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CONSENSUS: Consumption, Environment and Sustainability

Anna R. Davies, Frances Fahy, Henrike Rau, Laura Devaney, Ruth Doyle, Barbara Heisserer, Mike Hynes, Mary Jo Lavelle and Jessica Pape

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CONSENSUS: Consumption, Environment and Sustainability

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Executive Summary

'Sustainable consumption' is generally conceived as the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials, and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations. It is recognised internationally that achieving sustainable consumption represents a major challenge for public authorities (at all levels), businesses and consumers as it requires economic and social as well as environmental sustainability. In particular, patterns of household consumption are recognised as contributing significantly to global unsustainability yet understanding of that consumption is under-developed in many sectors. In response, the CONSENSUS research project conducted foundational and exploratory research to establish the parameters of debates and actions within the field internationally and across Ireland. The first phase reviewed existing policy, international good practice and tools for governing sustainable consumption. It was found that Ireland faces a number of key challenges in terms of good governance of sustainable consumption. These include the lack of a coherent policy framework for sustainable consumption; split responsibility for sustainable consumption across government departments; weakly developed consumer policy; and underdeveloped multistakeholder collaboration in sustainable-consumption discussions. Recommendations include: the formulation of interventions for sustainable lifestyles from a consumer perspective; more attention to the particularities of the political-institutional context that influences an area of consumption; awareness- raising among consumers of the material consequences of consumption; the combining of regulatory instruments; and the development of tailor-made policy strategies to address the challenge of sustainable consumption.

A review of existing policy, good practice and tools for governing sustainable consumption at international and national scales and a Lifestyle Survey formed the basis of the CONSENSUS research (see Sections 2–3 of this report). Involving 1,500 consumers across Ireland, the survey aimed to uncover people's attitudes and behaviours towards sustainable household consumption and revealed a persistent value-action gap between reported environmental concerns and sustainable behaviours in practice. The survey revealed a number of positive findings from an environmental perspective: respondents reported high levels of environmental concern, awareness, self-efficacy and a reported willingness to act in order to protect the environment. Although encouraging, these positive attitudes do not currently translate into pro-environmental consumption behaviours. Indeed, relatively low levels of environmental behaviour and action were reported across all four areas of consumption (transport, energy, water and food). Although a greater commitment to pro-environmental behaviours is required on the part of individuals, so too is increased attention from government and businesses to wider structural, societal and political factors that can inhibit individuals' sustainable consumption choices.

Following the foundational phase of research presented by the Lifestyle Survey, the exploratory phase of CONSENSUS (detailed in Sections 4–7) focused on four challenging areas of household consumption: (i) transport, (ii) energy, (iii) water and (iv) food. Combining qualitative and quantitative methods, the transport research, for example, evaluated appropriate education regimes, infrastructures, incentives and restructured working relationships that could transform mobility practices onto more sustainable pathways. The transport research concluded that reconceptualising mobility as the 'consumption of distance' offers a promising departure from technocentric and economistic views of mobility that have dominated research, policy and practice to date. The research highlighted the urgent need for cross-sectoral policy solutions to pressing transport problems experienced by people who consume too much distance and those who find themselves deprived of opportunities for personal mobility. Specific policy recommendations include: the development of a more nuanced understanding of mobility practices and a recognition of the need to work with people's existing habits and practices; the identification and promotion of 'niche' sustainable mobility practices such as informal car-sharing; and appropriate training, legislation and

regulation to protect the interests of both employers and employees in workplace-based sustainable mobility initiatives, such as teleworking schemes. It is clear that the consumption of distance varies across an individual's life course and further research is required to identify critical moments, or 'mobility milestones', when mobility practices evolve.

Reframing of problem arenas also took place in the water, energy and food research with a focus on the heating, washing and eating practices that householders undertake on a daily basis. The application of the novel practice-oriented participatory (POP) backcasting approach generated proposals for regulatory, socio-cultural and technical innovations that might coalesce to work towards the goal of more sustainable household consumption across these three practices. The POP backcasting process resulted in the development of discrete outputs in the form of scenarios and Transition Frameworks, and also served as an important learning tool for those who participated. Coordinating across the diverse set of actors that shape consumption practices is, however, a considerable challenge. This is particularly the case under conditions of economic globalisation where there is little control over the diffusion of new, potentially environmentally damaging products, alongside a preference for non-interventionist governing strategies. The involvement of a variety of actors from business, policy, non-governmental and civil society fields within this POP backcasting study however represents one governance mechanism for coordinating and aligning long-term policy and business goals for shifts in unsustainable consumption practices. Further testing of the identified interventions in real-life settings, or 'living laboratories', is required to evaluate their capacity to improve the sustainability of consumption practices.

