved a synthesis of the data and insights. The purpose of a prototype is that that an idea can be examined, tested and refined at an early stage, before any significant investment has been made. Low- or no-cost prototypes help explore what works and what does not work before going on to more elaborate iterations.

A more detailed presentation of the prototypes and description of the design process are presented in a supplementary report, but they are summarised below.

1.7.1 Circles: a network supporting resource efficiency advisors in Ireland

"Circles" is a digital platform that allows organisations (service providers) delivering EPA-funded programmes to provide more effective and meaningful support to companies (Figure 1.10).

The prototype platform allows support to be provided at optimal moments depending on variables such as company maturity, previous support received, or relevant trends and events (Figure 1.10). This support can be scaled up over time so that the company does not receive an overload of generic information, much of which may not be relevant. A common reporting framework can be tailored around the specific requirements of the business. This will assist the environmental manager in building the business case and making the issue salient for senior management.

Circles helps to make the system of business support more visible to both the business and service providers. This means that the service provider can better understand who else is providing services to the companies they support.

In developing a more structured model of support, there is an opportunity to restructure the financial incentives provided to businesses. For example, the Green Enterprise grants can be provided on a scaled basis depending on successful outcomes, e.g. resource efficiency targets being met.

A common reporting framework that is online will allow for comparative assessment between companies, sectors and regions. This can assist the EPA in planning the delivery of support. It can also assist companies in comparing their performance against their peers (sector, region).

1.7.2 Open Works: an open platform for the circular economy based on a many-to-many model of intervention

Open Works is a prototype digital platform that connects individuals and companies seeking expertise and support with other individuals and companies that can provide it (Figure 1.11). Open Works is built

(a)



(b)

Making the circular economy support network visible

Circles allows multiple service providers to connect with a company. It shows who else the company is working with & what they have achieved

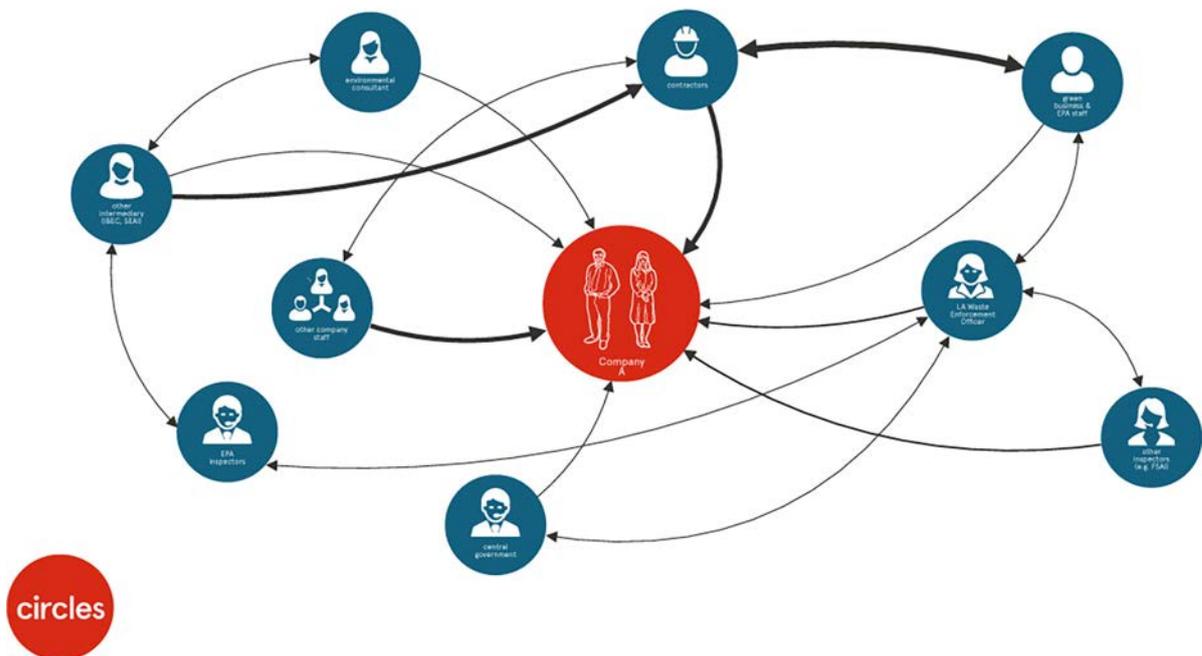
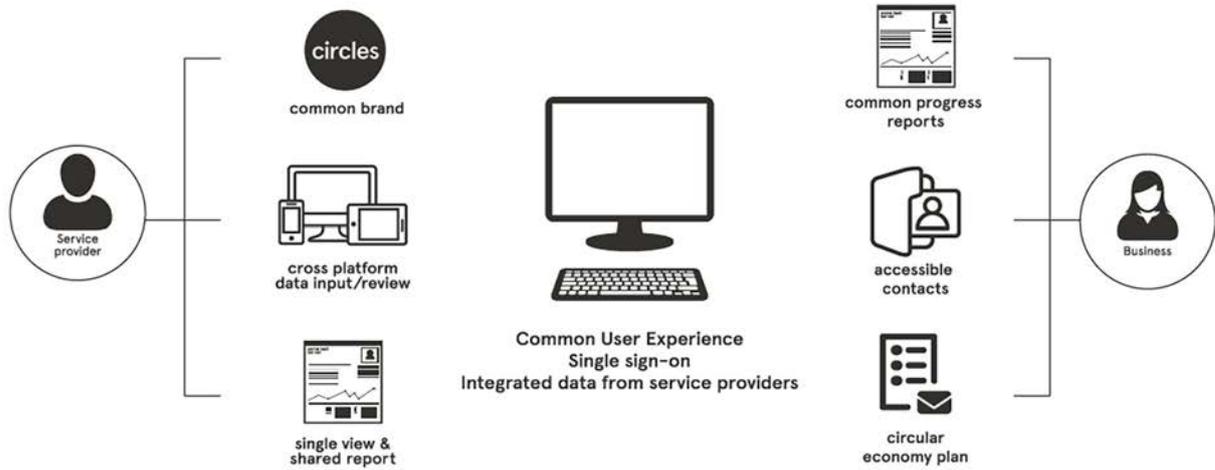


Figure 1.10. Images from the Circles Prototype.

(c) **How circles creates a shared resource around company needs**

Circles creates a single record of a company shared across service providers to allow support to be scaled over time.



(d) **Support adapts over time to meet business needs**

Circles tailors access to information, tools, finance, guidance and increases intensity of support over time in order to not overwhelm company.

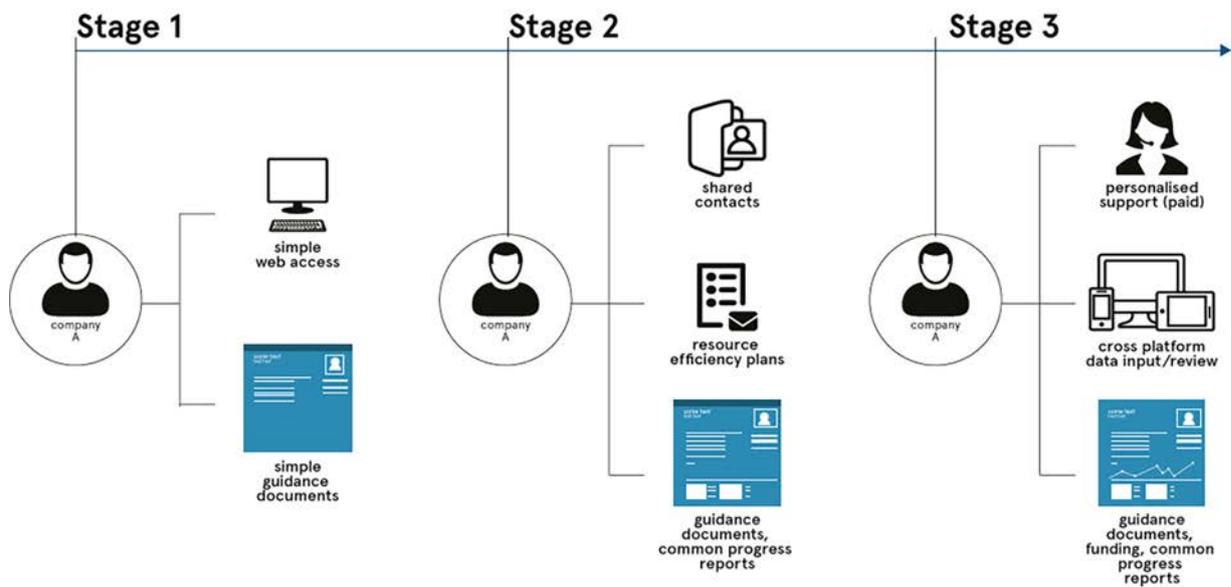


Figure 1.10. Continued.

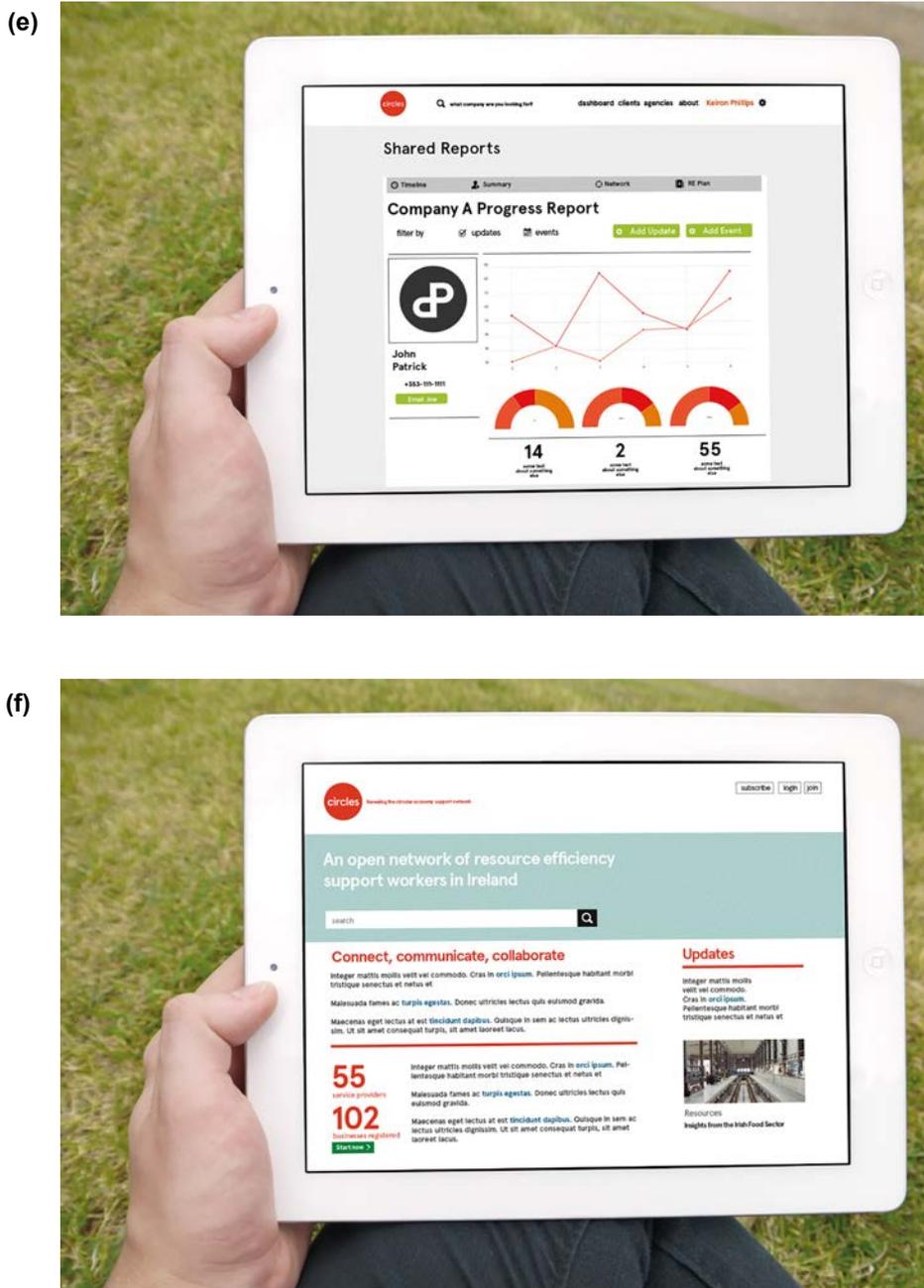


Figure 1.10. Continued.

around a free and open-access directory of experts and businesses that have successfully implemented resource efficiency, through support either from the EPA programmes or from other means. This is directly managed and verified by Green Business.

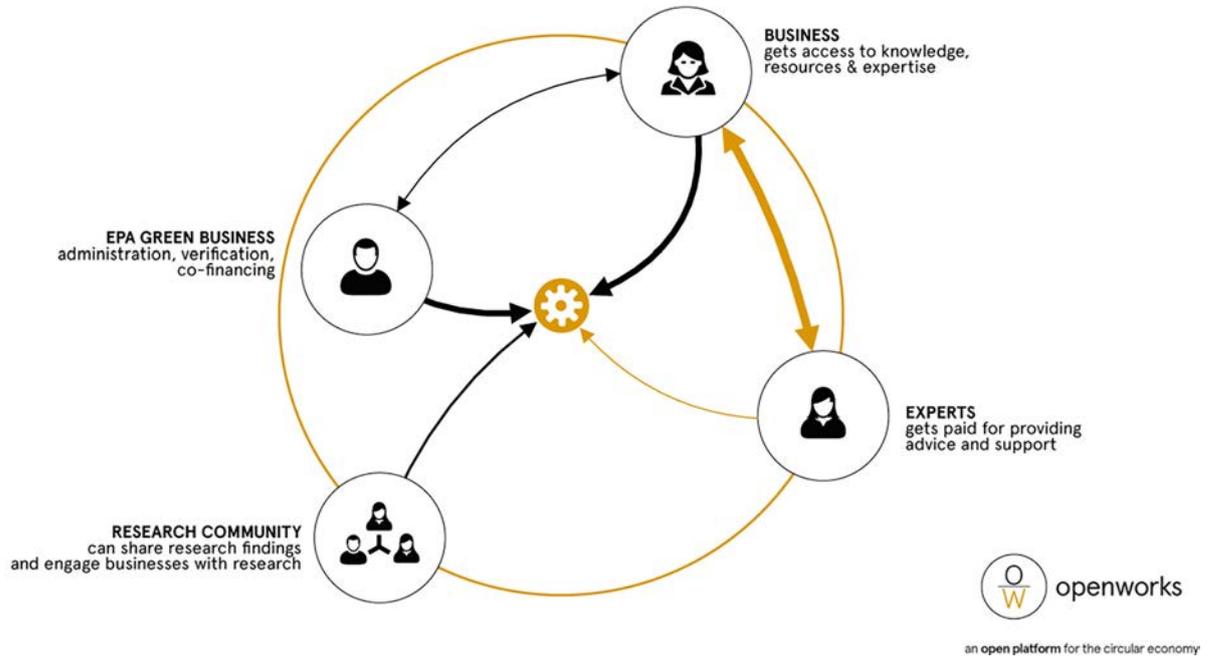
Open Works allows businesses to search for support based on individual needs as opposed to trawling through generic resources. Once the business has entered search criteria and requirements, it will be matched to a network of contacts and resources that

are relevant to its needs. The platform allows for more control on behalf of the business in terms of selecting advisors to work with, and the company does not receive an overload of generic information, much of which may not be relevant.

A common framework can be designed to allow advisors to present consistent and verifiable information about the services they provide and the costs involved. Open Works can provide an incentive to companies starting out on their resource efficiency

(a) **How Open Works works**

Open Works connects individuals and companies seeking expertise and support with other individuals and companies that can provide it.



(b) **How Open Works works**

Open Works is a free and open access directory of local circular economy experts and businesses that have successfully implemented resource efficiency.



Figure 1.11. Images of Open Works prototype.

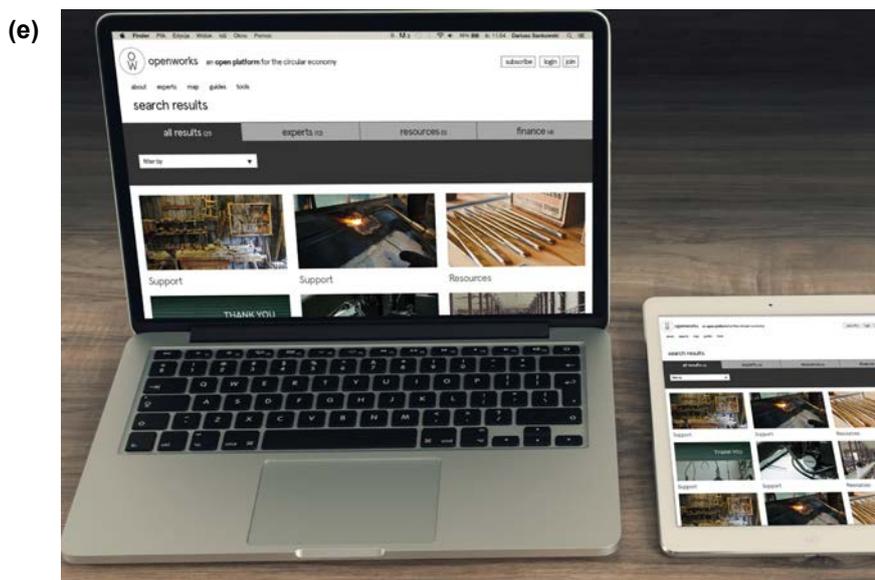
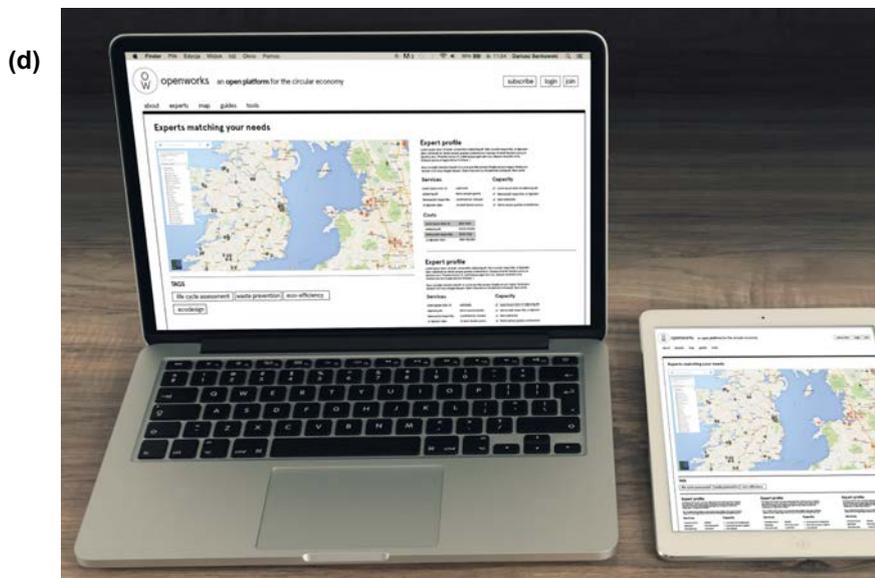


Figure 1.11. Continued.

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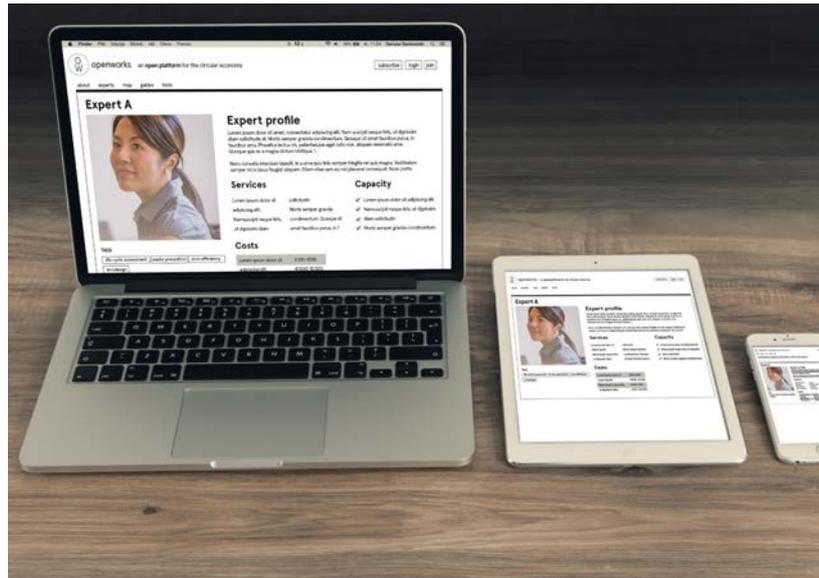


Figure 1.11. Continued.

journey in terms of being able to sell their expertise in the future. Open Works will provide the EPA with real-time data on demand, attitudes, queries and activities. User contributions build the network in a collaborative manner and can develop a local (and global) network that is sustainable and improved by users.

1.7.3 *CE-Accelerator: an accelerator programme for start-ups*

CE-Accelerator (Figure 1.12) is an intensive 14-week programme to mentor, incubate, invest in and launch circular economy innovations. It is organised as follows:

- 10 teams with an initial €5000 seed investment;
- three teams will be offered up to €30,000 of investment in return for 5% equity;
- teams are entrepreneurs, as well as “intrepreneurs” working within public service organisations.

CE-Accelerator is a new way of developing innovations and creating employment within the circular economy in Ireland. CE-Accelerator participants benefit from a bespoke curriculum of learning and development, led by inspiring people who have first-hand experience of the field, as well as access to experienced mentors, advisors and wider networks of expertise.

CE-Accelerator participants receive initial seed investment to help them develop their ideas. A total of

around €30,000 of follow-on investment is available to the teams at the end of the programme. This initial investment will need to be co-financed by other finance such as crowd funding. CE-Accelerator forms part of a larger programme of capacity building for the circular economy in Ireland. This programme includes the following elements:

- **CE-Accelerator charter** – defining the principles of the circular economy and what it means for Ireland;
- **community of interest** – providing a diverse network of practitioners, policymakers, experts, educators, researchers and graduates;
- **open-learning platform** – providing tools, research, guides, webinars, local training and massive online open courses (MOOCs);
- **investment in innovation** – creating conditions and incentives for circular economy innovation;
- **events and “unconferences”** – networking to support the community of practice.

1.7.4 *Behavioural Intervention Tool: a framework tool to support the design of behaviourally informed interventions*

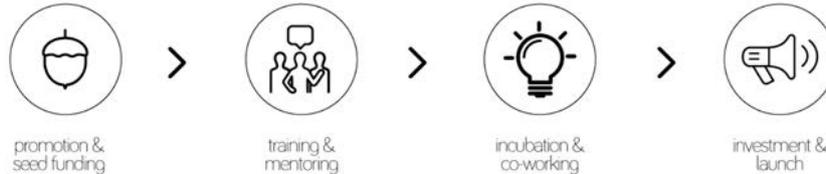
One of the issues highlighted during the research was that there was no accessible tool that could be used to guide the design of interventions for behaviour change for resource efficiency in business. The Behavioural Intervention Tool (Figure 1.13) assists policymakers and intermediary organisations to better understand

(a) ce-accelerator

About

ce-accelerator is an intensive 14 week programme to mentor, incubate, invest in and launch circular economy innovations

- 10 teams with an initial €5,000 seed investment
- 3 teams will be offered up to €30,000 of investment in return for 5% equity
- teams are entrepreneurs, as well as intrepeneurs working within public service organisations



(b) ce-accelerator

Benefits

ce-accelerator is a new way of developing innovations and creating employment within the circular economy in Ireland.

ce-accelerator participants benefit from a bespoke curriculum of learning and development led by inspiring people who have been there and done it themselves, access to experienced mentors, advisors and the wider networks of expertise

ce-accelerator participants receive initial seed investment to help get their ideas off the ground

A total of around €30,000 of follow-on investment is available to the teams at the end of the programme.

This initial investment will need to be co-financed with crowd-funding

(c) ce-accelerator

Process



Figure 1.12. Images from CE Accelerator prototype.

(d) ce-accelerator

Building blocks

ce-accelerator is part of a larger programme of capacity building for the circular economy in Ireland



(e)



(f)



Figure 1.12. Continued.

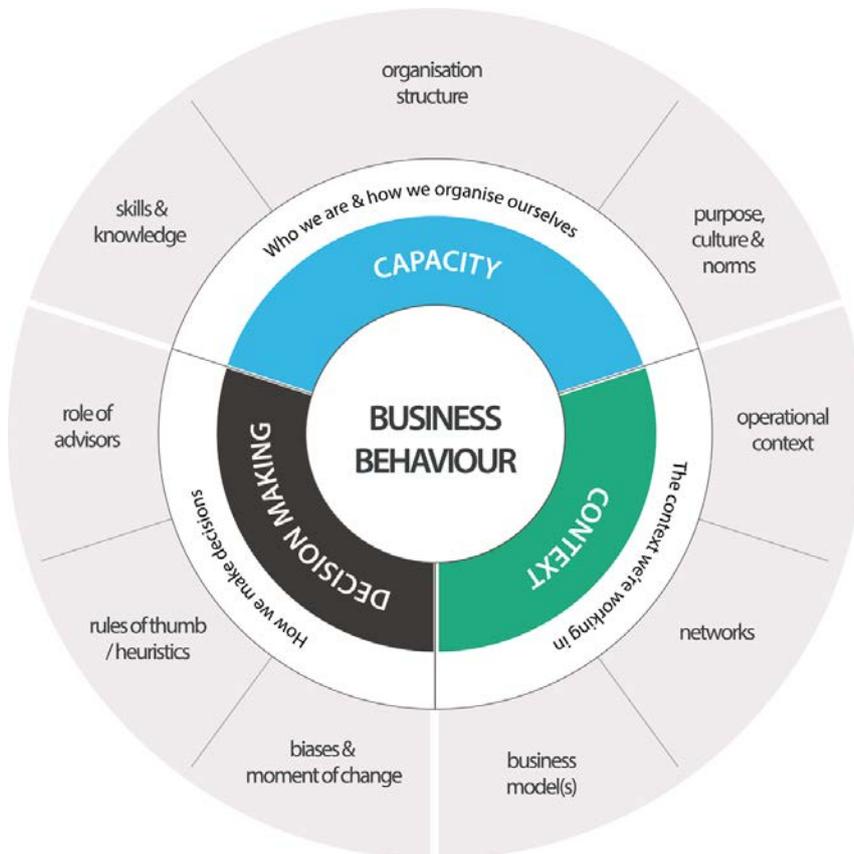


Figure 1.13. Behavioural Intervention Tool (framework).

Table 1.4. Behaviourally informed interventions aligned to user journey map

Behaviours and actions	Behavioural insights	Potential interventions
<i>Stage 1: Trigger for action (awareness, driver, opportunity)</i>		
Conversations with business peers, trade associations, family and others	Context and learning – collective discussions aid familiarisation with issues and process	Encouragement and facilitation of opportunities for group discussions about resource efficiency at business events or within community of practice
Reading and seeing information about RE/CE (e.g. TV and radio; sector events, press; specific communications or leaflets)	Priming – people behave differently if they have been “primed” by certain cues beforehand, e.g. words, sights.	Associate positive images and words with RE/CE (e.g. increases innovation, improves supplier relationships). At the same time avoid negative associations which may “anchor” future views on RE/CE
Reading and seeing information about RE/CE (e.g. TV and radio; sector events, press; specific communications or leaflets)	Effect – reliance on good or bad feelings experienced in relation to a stimulus	Use strong feelings to prompt decisions, for example by highlighting successful regional cases and relating impact on national context (e.g. helping Ireland to grow, become more sustainable, compete internationally)
Consideration of wider commercial benefits (including non-market benefits, e.g. CSR)	Framing and simplification – can facilitate information processing	Produce simple materials and use images, infographics rather than text
Seeing RE/CE in practice (e.g. in neighbouring business)	Social norms – people make choices based upon the perceived or communicated view of others	Increase awareness and acceptance of RE/CE (seeing RE/CE occurring in other businesses has the potential to affect social norms)
Encountering RE/CE messages at other times	Defaults and prompted choices	Individuals are asked to make a decision or make a choice about resource efficiency in application forms for general business grants
Encountering RE/CE messages at other events (e.g. trade shows)	Exemplify – leading by example	Highlight RE/CE for innovation and job creation, particularly within Irish context, e.g. national agenda
Sectoral or regional predisposition against RE/CE	Cultural polarisation – RE/CE may be assigned to particular businesses	Promotion of RE/CE as part of integrated management. Collaborate with non-RE/CE colleagues (e.g. Ibec, IDA)
<i>Stage 2: Formalisation of possible actions</i>		
Seeking clarification of benefits relative to commercial goals	Information presentation	Tailored material emphasising impacts, framed to emphasise non-environmental and other benefits
Generating ideas	Learning effects – people’s values and attitudes can change when information is exchanged in a constructive way	Provide experiential learning opportunities, e.g. site visits, practical workshops
Researching options	Reciprocation – people reciprocate help	Provide opportunities for previously successful applicants to assist in framing projects
Building business case	Information presentation and salience, including visualisations	Use novel techniques (e.g. visualisation and metrics) in other business events (aimed at those considering investment)
Assessing how RE/CE is driven or how it affects the operating environment or market	Priming, salience, framing – information presentation	Tailor presentation material to managers, board (e.g. business concerns, investor trends). Also consider the context (setting), and tailor discussions to the individual or group
<i>Stage 3: Accessing and using service</i>		
Making a commitment to undertaking a project	Commitment – through public pledges	Encouraging public to invest in RE/CE (publishing pledges on an EPA or sectoral website)
Dealing with sceptical or otherwise negative “others” likely to question RE	Removing frictions – making it easier	If concern relates “an onerous application process” or risk of EPA visit, reduce the bureaucracy burden for applicant by simplifying process, pre-populating forms and engaging with inspection teams where they exist
Identifying available and appropriate funding/support	Remove frictions – remove any “sticking points” that may deter individuals from acting	Offer application training to managers, use single forms so all future applications can be faster
Applying for a grant	Defaults and prompted choices, simplification – people will go for the default option	Make RE a default in other grant options to steer businesses towards a particular purpose
Accessing a grant	Loss aversion – incentives	Emphasis of top-up grant availability as a time limit may encourage take up to avoid missing out. Provide a higher level of grant if a threshold of applicants is reached

Table 1.4. Continued

Behaviours and actions	Behavioural insights	Potential interventions
Developing a plan – seeking reassurance from sector peers	Learning effects – people's values and attitudes can change when information is exchanged in a constructive way	Facilitate learning and knowledge exchange, rather than just providing materials
Identifying contractor or advisor	Networks – information, presentation and framing	Support business in search for contractors
Engage contractor to offer advice	Networks – information, presentation and framing	Support business by pooling/sharing information and expertise on RE and the delivery of projects
<i>Stage 4: After service</i>		
Provide options for feedback	Reciprocation – people reciprocate help	Provide opportunities for previously successful applicants to assist in framing projects
Consider further actions (to increase/maximise benefits)	Reciprocation – people reciprocate help	Provide opportunities for previously successful applicants to assist in framing new programmes
Demonstrating RE/CE to peers and local/sector discussions	Messenger – using social networks to encourage collective behaviour	Encourage businesses that successfully implement RE to become “champions” to reinforce benefits
Provide access to peers (to enable further/wider benefits to be realised)	Learning effects – people's values and attitudes can change when information is exchanged in a constructive way	
Communicate benefits of RE to other businesses	Social norms	Communicate RE as the preferred social norm at other non-environmental events, e.g. membership organisation events
Engage in and view results of RE projects	Social norms	Encourage view of investing in RE as the preferred social norm

CE, circular economy; CSR, corporate social responsibility; IDA, Industrial Development Authority; RE, resource efficiency.

why businesses may behave in particular ways. The tool describes key themes driving behaviour identified through the research, and it can be applied to examining the design of services and interventions.