Involving researchers from both Trinity College Dublin (TCD) and the National University of Ireland, Galway (NUIG), the CONSENSUS research project has surpassed its original aims and objectives. It has advanced understanding of the drivers that shape everyday household consumption practices, while also identifying a range of regulatory, technological and lifestyle interventions that could facilitate more sustainable living in the future. In doing so, the project has engaged over 100,000 members of the public along with 100 government, private sector and civil society stakeholders. Extensive results dissemination, project publications, creative online resources and social media activities have ensured that the research findings have attained an international profile.

1 Sustainable Consumption & CONSENSUS: An Introduction

> It is recognised that the sum of our individual or household behaviours has a substantial impact on the environment. However, it is difficult for citizens to relate personal consumption and behaviour to large-scale problems such as climate change, pollution, biodiversity loss and natural resource depletion. Even if we express environmental concern and awareness, this most often does not translate into behaviour.
>
> (European Commission, 2012, p2; Kollmuss and Agyeman, 2002)

'Sustainable consumption' has been defined as the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials, and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations (see Jackson, 2006). However, achieving sustainable consumption represents a major challenge for public authorities (at all levels), businesses and consumers as it requires economic and social as well as environmental sustainability (European Commission, 2012).

Challenging questions remain regarding how more sustainable consumption might be encouraged, measured and governed (Seyfang, 2006). In particular, households and the day-to-day choices made by their participants are key sites where negotiations over sustainable practices are ongoing. Household consumption, defined as 'the consumption of goods and services by households including the selection, purchase, use, maintenance, repair and disposal of any product or service' (Organisation for Economic Co-operation and Development [OECD], 2002), is increasingly being highlighted as an arena requiring attention from governing authorities (Geyer-Allely and Zacarias-Farah, 2003; Spangenberg and Lorek, 2002). For although choices are inevitably bounded, at least partially, by historical developments and past policy decisions, and while the impact of production processes on the environment are significant, the combined impact of households makes them a major contributor to environmental pressures (European Commission, 2012).

At the European household level, three domains – food and drink, housing and infrastructure, and mobility – are responsible for up to 74% of greenhouse gas (GHG) emissions, along with other air pollution and resource use impacts (European Environment Agency [EEA], 2012). Environmental impacts from households are rising despite improvements in efficiency and production (Moll and Watson, 2009). The number of cars on the roads is increasing; leisure trips are becoming more frequent, longer in distance and shorter in time (Ecorys, 2008). The size of houses and the number of appliances within them is growing (Eurostat and European Commission, 2009) along with the consumption of electricity from space and water heating, while waste generation is also increasing across Europe (ADEME – French Environment and Energy Management Agency, 2007). Consumption of meat, dairy and processed food is also mounting not only in Europe, but globally. For example, between 1992 and 2007 global average meat consumption grew from 34 kg per person per year to 43 kg (+26%) (United Nations Environment Programme [UNEP], 2011). Indeed, predicted growth in global population and changing diets in emerging countries is expected to lead to an increase of 70% in food demand by 2050 (EC, 2011), with undoubted environmental impacts.

In Ireland, consumption in general, and household consumption in particular, rose dramatically during the period of economic expansion known as the 'Celtic Tiger' (EPA, 2006a). While levels of consumption have decreased since 2008 following the ongoing period of recession and attendant austerity measures, there has yet to be an absolute decoupling of economic growth and resource consumption (EPA, 2012a). This is not a uniquely Irish problem. Even in countries such as Japan or Germany, which have arguably made the most intense efforts to decouple economic development and resource use and where at first glance domestic resource consumption shows stabilisation or even a modest decline, deeper analysis shows that many

goods contain parts that have been produced abroad using significant amounts of energy, water and minerals (UNEP, 2011).

When CONSENSUS was founded in 2008 there had been little analysis conducted in Ireland of consumption patterns and the factors that shape them, including cultural norms, infrastructural and product developments and governing mechanisms. Certainly, there had been no comprehensive in-depth analysis of household practices in the field of consumption. The culmination of the research findings presented in this synthesis report provides a snapshot of the wealth of data and knowledge generated by the five-year, all-Ireland research endeavour. The outputs from, and impacts of, the project are ongoing and will transcend both the funding period of the grant (April 2009–December 2013) and the scope of this report. The research issues identified by CONSENSUS now form a component part of further research developments both in Ireland and internationally and will continue to be logged on the CONSENSUS website (www.consensus.ie) and linked to the EPA website.