The model is a development of a preliminary framework established during the Open Practices research and reported on in a research blog during February 2015.

The tool focuses on the following three levels:

- **Context.** This refers to the operational and market context within which the business operates. This can include supply chain, subsidiaries, subcontracting models and social enterprises.

- **Capacity.** This refers to the organisational capacity and the issues that are internal to the organisation.
- **Decision-making.** This refers to the cognitive and social factors that may have an effect on decision-making.

1.7.5 Behaviourally informed interventions

While developing the Intervention Tool prototype in conjunction with the user journey map (Figure 1.9), a number of behaviourally informed interventions were proposed based on the insights gained through the field research (see Table 1.4).

2 Designing Interventions for Sustainable Communities

One of the limitations of existing frameworks and policy interventions for sustainable development is that they frame causes and drivers of impact around individuals and undervalue the social, cultural, political and technical drivers of sustainable behaviour and lifestyles. The challenge with this is that human behaviour is shaped through interdependent relationships with others, e.g. communities.

As evidenced by the evolution of policies related to sustainable development, there is growing interest in the concept of “sustainable communities” and how they can be enabled and facilitated. In broad terms what these policies have indicated is that communities are an important foundation stone of sustainable development and that they can help regions, towns, cities and countries to achieve their sustainable development goals. The types of interventions and actions that have been proposed generally favour bottom-up and collective action over top-down approaches, self-governance and self-reliance over dependency, and a local perspective that relies on a fabric of small-scale projects. Other common issues that have emerged are the role of active citizenship and public participation, social inclusion, equity, equality and empowerment (Deakin and Allwinkle, 2007; Dempsey *et al.*, 2011; Jeannotte, 2003).

Sustainable communities typically emphasise issues such as social justice, resilience, wellbeing, equity and living within the limits of supportive ecosystems (Agyeman and Evans, 2004). That is not to say that the definition downplays the economic role of sustainability but that the social context of sustainability is foregrounded (Agyeman and Evans, 2004; Keil, 2007; Marsden and Hines, 2008; Pearsall and Pierce, 2010; Roseland, 2012).

The broad thematic areas on which many sustainable communities and community initiatives focus are housing, energy, mobility, food and local economic needs. Some academics and policymakers choose to describe sustainable communities from the perspective of infrastructure and planning, e.g. settlements, land use and housing. Others deal with the social context of sustainable communities, e.g. social relations, social practices, lifestyles, politics and governance.

A common theme emerging from the various intergovernmental protocols, research projects, national and regional interventions, and local community sustainability projects is that changes to human behaviour and social practices are required to facilitate a societal “transition” towards more sustainable communities. The focus on social practices is important, as it suggests that individual human behaviour is not the “cause” of unsustainability and that human behaviour needs to be understood in relation to the broader context in which social practices are performed. It is true that social norms and values shape practices, but it is important to recognise that infrastructures, institutional arrangements and systems of governance also play an important role.

In terms of understanding sustainable communities, it is important to view the social practices that result in, for example, carbon emissions and municipal waste within the context of technologies, infrastructures and institutions that the communities access and interact with. A better understanding of the dynamic relationship between these system components may help the creation of transition pathways and possible “levers” to facilitate “transitioning”. This may include the design of services, programmes or policy interventions that help individuals or communities achieve sustainable practices or behaviour change.

Closely tied to the principle of transition are a range of other frameworks for creating social change. One example of this is social innovation. Social innovation is an approach by which communities and other social groups co-create, develop, diffuse and scale ideas into solutions that address pressing social and environmental needs. The current policy interest in social innovation is partly a recognition that existing approaches to complex social and environmental problems are not working but also that new perspectives on innovation can be fostered through citizen participation.

2.1 Community Research Design

The study applied a mixed-methods research strategy to investigate the experiences, socio-cultural structures

and practices that shape sustainable community initiatives in Ireland. The four stages of research included:

1. Desk research on sustainable communities and community initiatives

The desk research explored the behavioural dimension of sustainable communities, tools, metrics and frameworks, as well as examples of emerging practices. This stage also involved exploring the history of sustainable community policy in Ireland.

2. Analysing Local Agenda 21 Partnership-funded community initiatives in Ireland

An analysis of community initiatives funded through the Local Agenda 21 Partnership Fund was undertaken. The purpose of the fund is to facilitate the achievement of the objectives of the Agenda 21 action plan on sustainable development, which was agreed at the United

Nations conferences in Rio in 1992 (the "Earth Summit") and in 2012.

3. Survey of Irish sustainable community experts and practitioners

A survey of community organisations, environmental non-governmental organisations (NGOs) and community development organisations was undertaken.

4. Field research with sustainable community initiatives

The case studies were developed through a combination of contextual interviews, participant observation, social network analysis, and desk and archival research.

Figure 2.1 provides a generalised overview of the research process. While the research was undertaken between February 2015 and September 2015 (i.e. over 8 months), it was delivered on a part-time basis with approximately 3.6 months allocated.

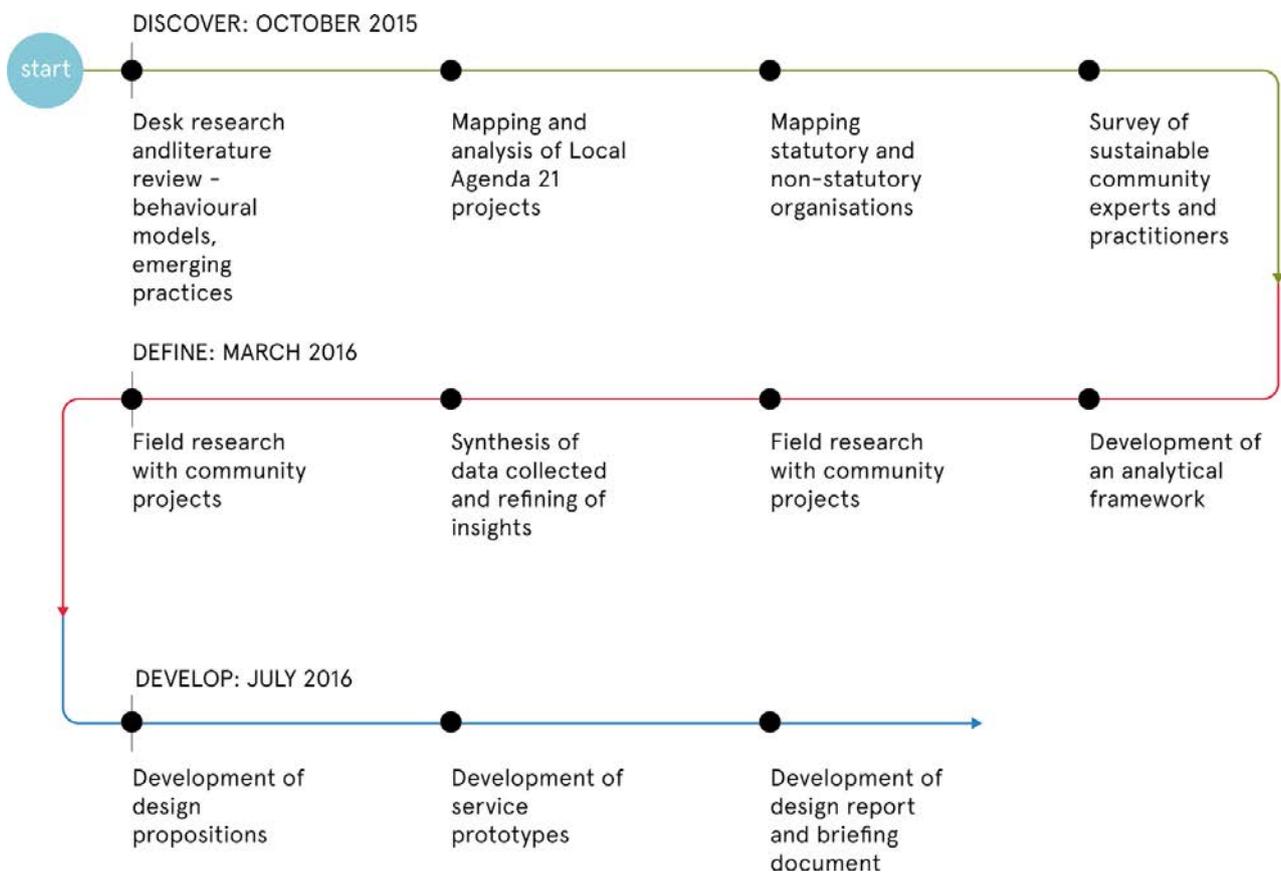


Figure 2.1. Overall research process.

2.2 Stage 1: Discover (Understanding Context)

In *Sustainable Development – A Strategy for Ireland* (Irish Government, 1997), the Irish Government played scant attention to the role of communities and the potential for community action and collective behaviour change. It framed the issue of community in the context of local government and suggested that a “reformed local government system” will support the delivery of the sustainable development strategy by empowering “local authorities at regional and local levels” through “their leadership of and interactions with local communities”.

The updated sustainable development strategy of 2012 places an emphasis on “sustainable communities”. The strategy suggests that the role of sustainable communities is to enhance “social capital” and “wellbeing”, and that they should provide places where people “want to live and work” while being environmentally sustainable and contributing to a “high quality of life”. There are number of normative promises within this definition, in particular with regard to high quality of life. The strategy does emphasise the role of social inclusion and tackling poverty. That is welcome, but it does not critically examine the dominant perspectives on what constitutes quality of life.

The updated sustainable development strategy also places emphasis, rhetorically at least, on the importance of developing citizen, community and wider stakeholder participation and engagement. The strategy suggests that successful implementation requires “new actions” alongside “broader engagement and participation”. The strategy also suggests that this engagement between citizens and local government plays a role in effecting behaviour change, which in turn facilitates the “transition to a more sustainable society and economy”.

While the strategy recognises the need to move beyond information-based interventions, no actions are defined. It also makes no reference to contemporary perspectives on behaviour change, such as the role of social practices, socio-technical regimes or interventions regarding choice editing and new forms of social provision and social innovation.

The embedding of community-level action in Irish sustainable development policy is important for a

variety of reasons. A key issue is that there is an important but underdeveloped link between active citizenship, local democracy and local institutions that embody sustainable development. Some research also points to the fact that community action and community initiatives can generate socially embedded changes in behaviour (Burgess *et al.*, 2003).

In addition to the sustainable development strategy, there are a number of other policies and strategies that address aspects of sustainable communities. While there is no overarching policy, it is possible to explore the threads within these various policies, frameworks and strategies to develop a perspective that favours potential opportunities for interventions that support sustainable communities.

2.2.1 Analysing Local Agenda 21 Partnership Fund

While this fund rarely receives significant attention, it is a key mechanism for funding community initiatives in Ireland. It has allowed committed community activists to develop actions and experiment with various ecological and social innovations in the community context.

The Local Agenda 21 Environmental Partnership Fund is administered by local authorities, and eligible projects are those that support and complement, at a local level, national environmental policies such as those on waste, biodiversity, climate change, air, water and sustainable development. The funding allocated by the programme is matched by the local authority, and projects can combine the grant with other sources of funding.

To better assess the scope and potential impact of the Partnership Fund, an analysis of projects funded between 2008 and 2015 was undertaken. The data for this analysis were extracted from the former Department of Environment and Local Government website. All the data are publicly available but are not presented in a consistent or accessible format. These data were extracted from multiple documents and reformatted to make an analysis possible.

Over the years analysed, 4401 projects were allocated funding across the following themes:

- training, education and similar awareness-raising initiatives;

- school/community vegetable gardens and allotments;
- development of community areas including wildlife and biodiversity;
- repair, reuse and recycling;
- composting and rainwater harvesting;
- audits, surveys and action planning.

Figure 2.2 presents the total number of projects by theme. Projects related to training, education and awareness raising accounted for 47% of the total number of projects. While this is in keeping with the principles of Local Agenda 21, it is noticeable that 1.5% of projects were related to audits, surveys and action planning. This imbalance may explain a lack of evidence supporting awareness raising and a lack of structured action emerging from the Partnership Fund.

While the data do not represent the full term of the Partnership Fund, increased funding was allocated between 2008 and 2015. This is due to a significant increase in the numbers of applications. In 2008 €332,000 was allocated to 400 projects, whereas in 2015 €780,183 was allocated to 770 projects.

There are regional variations in total allocated funds. Figure 2.3 presents an overview of the variance in allocations by local authority area. This highlights how Dublin City, Cork County and South Dublin are the three councils with the highest total allocations. While the highest total allocation was to Dublin City Council (DCC), at €322,571, the median across all local authorities was €131,000.

Figure 2.4 provides a heat map of the total funded projects. While further analysis is required, it provides an insight into the areas of Ireland that are most active

in relation to Local Agenda 21 Partnership-funded projects.

One of the noticeable characteristics of the Local Agenda 21 Partnership Fund is that some groups and organisations have been more successful at gaining finance through the fund. Figure 2.5 presents an overview of some of the key groups that have applied for the Partnership Fund. What this highlights is that the Tidy Towns groups have collectively been successful at winning funding, whereas the more emergent groups such as Transition Towns are less well represented. Clearly this is due to the number of Transition Town groups.

It is worth noting that there were 232 successful applications by Tidy Towns (€516,291) and 17 by Transition Towns (€37,909). If this allocation was evenly distributed among the applicants, it would mean that each successful Tidy Town application received €2225 and each successful Transition Town applicant received €2229.

Clearly the Local Agenda 21 Partnership Fund plays a key role in allocating small amounts of funding to a relatively large number of projects. It has a broad distribution across Ireland, and projects in urban and rural contexts. A key issue with the Partnership Fund is that it provides an interface between the team of environmental awareness officers in local authorities and communities across Ireland.

2.2.2 Sustainable community expert and practitioner perspectives

To better assess the perspectives on sustainable communities among Irish experts and practitioners,

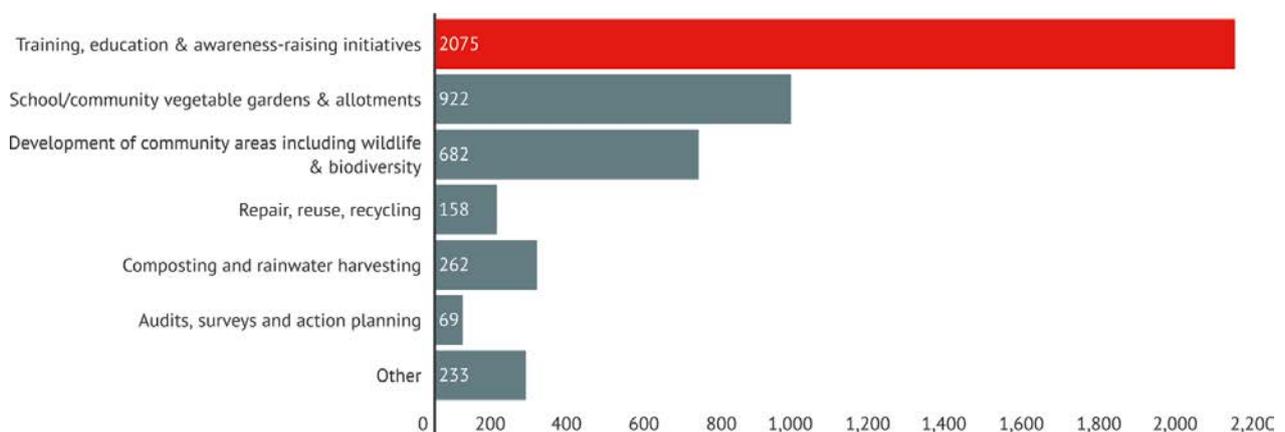


Figure 2.2. Total number of funded projects, by theme.

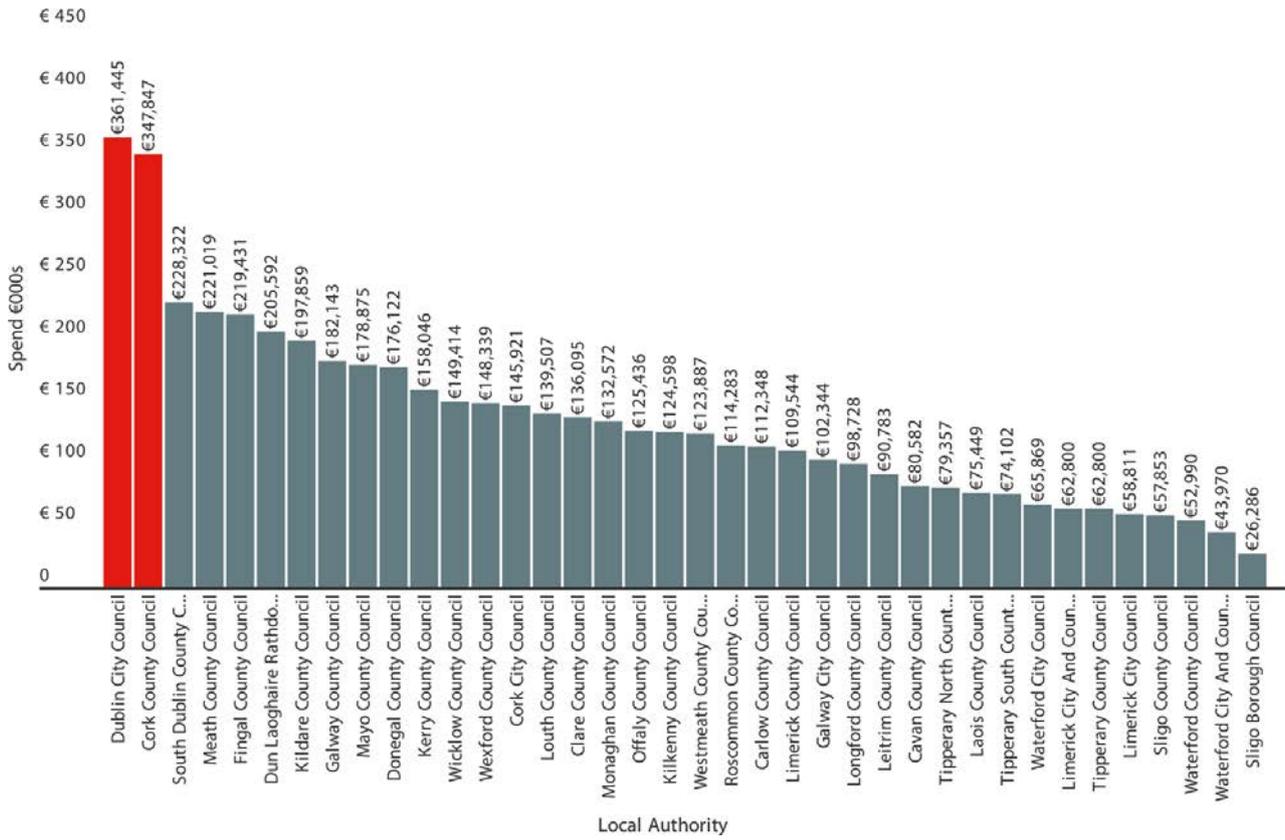


Figure 2.3. Funding allocation by local authority (€000s).

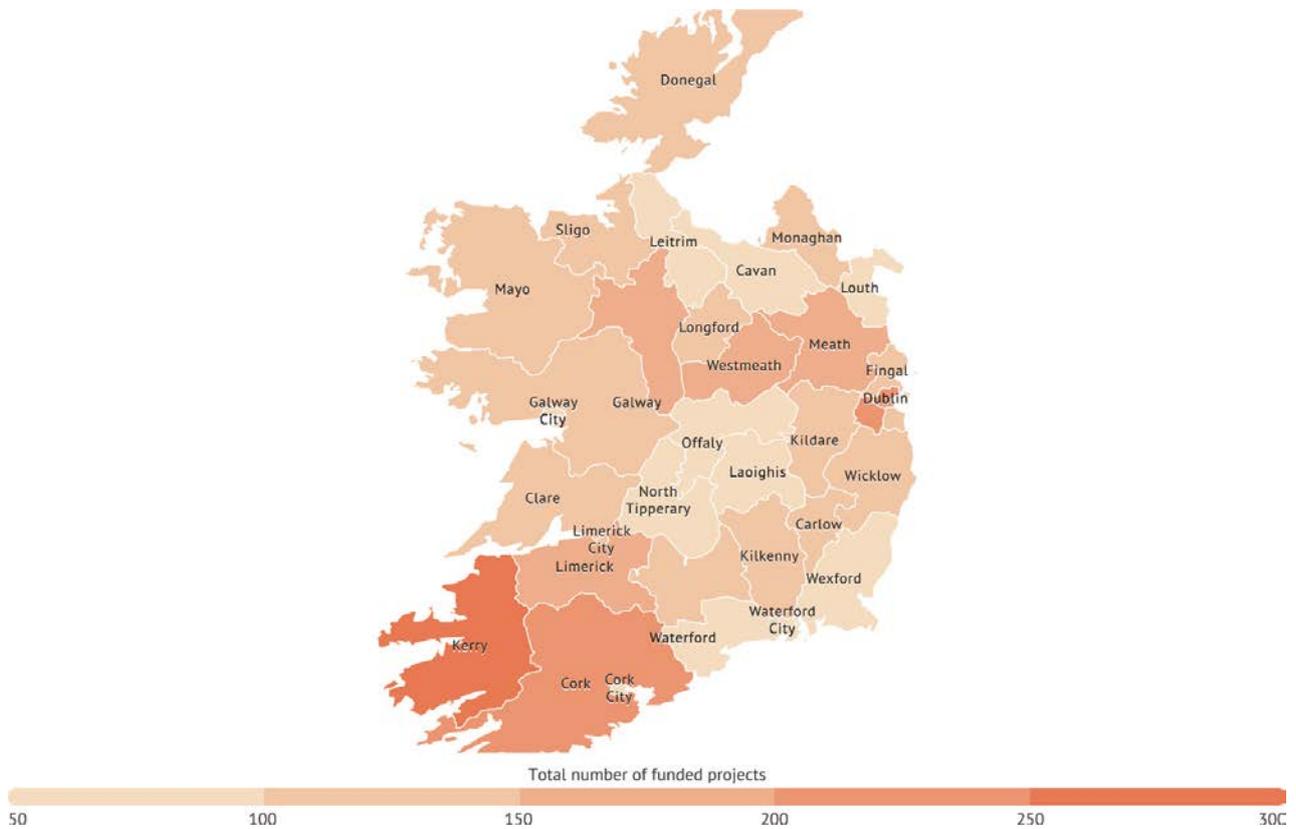


Figure 2.4. Heat map showing intensity of funded projects.

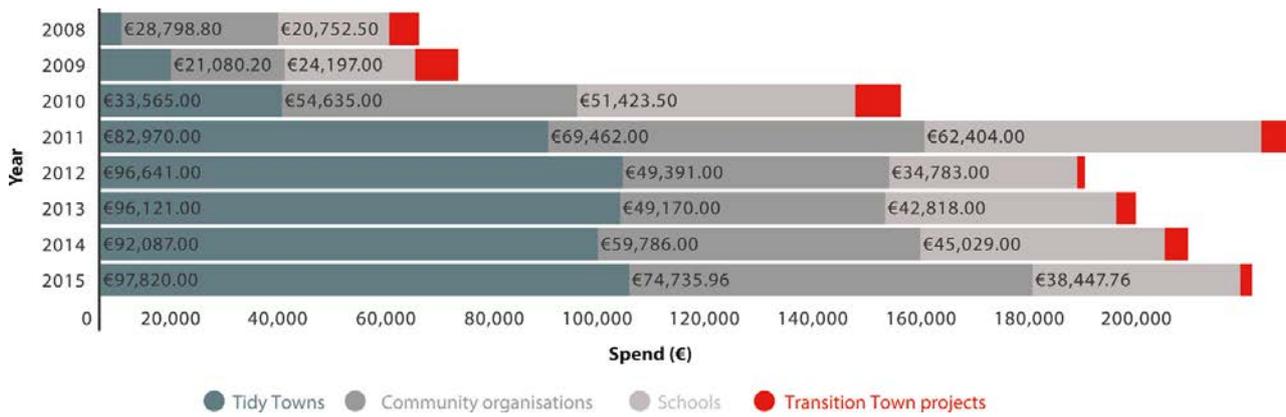


Figure 2.5. Total funding allocation to key groups by year (estimate).

a survey of community organisations, environmental NGOs, community development organisations and political parties was undertaken. The survey addressed issues such as policy and practical barriers to developing sustainable communities, existing sustainable community practices, and the dominant themes of existing initiatives.

The sample was selected using a variety of data sources. These included members of the Irish Environmental Network and the Public Participation Network, data from benefacts.ie and publicly available data from the Department of Employment Affairs and Social Protection. The survey was sent to senior staff, who could ask other staff to complete the survey on their behalf.

2.2.2.1 Results

The survey was open for 3 weeks and from the survey sample of 101 a total of 38 responses were received, a response rate of 37.6%. The survey sample was of a modest size, but it provides a reasonable insight into the perspective of experts and practitioners in Ireland. The organisations that responded provide a reasonable geographic distribution with representation from each province and a combination of urban and rural responses (Figure 2.6). In addition, 57% of the respondents were from the main large urban areas (e.g. Dublin, Cork, Kilkenny).

The respondents were categorised using the following broad themes: social, socio-economic, local authority, environmental, political and academic. These broad categories reflect the broad focus of the organisations. For example, “socio-economic” organisations, which represent the largest group of respondents (39%),

include community development, social enterprise and social finance organisations.

Of those that responded, the majority are in senior positions, i.e. at a chief executive, director, manager or co-ordinator level. There were two responses from councillors (one urban and one rural). Although the survey did not specifically ask respondents to self-identify in terms of their gender, based on the response names it is assumed that there were 20 male and 18 female respondents.

The survey asked respondents to define their organisation’s activities from a set of pre-defined options. The organisations that responded are involved in a diverse range of activities related to sustainable communities and community development. Figure 2.7 gives an overview of the range of activities identified by the respondents.

In terms of current involvement in activities related to sustainable communities, 94% of the respondents suggested that they were involved in activities related to sustainable communities. The remaining 6% had an interest in sustainable communities but were not actively involved in any specific activity.

2.2.2.2 Barriers to sustainable communities

This survey sought to understand the issues of barriers to sustainable communities from the perspective of practitioners and experts in Ireland.

Policy barriers

The two leading barriers are the lack of a single policy or vision for sustainable communities (34.6%)

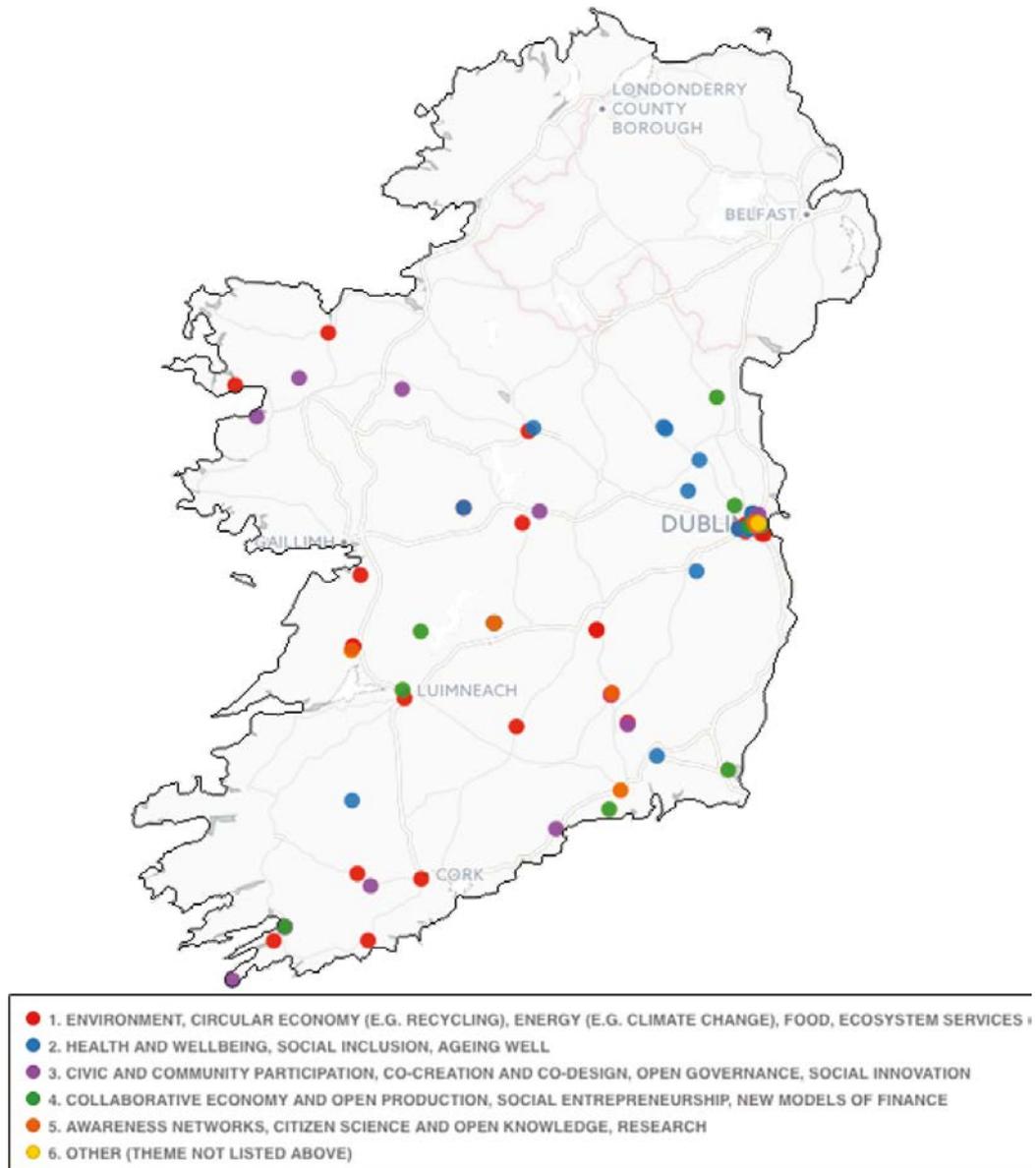


Figure 2.6. Location of survey respondents.

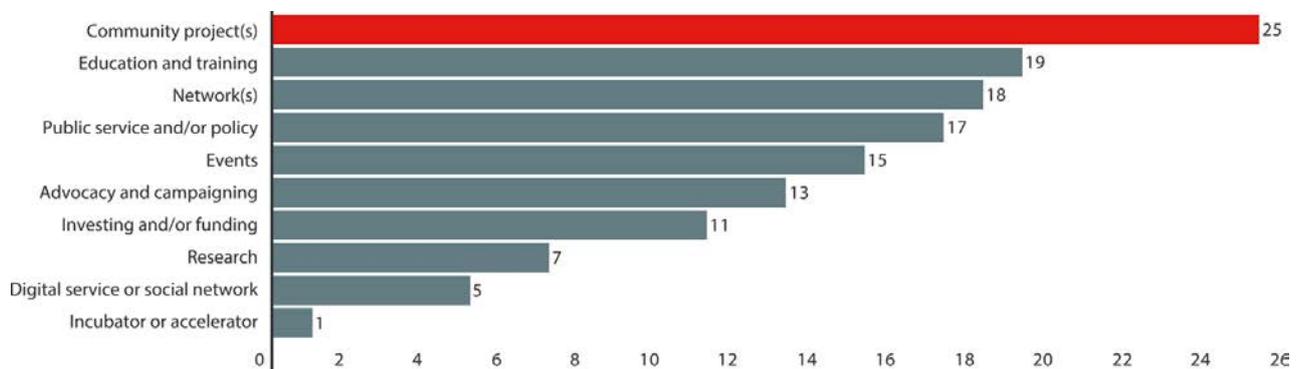


Figure 2.7. Types of activities in which the respondent organisations are involved ($n=38$).

and the lack of a common framework for evaluating sustainable community projects (26.9%) (Figure 2.8). The issues of regulations specifically relating to sustainable communities were seen to be less of a barrier. The regulatory barriers faced by communities are seen to be an issue. This is a common issue raised in the context of various sustainable community initiatives, e.g. setting up community energy projects, accessing vacant land for community gardens and selling food grown in community gardens.

Practical barriers

In terms of practical barriers to sustainable communities in Ireland, there was less variance in the responses and almost all the barriers were strongly identified with by respondents. The barrier that was most strongly identified with was “a low sense of ‘agency’ and ‘empowerment’ to create change” (33.3%) (Figure 2.9). The issue of physical spaces for groups to meet was not seen to be a significant barrier. The four people who identified with the challenge of providing a physical space for people to meet were located in Dublin.

2.3 Stage 2: Define (Field Research)

In addition to the survey data and desk research, field research was undertaken with sustainable community initiatives across Ireland. The intention was to explore a diverse range of community-based initiatives, particularly those focused on co-creation, participation, social enterprise and social innovation. The initiatives were also selected in terms of their likely contribution to the formation of theory around new practices related to sustainable communities. Through field research,

in-depth contextual interviews were conducted with representatives and stakeholders of community initiatives. The contextual interviews and participation observation were undertaken over repeated site visits and attendance at community events.

The cases were identified through a non-probability sampling method involving dialogue with national experts and desk research. From an initial sample of 30 potential cases, the final case studies were selected using a simple thematic framework. Cases were selected if they represented one or more of the following five themes.

1. environment, circular economy (e.g. recycling), energy (e.g. climate change), food, ecosystem services (e.g. outdoor tourism);
2. health and wellbeing, social inclusion, ageing well;
3. civic and community participation, co-creation and co-design, open governance, social innovation;
4. collaborative economy and open production, social entrepreneurship, new models of finance;
5. awareness networks, citizen science and open knowledge, research.

2.3.1 Overview of the cases

Table 2.1 provides an overview of the selected cases.

The case study and interview protocol organised data around the following themes:

- **Project vision and rationale.** This explores the various aspirations underpinning community projects and the way these are negotiated.

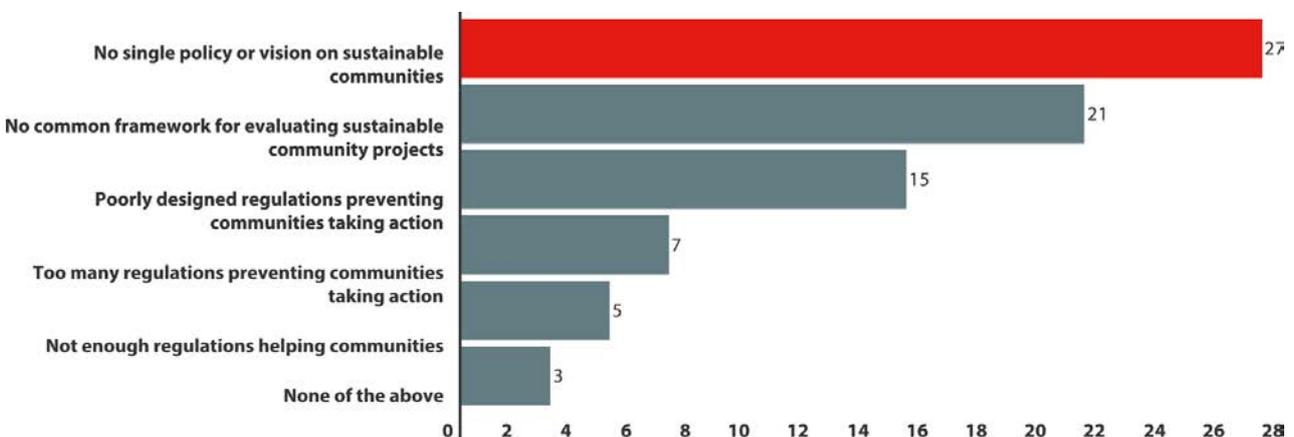


Figure 2.8. Policy barriers to sustainable communities (n=38).

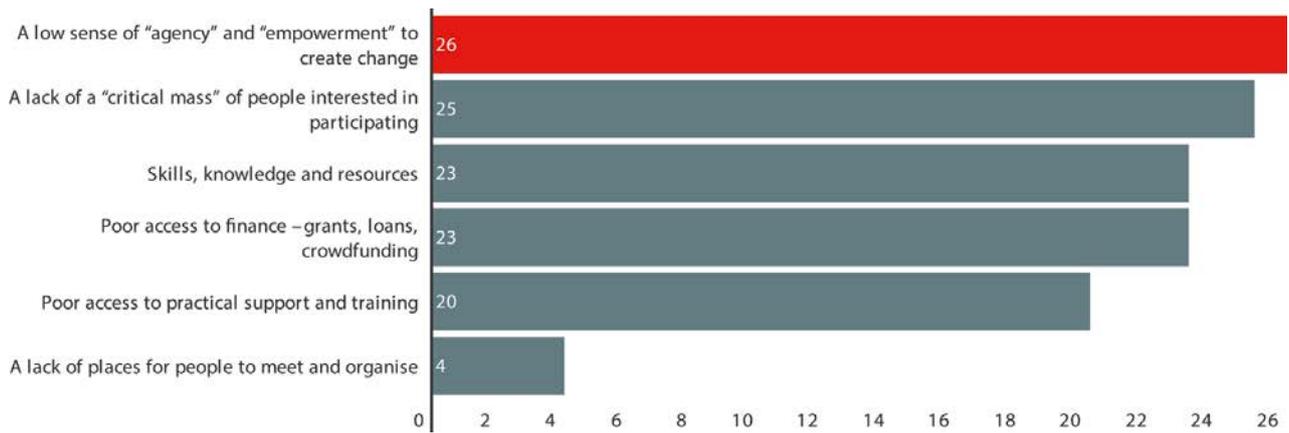


Figure 2.9. Practical barriers to sustainable communities (n=38).

Table 2.1. Case study overview

Name	Rationale	Theme (see framework in section 2.3)	Data collection	Location	Scale
Grow Dome	Innovative urban farming and social enterprise	1, 2, 4	Contextual interviews, participant observation (3 days working at Grow Dome)	Dublin	Micro (grassroots)
O’Gonnelloe Exchange	Co-creating rural community infrastructures	2, 3	Contextual interviews, participant observation (attending 3 community events)	Clare	Micro (grassroots)
DCC Beta	Civic prototyping between a local authority and communities	2, 3, 5	Contextual interviews, desk research, site visits	Dublin	Intermediate (local authority)
Ballyfermot Play Park	Co-creating green and play spaces with urban community	2, 3	Contextual interviews, desk research, site visits	Dublin	Micro–meso (grassroots, intermediary and local authority)
Public participation networks	New participatory infrastructures	3, 5	Contextual interviews, desk research, participant observation	National	Intermediate–macro (intermediary, local authority and national government)

- **Direction and evolution.** This explores the evolutionary path of community projects and the factors that influenced them along the way, including various conflictive events and tensions.
- **Power structure and politics.** This explores the intended/unintended or invisible/visible exclusionary patterns, such as power structures, hierarchies, discourses and dilemmas, as well as their ability to engage/benefit a diverse range of people.
- **Financial sustainability and scale.** This explores the financial sustainability and scalability of community-based initiatives, and deals with the relationship between the use of (and possible dependence upon) grant money and the wider social impact of the projects.
- **Governance and governing relations.** This explores the governance within community projects and the way regulatory structures hinder/enable particular projects.

2.3.1.1 Case 1: Grow Dome

Project vision and rationale

The Grow Dome is a geodesic grow dome based in Rialto, Dublin 8. The Dome was developed as a project by four individuals but is currently managed on a full-time basis by two of the original team. The Grow Dome team set out with the core aim of developing an intensive year-round approach to sustainable food production, which would apply key low-cost and low-impact technologies such as off-grid hydroponics, rain-water harvesting and upcycled materials. The team has a broader desire to use this form of urban farming as a mechanism for local job creation through small-scale community enterprise.

Direction and evolution

One of the initial driving forces behind the project was the desire to experiment with practical projects that could turn derelict sites into valuable community assets in Dublin. The team behind the Grow Dome had developed earlier urban farming projects, including one on the roof of the Chocolate Factory (a creative co-working space in inner-city Dublin). These early experiments in urban growing were relatively short lived and ran into various challenges faced by community projects.

Power structure and politics

The Grow Dome is a social enterprise, therefore it can set direction and is free to raise finance independently. A number of relationships needed to be negotiated because the dome is located within the Flanagan's Field community garden, which is itself located on part of the site of the former Fatima Mansions. Flanagan's Field is partly managed by the Back of the Pipes Residents' Association, which is leaseholder on the land and which existed prior to the establishment of the Grow Dome. The lease to the Residents' Association from DCC runs in 11-month stages and the land must lie vacant for a period of 1 month every year. DCC is always within its rights to change the use of the land and this contributes to ongoing precariousness for the community garden and the Grow Dome team. Despite this, the Grow Dome team and Residents' Association feel that the council staff that they interact with have their best interests in mind.

Financial sustainability and scale

One of the challenges faced by community growing projects is that they often rely on volunteers and a core team of committed residents that have the time and resources to manage the projects. An important focus of the Grow Dome project is the desire to develop a social enterprise around the Grow Dome model. This differentiates the Grown Dome from many other community growing projects around Ireland.

The early development of the Grow Dome relied on a variety of funding sources, such as grants, awards and donations from local organisations. Much of this money was used for direct costs such as building and maintaining the dome. The team also has plans to scale up the Grow Dome model by going into partnership with other organisations that can provide land and space to install a dome.

Governance and governing relations

The Grow Dome exists through a number of relationships negotiated with external organisations, e.g. residents, DCC, business support organisations and Flanagan's Fields community garden. The team feels that one of the most important relationships is with local residents. There are 100 keys to the Flanagan's Fields and these residents also have access to the Grow Dome.

The Back of the Pipes Residents' Association also championed the Grown Dome initially, and it made contact with a wide number of residents to explain the goals and purpose of the project. This trust-based relationship with residents may go some way to explaining the security situation of the dome. The Grow Dome has experienced only one incident of vandalism. This was a relatively minor incident and, given the expectations from external bodies about the security issue, it is a remarkably good record.

2.3.1.2 Case 2: O'Gonnelloe Exchange/Small Town Studio

Project vision and rationale

The O'Gonnelloe Exchange describes itself as a "community based start-up social enterprise that develops and nurtures collaboration". The O'Gonnelloe Exchange has initiated a series of projects that aim

to work collaboratively as a community to develop physical and social infrastructure.

Direction and evolution

While the community had worked together at various levels over the years, e.g. through the Gaelic Athletic Association (GAA), the most recent impetus for community activity was a series of “pow wow” workshops run in collaboration with the Small Town Studio in 2015.

The Small Town Studio is a design and architecture practice that was formed through collaboration between designers, architects, educators, community and local development groups. These pow wow workshops were a series of discussions open to everyone in the locality, to get people sharing ideas about how they could strengthen community ties, develop natural assets and develop local enterprises.

The initial emphasis of the work was on the development of existing assets in the community, namely “the lookout”, “the exchange” “the handball alley” and “the two mile gate”. Over a 4-week period, a participatory design and planning process took place in the parish hall.

While these pow wow events covered a broad range of topics, one consensus that emerged was that the community could benefit from continuing these meetings and workshops. One of the key realisations was that, while O’Gonnelloe is a rural community, its social relations were fragmented. There was a general consensus that because the community was fragmented it would be beneficial to continue bringing the community together, using the parish hall as the focal point.

Co-producing community infrastructure – the O’Gonnelloe footpath

A key project for the community has been the installation of a 4 kilometre footpath along the R463 between O’Gonnelloe and Tuamgraney. The impetus for this project was that the village is a ribbon development along the main road and it was not possible for residents to walk to or through the village.

The project commenced when the community approached Clare County Council with the proposal. The project took an unorthodox approach in that

Clare County Council provided the materials for the construction and the community provided the labour. This means that the path was built by a team of 40 volunteers working over the course of several weekends.

The intention is to provide an amenity for the local community allowing people to walk and meet their neighbours and young people to walk to school. In addition, walkers will be able to stop at several key locations, such as the old handball alley and public access points to Lough Derg. The Exchange will provide a second stop that will offer walkers refreshment and information on what is happening locally.

Co-creating community infrastructure – community cafe at O’Gonnelloe Hall

The village has had no shop for the past 6 years and no centrally located pub since 2011. The post office also closed a number of years ago, as did the petrol station. One of the issues that the community raised during the pow wows and other community meetings is that there is no place for the community to meet, and no cafe.

Some of the local community participating in the O’Gonnelloe Exchange set up a Saturday morning coffee shop. This is based in the kitchen of the old schoolhouse, which had been acting as a parish hall. In the spirit of how the O’Gonnelloe Exchange had been operating, they decided to start with existing assets and use volunteers’ time. The kitchen is used by the cafe and tables and seating were installed. A blackboard is used to display items for sale, which typically include local produce.

Power structure and politics

The O’Gonnelloe Exchange has been developing organically over the past 2 years, and its participants have resisted the traditional formal structure of community development organisations. The intention is to develop an innovative structure that allows the community to form teams or collectives around various projects. While they intend to maintain a flat structure, the projects tend to happen through the effort of core groups. The meetings in which this potential structure was discussed underline the challenge of developing innovative structures that are informal enough to allow

wide engagement while being formal enough to allow organisations to apply for finance and develop more sustainable projects.

Financial sustainability and scale

One of the key challenges faced by the O'Gonnelloe Exchange will be developing the financial capacity to undertake new projects and sufficient stability to develop proposals for larger grants. For example, the development of the footpath would not have been possible without the combined resources of the community and the local authority. It is possible that the local authority could have delivered the footpath without the social dividend, but the community would have struggled to raise finance for the project.

There is a desire to develop capacity for applying for further funding for future projects. For example, options available to the community such as LEADER and Local Agenda 21 have been explored previously.

Governance and governing relations

The development of the path has enabled the Exchange to think about future possibilities for collaboration. The nature of the relationship between the Exchange and Clare County Council was innovative and in many ways speaks of the possibility of co-production. There is also an interest in the concept of living labs and the possibility of developing further external links with organisations such as universities and research institutes.

2.3.1.3 Case 3: DCC Beta

Project vision and rationale

"DCC Beta" is a project and structure for trialling, assessing and implementing ways to improve the experiences of citizens living in Dublin. DCC Beta set out to act as the "experimentation and learning face of Dublin City Council" and was developed by Shane Waring within the City Architects office of DCC. The term "beta" is applied to the design, engineering and technology industries and describes an output or product that is still in the early prototype stage. This implies that the output or product can be tested, trialled and evaluated in a real-world setting, with a view to gathering feedback and improving on the initial idea.

Direction and evolution

DCC Beta started as a City Architects "10% innovation time" staff project in 2012, and later became a full City Architects project in 2014. To date, DCC Beta has initiated approximately 20 projects on varied themes and scales. Two of these projects have now been finalised into City Council policies and are currently being deployed by DCC's Area Offices. Other projects are still in the trailing phase and/or on hold, primarily as a result of available resources. The approach has shown that it is possible to temporarily implement something in the city to obtain a better quality of learning and discussion and to better manage risk.

Power structure and politics

A number of existing "city innovation" and "co-creation" platforms focus on suggestions from citizens, which are submitted to (or through) local government for further development. A key principle of the DCC Beta approach is that DCC staff can actively participate in experimentation and evidence-based learning.

This differs from a number of other similar co-creation platforms, which rely on bottom-up or citizen-promoted ideas, usually through some form of deliberative digital tool. While these bottom-up approaches are important, there are a number of factors to be considered, such as the capacity to deliver on the project, or championing of the project by one of the directly elected members of the council or very senior staff members.

The process of trialling and decommissioning beta projects presents a number of governance challenges. While the project may be seen as raising the expectations of citizens unnecessarily, it is valuable in fostering honest policy conversations and developing better quality data to challenge existing services to demonstrate their efficacy. The conversations around DCC Beta projects include the perspectives and experiences of a range of individuals from across the local authority and the wider community.

Financial sustainability and scale

A key challenge for DCC Beta will be the development of a business model that allows the scaling up of the approach in DCC and transferability to other local authorities in Ireland. One of the challenges of scaling

a project such as this is defining value, measuring impact and measuring full costs per service. DCC Beta has collaboratively developed a framework of indicators and metrics that can be applied to various projects at various scales. The intention is not to apply all indicators to every DCC Beta project but to provide a basket of indicators that can be applied to different projects.

Governance and governing relations

DCC Beta is a unique project in Ireland and it has successfully demonstrated the scope and possibility for developing a structure to trial and prototype projects in the local authority context. The DCC Beta project has also taken steps towards developing a culture of evidence-based approaches to trials, while creating a collaborative platform that allows staff to solve challenges or explore innovation opportunities.

One of the governance issues that DCC Beta has raised is the nature of formal partnerships for public service delivery. The traditional approaches to procurement and commissioning can be looked at from a different perspective. The DCC Beta approach opens up greater scope for innovative practices such as co-design and co-production. There is potential for DCC Beta to develop a model of “collaborative commissioning” wherein local authority service contracts are co-designed with local communities. In this scenario, DCC Beta helps to facilitate a dialogue with service and product providers, and community stakeholders, to agree on objectives, processes and resources.

2.3.1.4 Case 4: Ballyfermot Play Park

Project vision and rationale

The play park project is a collaborative and participatory design project which is aimed at developing a new play area and skate park in “the Lawns” at Le Fanu Park, Ballyfermot, in Dublin 10. Ballyfermot is a suburb in the city of Dublin and is located 7 kilometres west of the city centre.

The primary objectives of the project are the development of a play area and green space for local residents, which encourages active citizenship, fosters community involvement, addresses inequality and disadvantage, and employs a genuine participatory

design process. The project also aims to develop new tools, processes and opportunities for collaboration and co-design in the context of public space. By involving the community from the start, the project seeks to improve the “design literacy” of residents and bridge the gaps between architects, researchers and citizens.

Direction and evolution

While there have been many decades of community development activity in Ireland, Ballyfermot Youth Services and other stakeholders (e.g. outdoorcommunity.ie) have been campaigning for increased investment in green spaces and play areas for young people in its area since around 2012. The focus of this campaigning has been on the provision of play spaces for people under the age of 25.

Importantly, in 2011, a group of local young people started to campaign for improved facilities in their community. There has been an increase in interest in outdoor play activities such as skateboarding and BMX among young people in the area, but there is currently no dedicated space for these activities in the south inner city.

The site in Le Fanu Park was chosen by DCC in response to the growing need and desire for a free play and skate park in the Ballyfermot area. The site is adjacent to a campus of youth and leisure facilities (Leisure Centre and FamiliBase) which opened in 2008, and the play park initiative is seen as a further extension of these resources. The initiative will be delivered in three phases through a process of high-quality public engagement, an architectural competition and construction.

In the first phase of the project there were 10 events which combined aspects of consultation, public engagement, co-design and participatory planning.

Almost 370 people of all ages participated in the activities, which included:

- meetings with young BMX cyclists, skaters and scooter users in Ballyfermot;
- consultation picnic on the Lawns, which the community was invited to;
- committee meetings to discuss management, maintenance and objections with residents, Gardaí and DCC staff;

- an image-making workshop called “Re-Draw the Lawns”;
- an inclusive design workshop in Ballyfermot Library, exploring universal design principals for people with specific access and learning needs;
- “Play The Lawns”, a site-specific event to explore the lawns as a site for play.

The feedback collected through the initial engagement activities informed the design brief, which in turn formed the basis of the international design competition. In addition to this, the team also developed a video that was able to express the scope and context of the project while allowing international design teams to get a better sense of the cultural context of the local area.

The company that won the design competition was Relational Urbanism, a multidisciplinary design practice that covers architecture, urbanism and local development. Relational Urbanism as a practice focuses on the relationship between social, environmental and development issues, and it has worked on both large-scale metropolitan visions for cities and small-scale designs.

Power structure and politics

The site where the play park is being developed has been a contested space for many years. It was the focus of local campaigning by young people and residents, who had a strong desire to see the space put to better community use.

Financial sustainability and scale

The development of a play park is something that a community will not typically be able to self-finance. In this case, the process was accelerated by the finance and expertise that the Irish Architecture Foundation and Matheson Foundation brought to the DCC.

The initial budget allocated for construction and design of the play and skate space alone was estimated to be between €300,000 and €500,000. This budget is required to cover construction, equipment, lighting and security features. Approximately 10% of this overall budget includes design consultancy services over the duration of the build, e.g. quantity surveyors, engineers and project management.

An additional budget was allocated by the Irish Architecture Foundation for ongoing community engagement, communication and facilitation. These activities are being led and managed by the Irish Architecture Foundation and were planned to run until autumn 2016.

Governance and governing relations

The project is interesting in the Irish context in the sense that it took a “people first” approach. This is counter to traditional planning and development practices. There has been criticism of planning and development in Ireland, and the perception is that councils develop plans first and consult the public later.

A leading principle of the participatory design process is taking an asset-based approach and identifying local people’s needs and aspirations at an early stage of the design process. This can help create a strong sense of shared ownership of the space while enhancing active citizenship. While the project is a collaboration between the partners and the final design and architecture form, the lead partner reserves the right to request amendments to any design which, in the opinion of a panel of technical experts, will exceed this budget.

2.3.1.5 Public participation networks

Project vision and rationale

While formal structures for public participation in Ireland are nascent, Ireland has seen the development of public participation networks (PPNs) within each local authority since 2014. The overarching aim of the PPNs is to enable citizens to take an active role in local government policymaking and service delivery.

The PPNs were not universally welcomed by the community sector. Interviews with PPN managers and community organisations participating in the PPNs suggest that the positive role of the PPNs will be in “clearing the lines” between local communities, individuals and local authorities and in providing a more coherent mechanism for local authorities to connect with community, voluntary and environmental groups.

The structures and processes of the PPNs are intended to facilitate and enable public and community

organisations to articulate a diverse range of views and interests within the local government system. A parallel and equally important aim should be to facilitate local authorities to make better and more timely decisions. To allow the diversity of voices and interests to be facilitated and involved in decision-making, a network has been set up in each county/city and municipal district.

According to the guidelines of the Department of Rural and Community Development, the PPNs:

- facilitate the participation and representation of communities in a fair, equitable and transparent manner through the involvement of environmental, social inclusion and voluntary sectors in decision-making bodies;
- strengthen the capacity of communities and environmental, social inclusion, community and voluntary groups to contribute positively to the community in which they reside/participate;
- provide information relevant to the environmental, social inclusion and voluntary sector and act as a hub around which information is distributed and received.

Direction and evolution

The PPNs have now been established in every local authority area in Ireland, bringing together community, voluntary, social inclusion and environmental organisations in each city/county. It is estimated that well over 12,000 volunteer-led organisations have already joined their local PPN. Each PPN is tasked with developing a “wellbeing statement” for their area, for current and future generations.

This process will empower PPNs to be proactive in setting the agenda for local development. PPNs are the mechanism by which representatives are elected to sit on local authority and other decision-making boards and committees, including Strategic Policy Committees (SPCs), Local Community Development Committees (LCDCs) and Joint Policing Committees (JPCs). PPN representatives are supported by “linkage groups” of organisations that are stakeholders on a particular issue.

This mechanism enables issues to be brought from grassroots communities to the decision-making table, and ensures that representatives reflect a diversity

of views and not just their own, or that of their own organisation.

Power structure and politics

All community, environmental and voluntary organisations in a county or city can register to be members of the relevant PPN. This PPN is the main channel through which individuals will be elected and selected to participate in various activities within the county and city councils and their respective boards and committees.

For example, individuals from the PPN can be elected to sit on the SPC or the LCDC. The SPCs act as a mechanism for consultation on policy issues and allow representation on strategy development and decision-making by elected members, sectoral interests and community groups.

The LCDCs have recently been established within all 31 local authorities. Their function is to co-ordinate and link local and community development, and typically they include elected members, council officials, local development agencies, community and voluntary organisations, private sector groups, farming groups and wider civil society. The ambition is that LCDCs will draw on the diverse expertise of their members to improve the quality and effectiveness of public services at a local level.

The PPNs have an evolving structure and each local authority area has begun to adopt practices that are relevant to its area and to the existing infrastructure.

Financial sustainability and scale

To date, the PPNs have been provided with core funding by the Department of Housing, Planning and Local Government (formerly the Department of Environment, Community and Local Government). In 2016, funding from this department provided up to €50,000 for each PPN, and this was to be matched with at least €30,000 by the local authority.

Governance and governing relations

In general terms, the overarching structure of the PPNs is as follows:

- **A county and city plenary.** The plenary acts as the ruling body of each PPN and is comprised

of all community, environmental and voluntary organisations registered in the relevant area.

- **A municipal district plenary in each municipal district.** This functions in the same manner as the county and city plenary, but at the municipal level.
- **A secretariat at county or city level (facilitation and communication).** The role of the secretariat is to facilitate the implementation of plenary decisions, co-ordinate the activities of the PPN, communicate with all PPN members and disseminate information.
- **Linkage groups.** These linkage groups comprise networks of individuals who share a common interest and who may be from different groups (e.g. community, voluntary, environmental).

2.4 Insights from Case Studies

The case studies above support the exploration of new sustainable community practices in the Irish context. In this sense, they represent potential niches of practices that can contribute towards sustainable communities and community initiatives in Ireland. They also underline the potential benefits of adopting community-centred approaches to sustainable development.

An initial analysis of the cases, presented in a supplementary report, reinforces and augments some of the issues identified through the expert survey and desk research. This includes the “enablers” of sustainable community initiatives (passionate individuals, community involvement, leadership, partnerships, relationships with commissioners), the barriers they faced (financial precocity, existing regulations, mobilising individuals, building trust) and the role of the wider policy and regulatory system.

An additional aim of the case studies was the identification of behavioural insights that may inform the design of interventions for sustainable communities, and the structural drivers and barriers to these behaviours in the community context. The following sections discuss these aspects further.

2.4.1 Behavioural dimension

2.4.1.1 Removing frictions

The behaviour science literature and design practitioners are often concerned about frictions and “friction costs”. These minor increases in effort

(frictions) can make a significant difference to whether or not a desired behaviour takes place. Frictions can occur in many of the interactions that an individual (or community) has with a service, and typically will reduce conversions and lead to frustrations or the abandoning of key tasks.

In the public sector context, friction can lead, among other things, to a low level of uptake in support programmes and to community organisations wasting time and resources applying for support or making sub-optimal choices on support, when easier options are selected over higher value options.

While it is important to consider the wider aspects shaping behaviours, such as social norms and social capital, it is equally important to be mindful of the small barriers that get in the way of desired behaviours or collective action.

Frictions across multiple touchpoints (e.g. printed or online forms, funding applications, timing of meetings or guidance documents) were reported by individuals in the case studies. This suggests that public sector organisations (e.g. local authorities, the EPA, intermediary organisations) have multiple opportunities to remove “friction” from existing interventions and services. This requires recognition that community groups are a combination of formal and informal organisations with differing skills and competencies.

2.4.1.2 Intrinsic motivations

Sustainable community initiatives are often reliant on the motivations of individuals to organise themselves on a collective basis. The literature presents a number of theoretical perspectives on motivation, such as expectancy-based theories, expectancy–value theory, attribution theory and self-determination theory.

One of the issues of interest in the case studies was the motivation of individuals to participate and engage in sustainable community initiatives. Of particular interest was the issue of intrinsic motivation and the expectancy of gaining reward for engaging with an initiative. Intrinsic motivation describes when the act of doing something is inherently satisfying, whereas extrinsic motivation relates to the receipt of awards (or the avoidance of penalties).

To understand intrinsic motivation, it is important to understand what an individual or community believes to be important. For example, “intrinsic” values of

personal growth, emotional intimacy or community involvement may be more of a motivating factor for someone to engage in their community than extrinsic values such as the acquisition of material goods, financial success, physical attractiveness and social recognition.

The concept of intrinsic motivation resonates strongly with the idea of sustainable communities. In the case studies the articulation of outcomes or gains by those involved could typically be described as intrinsic, e.g. “doing your bit”, “helping your neighbours”, “striving for resilience” or “tackling climate change”. Understanding and articulating these intrinsic motivations can help to frame messages around interventions aimed at changing behaviour within the community context.

2.4.1.3 Creating connections

The literature presents a number of theoretical perspectives and a range of empirical evidence highlighting how social connections can influence behaviour in a myriad of ways. This ranges from the power of social norms to the role of social capital.

Social norms strongly influence the degree to which social networks can enhance or inhibit the effect of programmes seeking to enable pro-sustainable behaviours. For example, evidence from an EPA-funded research project assessing public information programmes to enhance home radon testing identified social norms as a key mechanism for overcoming household resistance to radon testing (Hevey, 2016). This suggests that reinforcing desirable social norms can be a low-cost but effective way of prompting people to automatically adjust their behaviour to mimic peers.

Implicit in this is the need to develop connections and networks between people within a community, which can help create the conditions for collective action. Social learning and peer-to-peer knowledge sharing can be constituent elements of social networks and help build social capital.

In each of the case studies, participants emphasised how the development and implementation of the initiatives were reliant on different forms of social networks. A basic social network analysis of each of the initiatives was undertaken based on input from the participants. In practical terms, social networks can

contribute to participation and result in people being more socially connected.

2.4.1.4 Self-efficacy

Self-efficacy is the belief that a person has about his or her own ability to undertake a particular action that will result in a desired outcome. The theories of self-efficacy relate in particular to completing challenging goals that require overcoming a number of barriers. A high self-efficacy can also explain why some individuals or communities persevere in spite of numerous challenges. Self-efficacy is important in that it relates to how cognitive processes such as mindsets and values actually translate into behaviour.

Self-efficacy is nurtured through direct experience of performing some action, in particular when this action leads to new outcomes. Individuals in the case studies described the importance of “quick wins” to convince others of the value of doing something. The quick wins developed confidence that it is likely to be possible to overcome challenges or hurdles in the future. In one of the cases, the play park, the co-design of prototypes provided a sense of what was possible, and this led to further engagement by residents.

The experiential and social learning that drives self-efficacy can rapidly contribute to the capacity of a community or community initiative to believe in the possibility of bringing about desired changes.

Interestingly, the theory of self-efficacy also suggests that social learning can play an important role in that people will learn from the experiences of others in addition to their own experiences. The theory of self-efficacy is well established in a range of programmes in the areas of health, ageing, community development and youth. It is relevant to the powerful role of peer-to-peer learning as well as the role of champions or role models. One interesting aspect of self-efficacy is that role models or champions have to develop a perceived legitimacy, which can be through shared learning, or being embedded or resident within a community over a long period of time.

2.4.1.5 Reciprocation

A key issue that is related to social capital is the principle of reciprocity, and it can, in part, help to explain how peer support and group activities

contribute to community development. Reciprocity is typically defined as a social norm that involves in-kind exchange between people, in particular within some form of a community.

In the case studies, the observations of reciprocation were not financial but typically involved an individual responding to another person's action with another equivalent action. The principle of reciprocity has been applied in many contexts, such as charitable giving and the provision of free samples in product trials. In addition, social networks, peer-to-peer support and reciprocation are strongly linked to wellbeing. The observations made through the case studies highlight how providing support to others (e.g. peer support) can be beneficial for both the provider and the recipient.

2.4.1.6 Commitments

Evidence suggests that the way individuals are perceived by others is key to their sense of self. These insights suggest that the powerful social mechanisms of social norms and reciprocation can be explored and applied at minimal cost to encourage people to stick to personal commitments more closely.

When people make declarations of their intention to change their behaviour in the presence of others, in particular in the presence of someone they respect, it "raises the stakes" of the commitment. This subtle social pressure helps people to feel that they themselves are more likely to adjust their behaviour to meet the public commitment.

Supporting and investing in social connections that are underpinned by public commitments could therefore have positive impacts on sustainable community initiatives. Enabling people to participate in a variety of reciprocal relationships is an important step towards developing "social capital". Although not specifically addressed in this research, there is anecdotal evidence that the Tidy Towns model benefits partly from the commitments towns make towards achieving goals; because these commitments are public, they drive implementation.

2.4.2 Structural dimension

To focus the discussion on the challenges facing sustainable communities and community initiatives in Ireland, the following section will focus on three key

"practical" and "policy" challenges identified through the expert survey and on how they manifested in the case studies. While focusing on challenges may seem counterintuitive from an appreciative enquiry or asset-based approach, the challenges help to frame some of the broader conditions that may be essential for initiating and sustaining a community initiative.

2.4.2.1 Policy for sustainable communities

The expert survey identified the lack of a single policy or vision for sustainable communities in Ireland as the most important barrier. It is fair to say that sustainable communities as an item on the policy agenda have fallen between the gaps between traditional social, economic and environmental policy and institutional boundaries. The "institutional fit" within the current departmental regimes and funding programmes is poor. This has resulted in a fragmented landscape of support, where initiatives have inconsistent support that is reliant on meeting the demands of multiple, single-issue funders.

This challenge of institutional fit manifests itself in many ways and could be seen in the case studies examined. For example, the challenge manifests itself through frictions in accessing finance, a lack of institutional support (e.g. from local authorities), or the combination of perceived and actual regulatory constraints preventing the development of initiatives.

It has been argued that community-level actions, in particular those relating to sustainability, need to be connected in some form to the policy infrastructure (Church, 2005). One of the arguments for this is that initiatives can access finance more quickly, and in particular finance that is tied to a changing or emerging policy agenda.

In addition, there is also an argument that a supportive policy context would lend itself to strategic niche management, which in turn opens up more opportunities for niche development, scaling and diffusion. A practical example of this is that a sustainable community initiative may receive coherent support at appropriate stages of development from a supportive policy context that removes frictions, clarifies regulations and facilitates financing.

Because community initiatives tend to be locally focused, they may not be sufficiently connected with external sources of knowledge or agile enough to

take advantage of all opportunities (e.g. funding, collaboration). Therefore, there may need to be new local intelligence infrastructure to reciprocally support the development of community initiatives and provide greater awareness among policymakers of actions within communities.

2.4.2.2 Common evaluation framework

A diverse range of measurement frameworks and indicators can be applied to understanding the impact and effectiveness of sustainable community initiatives. The challenge as identified by the expert survey is that there is no common framework in Ireland.

Although there were some preliminary examples (e.g. DCC Beta metrics), none of the case studies had complete or consistent processes for formally documenting learning. Many of the skills and learning were tacitly held by people delivering the initiatives. This is not to suggest that all learning needs to be codified in an accessible format, but the lack of documentation can be a challenge for new entrants to the initiatives, and also for evaluation and future funding proposals.

In the light of this, a pragmatic approach may involve the development of a framework of sustainability indicators that are embedded within a broad assessment strategy. This in turn can draw upon by existing funding programmes, e.g. Local Agenda 21. Due to the lack of an existing culture and capacity around measuring sustainable communities, this would involve a limited set of indicators that are part of a broader common framework but that can also be adapted to local needs.

It is important to note that evaluation plays more roles than meeting the demands and expectations of project funders. It can also form part of the collective intelligence of the community initiative.

2.4.2.3 Regulations

All community initiatives, and sustainable community initiatives in particular, are either enabled or constrained by the regulatory context in which they operate. Even if the initiatives are self-governing or operating without government finance, they will still be bound by local, national and EU regulations. For example, community initiatives may be subject to national and local planning procedures, community

gardens will be subject to local planning restrictions, and community food projects will need to adhere to health and safety, and food safety, regulations.

In the case studies examined there were regular, and in some cases intense, interactions with local authorities and other regulatory agencies. These interactions ranged from the collaborative to the purely transactional (e.g. the O'Gonnelloe Exchange project was collaborative, whereas the Grow Dome project was transactional). In each of the cases, a sensitive approach was taken, as participants in the initiatives were mindful that adding additional frictions would have made the projects untenable.

In some of the case studies, existing laws and regulations placed constraints on the scope and potential of the initiatives. For example, the Grow Dome project wished to sell produce but was prevented from doing so by the byelaws governing the community garden in which they operated.

In other cases the perception of legal constraints was more of an inhibiting factor than the actual regulations. For example, in the case of O'Gonnelloe, the community did not consider it possible for a community to collaborate with the public sector. As it transpired, the local authority was willing and able to collaborate with the community in producing the paths.

This issue of perceived regulation is important, as the initiators of community initiatives sometimes believe that they are not allowed to undertake particular activities, while in fact the law does not restrict these. The perceived legal restrictions and the sometimes impenetrable legal structures can create frictions for the progress of the initiative. In some cases those initiatives involving individuals with direct experience of the legal context progressed more quickly.

While legal gaps sometimes provide opportunities for initiators, the research suggested that these gaps could also create confusion and perception of restrictions among community initiatives. Contributing to this confusion is the often rather limited legal explanation provided by local authorities. The experience of some initiatives was that, if queries were sent to local authorities, the relevant activity would not be possible if it had not occurred in the past. In addition, some of the initiatives were given the impression that if they implemented particular activities there was no clear guarantee that they would be supported.

2.4.2.4 Low sense of agency and empowerment

Community initiatives are embedded within and dependent upon existing socio-cultural contexts. These contexts can help frame and determine the sense of agency and empowerment community members feel towards establishing or participating in a community initiative. This can also be articulated as the intrinsic motivations of individuals or the structure of relationships between individuals, social norms and peer support.

The experts and practitioners surveyed suggested that a low sense of agency or empowerment was a key barrier to sustainable communities in Ireland. While there are a number of socio-cultural and historical reasons for this, it suggests that these factors are an important prerequisite for community initiatives.

Connected with this is the issue of self-efficacy, which is also understood to be an important prerequisite for encouraging an individual to participate in a collective effort such as a community initiative. While it could be argued that those experts and practitioners leading initiatives had a high degree of self-efficacy, it is also true that a degree of doubt in their capacity to contribute to and develop the initiatives was expressed.

These issues were also evident in the case studies, albeit at different scales. The case study initiatives typically have a smaller cohort of active "champions" to mobilise others in the community and the projects themselves. There was a clear desire for "go to" people who could be referred to when decisions had to be made. Each case study initiative had examples of this, but typically they worked alongside more ad hoc management and decision-making structures.

Those people that assumed the role of "champion" typically had a strong personal motivation that stemmed from their values and beliefs. For example, in the case of O'Gonnelloe Exchange, the informal "champions" were driven by a strong desire to make their community an even more desirable place to live and a place where their families could thrive.

Alongside the value-based drivers, there was also evidence that existing and relevant professional knowledge and skills were a key asset that helped the passive selection of "champions". This combination of strong desire for change and existing knowledge

and skills would rank highly in terms of "self-efficacy", e.g. knowing why, what to do and how to do it. In addition to this, the various mechanisms for spreading knowledge and skills provide experiential learning opportunities for the wider community, and showing others "how it is done" was a key driver of deeper and broader participation. This open approach helped address the dual issues of "agency" and "empowerment".

While the initiatives were operating within different social contexts (e.g. rural and urban), they were all dependent on a socio-cultural context that favours cooperative and citizen-led approaches to community development. An issue that could be seen in each of the initiatives was a desire to do things differently from the existing or dominant way of doing things (i.e. the socio-technical regime). Although not explored through the interviews, there was an implied frustration with established community and governmental arrangements.

Not only do these "socio-cultural contexts" provide participants with knowledge and skills, they also feed a certain "desire" to somehow distinguish themselves from the mainstream, dominant way of doing things, as well as encouraging them to think and act differently. This experience of overcoming the resistance, frictions and hassle-factor of initiating a new project can be challenging both socially and professionally.

2.4.2.5 Lack of critical mass

Community initiatives rely on networks of individuals that decide through various means to collaborate over a period of time to work towards common objectives and goals. One of the key issues identified through the expert survey was the issue of developing a critical mass of individuals around which an initiative can be formed. Coupled with this, the initiative has to contend with a diverse group of individuals with various skills, values, capacities, perspectives, mental models, expectations, and levels of commitment and time available.

The development of a critical mass can be shaped by a number of factors and this was evidenced through the case studies. For example, each of the case studies (except for the PPNs) had a fluid membership base that was typically driven by a small cohort of individuals, typically three or fewer.

One assumption was that rural-based initiatives would be different from those in urban areas in terms of assets (“everyone knowing each other”) and geographical constraints. This was not the case, and in each of the case studies the challenges around building a critical mass related to timing, communication, existing social networks and activities that allowed for experiential learning.

2.4.2.6 Low level of skills knowledge and resources/poor access to finance

This issue can be best framed as a challenge of capacity, where capacity refers to the combined hard and soft resources a community or community group has available for implementation. To initiate a community initiative a particular combination of skills, key individuals and champions, resources and supportive contextual factors are required. After start-up, the challenge is to survive and remain financially sustainable, which requires additional skills and people, plus resilience and a viable resource base.

The issue of finance is key for every organisation, in particular in the non-profit sector. Some of the challenges relate to the funding programmes themselves, in terms of how they are structured and the scale of support available. Grants are typically short term, linked to constraining targets and bureaucratic, and they leave little potential or room for core development. The themes and frameworks for funding are set by funder requirements rather than responding to recipients’ requirements.

Another challenge relates to how the initiatives themselves are structured. For example, sustainable community initiatives are typically made up of complex contractual arrangements between heterogeneous groups of individuals, social enterprises, co-operative companies, government and intermediary organisations.

This has significant implications for the scaling of community initiatives (niches). Without well-established financial capacity, the initiative will not be sufficiently resilient to address shocks such as funding cuts, the loss of key staff or volunteers, burnout of activists, or changes in regulations and government policy.

Another issue in relation to skills relates to organisational and business planning. Many community initiatives struggle to establish functioning and viable business models that align the values of the initiative with the demands of financial sustainability. Some community initiatives establish multiple impacts (environmental, social and economic), which need to be considered in addition to financial return.

2.4.2.7 Diffusion challenges

Although not specifically explored in the case study interviews and survey, one of the broader challenges related to community initiative with regards to sustainable development is that many of the initiatives are relatively small scale and are situated in specific geographical and social contexts. This can make scaling and diffusion of new practices difficult.

This seems to be a particular issue in the Irish context. For example, the Local Agenda 21 Partnership Fund has been successful in reaching out to a diverse range of community initiatives, but no evidence is available on the collaboration between initiatives or the scaling of initiatives as a result of the funding. This is not strictly the purpose of the funding, but there is a potential for recognising the funded projects and community initiatives as niches that help shape new practices, which in turn can be scaled up if appropriate.

The Local Agenda 21 Partnership Fund and related interventions are potentially creating the conditions for niches to emerge, but there is also scope to learn from the successful niches and explore how these could be established in different areas and at different scales. This can be undertaken in a passive manner through communication and structured social networks. Evidence from other community initiatives shows that they do not scale through a structured top-down configuration but through emergent social interactions (e.g. Transition Towns).

When considering scaling of initiatives it is important to understand how embedded practices within one initiative may not translate to other contexts. It could be useful to differentiate between initiatives that are formed around geographical communities (local grassroots groups meeting a specific need) and communities of interest (ideologically based initiatives).

3 Conclusions

Transitioning to more resource-efficient businesses and sustainable communities in Ireland will require innovation, shifts in behaviours and social practices, and shifts in the norms and values that shape these behaviours, as well as innovation in how policy interventions and services are designed and delivered.

This transition, and the related social practices and behaviours, will occur when there are changes in the institutional arrangements, social infrastructure and systems of governance that shape and reinforce social practices.

From the business perspective, this research highlighted that the current policy landscape is dominated by a set of common interventions that do not sufficiently take into account the social or behavioural dimension of decision-making for resource efficiency, or the broader market and system failures that influence business behaviour. This may in part explain why interventions have not had the desired scale of impact.

The effectiveness of any policy or intervention for resource efficiency is contingent on access to data that support both implementation and evaluation. This typically requires more in-depth analysis on the effectiveness of existing policies and interventions, as well as the construction of more plausible future scenarios on resource consumption in Ireland.

Although significant progress has been made in developing indicators for resource efficiency at the micro, meso and macro levels, a number of persistent gaps remain. One is the capacity to measure behavioural additionality at a company level in response to policies, support services or interventions.

From the community perspective, this research also highlighted that the current policy landscape relevant to sustainable communities in Ireland is dominated by a number of paradigms such as the “rational choice model” of behaviour and the “techno-economic” model, which emphasises individual decision-making and technological solutions. This has given rise to the assumption that housing, infrastructural and spatial planning solutions are the dominant mechanisms to develop sustainable communities.

While these are essential components of any policy framework for sustainable communities, these policy perspectives do not sufficiently take into account the social or behavioural dimension of communities. This may in part explain why previous interventions, aimed at assisting individuals, households and businesses to identify the steps they can take to reduce their energy, water and resource consumption, have not had the desired scale of impact.

In the context of sustainable development policy, the desire to focus attention on the community level is relevant for at least two reasons. Firstly, the scale and rate of change required in terms of transitioning to a more sustainable society means that relying on individualistic and consumerist policies and interventions is inefficient.

Secondly, the focus on individualistic and consumerist approaches is misguided because it undervalues the need to innovate the regulatory, institutional and social setting in which unsustainable behaviours and social practices are produced.

More broadly, the research indicated that there is a low level of sustained and systematic experimentation (e.g. randomised controlled trials) and evaluation of sustainable community initiatives and business support programmes. This creates a challenge in drawing out insights and patterns of practice that can inform the design of new initiatives or in scaling up of existing initiatives and support services.

This lack of data can also make it difficult to identify the gaps in current capacity, funding, advice and support. This may also result in fewer initiatives. More knowledge about common patterns and practices is almost certain to make it easier for innovators to be effective and for ideas to be improved into a sustainable form, e.g. financially and organisationally.

3.1 Designing Support Services for Business

Section 1.7 of this report presented prototypes of new support services and a series of potential changes to existing interventions that are informed by

behavioural insights. To position these in the context of existing interventions, the following is a framework of principles and approaches that can enhance the national innovation system and support services for businesses:

- Develop an experimental framework through which potential interventions can be tested. This should include a range of experimental approaches, such as randomised controlled trials, field experiments and A/B testing.
- Develop a theory of change for resource efficiency services and policy interventions. For example, a logic model or systems change framework can outline how the various elements involved in the services or programme interact to bring about desired outcomes.
- Improve the data architecture around existing interventions. The effectiveness of any policy or intervention for resource efficiency is contingent on access to data that support both implementation and evaluation.

Resource efficiency behaviours are diverse, but there are generalised and aggregated patterns that are systematically linked to factors such as the size of an organisation, its sector, its subsector, and the local and national context. These behaviours can be modelled and better segmented to support the effective targeting of interventions and service touchpoints.

Some of the key behavioural insights that can inform future policy intervention or service design are listed below.

Salience. Increasing the salience of resource efficiency can be a key issue to consider when determining whether or not it becomes a strategic or investable issue for a company.

Frictions. The research highlighted how small frictions in using a service can have implications for how successfully a company will apply behavioural changes. There are many low- or no-cost options for removing these from the service system, such as pre-populating forms or using simple messaging.

Measuring value. There is a dominant focus on the later stages of decision-making, e.g. evaluating alternative resource efficiency strategies with cost metrics. There may be scope to focus on earlier stages of identifying opportunities and assembling possible

actions. This may help develop clarity on the journey between addressing the “low-hanging fruit” and higher level resource efficiency actions.

Framing. Resource efficiency is often framed as a cost in the sense that the most prominent interventions are fiscal incentives, free services or grant aid. The framing of resource efficiency could move from investment in resource efficiency being about cost saving to it being an investment in productive capacity.

Messenger. The research highlighted how companies seek out trusted sources of information, which tend to be other businesses or sector organisations. There is scope for establishing a network of resource efficiency “champions”, who commit to promoting resource efficiency within the business community.

Optimal moments. The research suggests that there is the possibility that interventions may be more effective at particular times of the business cycle (e.g. when investments are being made in capital, when a new product development process is being initiated or when a company is starting up).

Skills and competencies. Developing skills to interpret technical information and building capacity to undertake more innovative actions for resource efficiency, especially for smaller SMEs, should be considered. Smaller SMEs are also found to perceive a “cultural” barrier to participation in resource efficiency, in that they consider their contribution to be small. Helping SMEs to understand cumulative impacts may overcome this barrier.

3.2 Designing Interventions for Sustainable Communities

While changes for local sustainable development are likely to emerge from communities regardless of actions at a policy level, there is a critical role for national and local government as well as intermediary organisations [e.g. the EPA and the Sustainable Energy Authority of Ireland (SEAI)], through policy and regulatory mechanisms, systemic support structures, building on existing assets (community organisations), advocacy at policy level, and financial and fiscal incentives.

This role for government is to work alongside community and environmental organisations, NGOs and the national intermediary organisations already

working at a community level (e.g. the EPA and SEAI). The ongoing work of these organisations in assisting the transition to sustainable communities needs to be supported and sustained. The successful implementation of community initiatives is often dependent and contingent upon wider systemic changes, which governments can influence.

While this research does not advocate a standardised template for designing interventions and services aimed at changing behaviour at a community level, or developing community initiatives, the insights from the research suggest that there is significant scope and potential for developing sustainable community interventions.

3.2.1 *Recognising new community practices, behaviours and “what works”, moving beyond barriers and constraints*

If interventions are to be developed that support communities to be more sustainable, there is a need to develop deeper insights into the needs, wants and aspirations of communities across Ireland and the collective behaviours and social practices that support sustainable communities.

Some public sector organisations in Ireland have generated a rich evidence base about the impact of services they deliver (particularly in the health sector). Typically organisations do not understand the broader needs and aspirations of citizens beyond the requirements of the services they provide. This makes developing an approach to supporting sustainable communities built on local assets and existing civic capacity more difficult.

The existing evidence gained through attitudinal and behavioural surveys should to be augmented with ethnographic research and insights from behavioural science. This will help build on the understanding of community needs by *mapping social assets, resources and networks*. By better understanding the *grain of communities*, interventions can be designed around outcomes that are meaningful to people and communities. In addition to this ethnographic approach, action research can work towards developing peer-to-peer-generated insights into communities. This can involve generating an understanding of the assets, resources and needs

within a community by *deploying community-led researchers*.

Alongside supporting existing communities, there is need to support the *next generation of sustainable community leaders*. Organisations such as the Young Foundation, Future Voices Ireland and Young Social Entrepreneurs can be engaged to develop research and training programmes for young people that encourage bottom-up models of sustainable community leadership.

3.2.2 *Creating new collaborative systems and infrastructure for participation, co-creation, empowerment, social learning and agency between citizens, local authorities and local economy*

Clearly this is a challenge because the issues of sustainable communities cannot be advanced by government or any single sector alone. It is well understood that government, civil society and the private sector often do not collaborate, for a number of reasons. For example, there are differences in values, ideologies and purposes. This results in public service silos, where various departmental agendas (e.g. economic growth, health) are dealt with separately, and public sector organisations are divided by discrete professional boundaries. This then shapes the dominant forces behind funding, procurement, commissioning and partnership processes.

One mechanism for this is developing new approaches to engagement, participation and co-creation. There are many different forms and scales of engagement, and Ireland is beginning to experiment with new models and approaches, e.g. PPNs. The shift towards co-produced local government is a small step towards shifting the balance in favour of relational public services. This shift has the potential to help scale sustainable communities, as it can develop innovative public–private–social partnerships (e.g. the O’Gonnelloe Exchange) that can leverage investment and create impact at scale.

There are many examples to learn from. For example, in the UK a number of local authorities have developed a new model of local governance that they call cooperative councils. These local authorities place greater emphasis on public engagement and

participatory democracy as part of a wider agenda of public service reform. One example of changes that they have brought about is in the area of commissioning and service provision. The cooperative councils engage more deeply with the communities to co-design the services they provide.

3.2.3 *Recognise complexity of community assets and needs*

This research has highlighted the importance of considering the behavioural aspects of sustainable communities. For example, a person's sense of agency and empowerment is a key psychological factor in motivating behaviour. This sense of agency is driven by variables that are related to the individual (e.g. socio-economic status, education), but importantly there are also external variables such as the social, institutional and regulatory context.

This presents a challenge for the design of interventions or programmes supporting sustainable communities, in that the interventions may not be able to address all aspects that drive behaviour. Coupled with the collective nature of social norms, there is a strong argument towards participatory approaches that involve communities in the design and delivery of programmes. Aside from building social capital, this can impart a sense of empowerment, ownership and collective governance.

There is an argument for developing active or collaborative citizenship wherein individuals and communities have opportunities to collaborate and participate in a more informed discourse on what a sustainable community could be. This can be through, for example, supporting and developing innovative spaces for social exchange. When designing or evaluating behaviour change programmes, there will be a need to question what assumptions are made about behaviour and behavioural change, how these are reflected in the approaches and method used (e.g.

co-design, information, workshops, scenario planning, goal setting) and to what extent routines, social practices and context are explored or identified.

3.2.4 *Measure what matters to communities*

As mentioned, there is a lack of data and evidence on the effectiveness and impact of sustainable community initiatives in Ireland. This is related to the multi-faceted nature of sustainable community initiatives but also the inconsistent demand for evidence from commissioners and funders.

The types of impacts related to sustainable communities are diverse and not easily aggregated. There is a requirement to develop quantifiable and comparable outcome indicators with richer ethnographic insights that articulate a wider "narrative" of value to communities. This would involve combining traditional output indicators with a wider set of outcome indicators. The skills for evaluation typically reside outside community initiatives. Therefore, there is an opportunity to create new linkages between academia, policy and practice in such a way that communities and frontline workers in local authorities can use and co-produce evidence.

There is an opportunity to learn from initiatives piloted in other contexts, including the developing world. In particular, funders in the development sectors have been refining and experimenting with evaluation methodologies such as systems thinking and randomised controlled trials [e.g. the Massachusetts Institute of Technology (MIT) Jameel Poverty Action Lab (J-PAL)]. These experiments are feeding into an approach to evaluation that is focused on producing evidence that can be adapted to changes in context and that can provide "real-time" data. These new methods are particularly useful for formative and developmental evaluations that can improve sustainable community initiatives as they are evolving.

References

- Agyeman, J. and Evans, B., 2004. "Just sustainability": the emerging discourse of environmental justice in Britain? *Geographical Journal* 170: 155–164. doi:10.1111/j.0016-7398.2004.00117.x.
- Baldwin, J.R. and Gellatly, G., 2004. *Innovation Strategies and Performance in Small Firms*. Edward Elgar Publishing, Cheltenham, UK.
- Bastein, T., Koers, W., Dittrich, K., Becker, J. and Lopez, F.J.D., 2014. Business Barriers to the Uptake of Resource Efficiency Measures. Deliverable D1.5 Report. POLFREE, London.
- Burgess, J., Bedford, T., Hobson, K., Davies, G. and Harrison, C., 2003. 10.(Un) sustainable consumption. In: Berkhour, F., Leach, M. and Scoones, I. (eds), *Negotiating Environmental Change: New Perspectives from Social Science*. Edward Elgar Publishing, Cheltenham, UK, pp. 261–292.
- Chaminade, C. and Edquist, C., 2007. Rationales for public policy intervention in the innovation process: A systems of innovation approach. Paper No 2006/04. Centre for Innovation, Research and Competence in the Learning Economy, Lund, Sweden.
- Church, C., 2005. Sustainability: the importance of grassroots initiatives. Paper presented at Grassroots Innovations for Sustainable Development Conference, UCL, London, 10 June.
- Deakin, M. and Allwinkle, S., 2007. Urban regeneration and sustainable communities: the role of networks, innovation, and creativity in building successful partnerships. *Journal of Urban Technology* 14: 77–91.
- DEFRA (Department of the Environment, Farming and Rural Affairs) and Oakdene Hollins, 2011. *The Further Benefits of Business Resource Efficiency*. DEFRA, London.
- Dempsey, N., Bramley, G., Power, S. and Brown, C., 2011. The social dimension of sustainable development: defining urban social sustainability. *Sustainable Development* 19: 289–300.
- Edquist, C., 2011. Systems of innovation: perspectives and challenges. *African Journal of Science Technology, Innovation and Development* 2: 14–43.
- European Commission, 2011. Attitudes of European Entrepreneurs Towards Eco-innovation. Flash Eurobarometer Series No 316. European Commission, Brussels.
- European Commission, 2015. SMEs, Resource Efficiency and Green Markets. Flash Eurobarometer No 426. European Commission, Brussels. Available online: https://data.europa.eu/euodp/en/data/dataset/S2088_426_ENG (accessed 14 July 2016).
- European Commission, 2016. European SMEs and the Circular Economy. Flash Eurobarometer No 441. European Commission, Brussels.
- Eurostat, 2016. Material flow accounts and resource productivity. Available online: http://ec.europa.eu/eurostat/statistics-explained/index.php/Material_flow_accounts_and_resource_productivity (accessed 4 December 2016).
- Geroski, P.A., 1991. Innovation and small firms. *International Journal of Industrial Organisation* 9: 473–474.
- González, X., Jaumandreu, J. and Pazó, C., 2005. Barriers to innovation and subsidy effectiveness. *RAND Journal of Economics* 36: 930–950.
- Hevey, D., 2016. *Review of Public Information Programmes to Enhance Home Radon Screening Uptake and Home Remediation*. Environmental Protection Agency, Johnstown Castle, Ireland.
- Irish Government. 1997. *Sustainable Development – A Strategy for Ireland*. Dublin, Ireland.
- Jeannotte, M.S., 2003. Singing alone? The contribution of cultural capital to social cohesion and sustainable communities. *International Journal of Cultural Policy* 9: 35–49.
- Keil, R., 2007. Sustaining modernity, modernising nature. In: Krueger, R. and Gibbs, D. (eds), *The Sustainable Development Paradox: Urban Political Ecology in the US and Europe*. Guildford Press, New York, pp. 41–65.
- Lundvall, B.A., 2007. National innovation systems – analytical concept and development tool. *Industrial Innovation* 14: 95–119.
- Marsden, T.K. and Hines, F., 2008. Unpacking the new quest for community: some conceptual parameters. In: Marsden, T.K. (ed), *Sustainable Communities: New Spaces for Planning, Participation and Engagement*. Elsevier, Oxford, pp. 21–47.
- Pearsall, H. and Pierce, J., 2010. Urban sustainability and environmental justice: evaluating the linkages in public planning/policy discourse. *Local Environment* 15: 569–580. doi:10.1080/13549839.2010.487528.

Roseland, M., 2012. *Towards Sustainable Communities: Solutions for Citizens and Their Governments*, 4th edition. New Society Publishers, Gabriola Island, BC.

Schulte, U.G., 2013. New business models for a radical change in resource efficiency. *Environmental Innovation and Societal Transitions* 9: 43–47. doi:10.1016/j.eist.2013.09.006.

Tiwari, R. and Buse, S., 2007. Barriers to innovation in SMEs: can the internationalisation of R&D mitigate their effects? *Proceedings of the First European Conference on Knowledge for Growth: Role and Dynamics of Corporate*, Seville, 8–9 October, pp. 8–9.

Tukker, A., 2015. Product services for a resource-efficient and circular economy – a review. *Journal of Cleaner Production* 97: 76–91. doi:10.1016/j.jclepro.2013.11.049.

Abbreviations

CTC	Clean Technology Centre
DCC	Dublin City Council
EPA	Environmental Protection Agency
EU	European Union
LCDC	Local Community Development Committee
NGO	Non-governmental organisation
PPN	Public participation network
R&D	Research and development
REA	Resource efficiency assessment
SME	Small and medium-sized enterprise
SPC	Strategic Policy Committee

AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Gníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaoil a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaoil a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialú: Déanaimid córais éifeachtacha rialaithe agus comhlionta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.

Eolas: Soláthraimid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spríodhíre agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.

Tacaíocht: Bimid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaoil atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaoil inbhuanaithe.

Ár bhFreagrachtaí

Ceadúnú

Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaoil:

- saoráidí dramhaíola (*m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistriúcháin dramhaíola*);
- gníomhaíochtaí tionsclaíocha ar scála mór (*m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta*);
- an diantalmhaíocht (*m.sh. muca, éanlaith*);
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (*OGM*);
- foinsí radaíochta ianúcháin (*m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha*);
- áiseanna móra stórála peitрил;
- scardadh dramhuisece;
- gníomhaíochtaí dumpála ar farraige.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdarás áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhírú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídionn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaoil.

Bainistíocht Uisce

- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uisce idirchriosacha agus cósta na hÉireann, agus screamhuisecí; leibhéal uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

Monatóireacht, Anailís agus Tuairisciú ar an gComhshaoil

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil (*m.sh. tuairisciú tréimhsiúil ar staid Chomhshaoil na hÉireann agus Tuarascálacha ar Tháscairí*).

Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis ceaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhar breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainathint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaoil in Éirinn (*m.sh. mórphleananna forbartha*).

Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéal radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as tairmí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaoil ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaoil (*m.sh. Timpeall an Tí, léarscáileanna radóin*).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosaint agus a bhainistiú.

Múscaill Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an ghníomhaíocht á bainistiú ag Bord Iáinimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltáí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair inní agus le comhairle a chur ar an mBord.

Author: Simon O'Rafferty

Sustainable consumption and production demands individual, organisational and institutional behaviour changes. Policymakers and regulators already apply a range of interventions and incentives with a view to changing individual and organisational behaviour. This includes fiscal incentives, subsidies, pricing mechanisms and market-based instruments, standards, eco-labels and communication, business support programmes and curriculum development.

Identify Pressures

These interventions have had varying degrees of success, and some have been ineffective or, worse, counter-productive. There is a growing interest among governments in applying innovative practices when developing policies, regulations and services. This includes using design thinking, behavioural insights, foresight and data science. The potential to fully combine insights into human and organisational behaviour with environmental policy ambitions has not yet been realised.

This research project sought to explore the potential for applying these approaches in Ireland and more specifically within the EPA. The research focused on opportunities to enhance existing EPA support services for businesses and possible future interventions for sustainable communities. In addition to desk research, surveys, semi-structured contextual interviews and participant observation, the project undertook ethnographic research with businesses and community initiatives that combined descriptive fieldwork with theory building.

Informing Policy

From the perspective of sustainable communities, the research highlighted policy and practical barriers to developing sustainable communities in Ireland. These include a lack of a common policy and evaluation framework, a low sense of agency and empowerment in communities, and fragmented support networks, leading to scale and diffusion challenges. The research highlighted a number of behavioural insights that can inform intervention design, such as the role of social networks and social norms, removing frictions and hassle factors, reciprocity and public commitments.

From the business perspective, the research highlighted key structural factors impacting on the delivery of interventions and business support services for resource efficiency in Ireland. These include the structure of the existing business support network, the reliance by small and medium-sized enterprises on their own or private sector support, which may be sub-optimal, resistance to moving beyond “low-hanging fruit” actions to achieve resource efficiency and impacts of interventions going unmeasured or misattributed as a result of time elapsed between intervention and investment. The research also highlighted several behavioural factors to consider in intervention design, such as norms and peer influence, and various forms of decision-making, e.g. groupthink, heuristics and satisficing.

Developing Solutions

Building on the insights gained from the research, the project developed a series of business support service prototypes. Service prototypes are early-stage propositions on how services can be delivered. Typically, prototypes can be examined, tested and refined before any significant investment is made. Prototypes go beyond policy or service recommendations, as they provide form and structure to recommendations and allow for an examination of the desirability feasibility and viability of these.

The research also developed a novel “behavioural design tool” that can support the design of future support services for businesses. This tool is built around an understanding of the internal, external and decision-making factors that will influence the effectiveness of interventions.