The remainder of this introduction outlines the CONSENSUS research project structure and management. The rest of the report synthesises key findings related to the core elements of the project, including governing tools, Lifestyle Survey, mobility, home heating, personal washing and eating. Each section outlines the key challenges, delineates the findings, presents the impact of the research and prescribes recommendations for future action.

1.1 Key Issues in Consumption

Despite the best intentions of world summits on sustainable development since 1992, globally there has been a dramatic increase in resource extraction to meet the demands of an ever consumptive and growing population. Data produced by UNEP for the Rio+20 Conference held in 2012 and as part of the *Global Environmental Outlook (5) Report* (UNEP, 2011; UNEP, 2012) dramatically indicates the extent of this growth in consumption despite efficiency improvements in unit production. For example, natural resource consumption is reported to have increased by over 40% between 1992 and 2005 despite a decline in the amount needed per product. This is reflective of growing population demands for food, shelter and an improved standard of living (UNEP, 2011). Significant consumption inequalities, however, also persist with energy consumption in developed countries now 12 times higher than that of developing nations (UNEP, 2011). Consumption of goods and services is a major driver of global resource use and therefore, by association, negative environmental impacts. Indeed, the EEA indicates that European consumption of food and drink, housing, mobility and tourism, is contributing an increasing share of environmental pressures and impacts worldwide owing to burgeoning global trade. Within household consumption specifically, three areas are estimated to be responsible for approximately three-quarters of all environmental impacts: (i) eating and drinking; (ii) housing and infrastructure; and (iii) mobility. These areas reportedly contribute 74% of GHG emissions, 74% of acidifying emissions, 72% of tropospheric ozone precursor emissions and 70% of the direct and indirect material input caused globally by private consumption in 2007 in the EU (EEA, 2012).

It is clear that the structural transformation required to address the negative aspects of consumption will need to occur across public, private and civil society realms and impact consumption patterns and production processes in novel ways. According to additional data collated by the EEA, increasing numbers of electronic goods (such as TVs, PCs, laptops, mobile phones and kitchen appliances) are being purchased, and replaced more frequently than previously. Household electricity consumption continues to expand and while houses are getting more energy efficient, they are also larger and accommodating fewer people. This means that energy consumption for heating is only decreasing incrementally, if at all. In addition, every European citizen threw away roughly 445 kg of household waste in 2008 (EEA, 2012).

With unsustainable consumption recently described as ‘the mother of all environmental issues’ by the EEA (2012), governing bodies have attempted to address the stark challenges to environmental quality that these consumption patterns create – with European initiatives such as the Integrated Product Policy and the Ecodesign Directive (2009/125/EC). Such regulatory measures focus on reducing the environmental impacts of products across their life-cycle, including their

energy consumption. The European Commission's 2008 *Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan* also focused on reinforcing life-cycle approaches, strengthening green public procurement and initiating actions to change consumer behaviour. A mid-term evaluation of this plan conducted in 2011 recorded some positive progress in achieving a coherent and consistent policy framework, but with much remaining to be done to implement policy. This position is supported by the European Commission's Roadmap to a Resource Efficient Europe. The roadmap establishes a common methodology for assessing, displaying and benchmarking the environmental performance of products, services and companies. It also recommends measures to reduce environmental impacts in the consumption areas of food, housing and mobility. It remains the case that current policies are at best having only incremental impacts on consumption.

1.2 CONSENSUS Research Framework

CONSENSUS examined four key areas of household consumption that currently have a negative impact on the environment and inhibit our ability to achieve sustainable development in both Northern Ireland and the Republic: transport, energy, water and food. A set of integrated work packages addressed four themes identified in the 2007 STRIVE call for the:

- Measurement and evaluation of consumption (Theme 1);
- Development and implementation of sustainable behaviours and incentives (Theme 2);
- Identification of links between consumption, health and well-being (Theme 3); and
- Assessment of how matters of household consumption are being governed through institutional practices and participation (Theme 5).

These issues were approached through a combination of foundational, exploratory and integrative research initiatives (see Fig. 1.1 for an outline of the CONSENSUS project structure[1]).

The foundational components of the research consisted of a critical analysis of existing tools for governing consumption (Section 2 of this report) and the development, implementation and analysis of an all-island of Ireland Lifestyle Survey (Section 3). The governance analysis not only described the mechanisms in place to transform consumption, it also provided the means to identify and bring together researchers

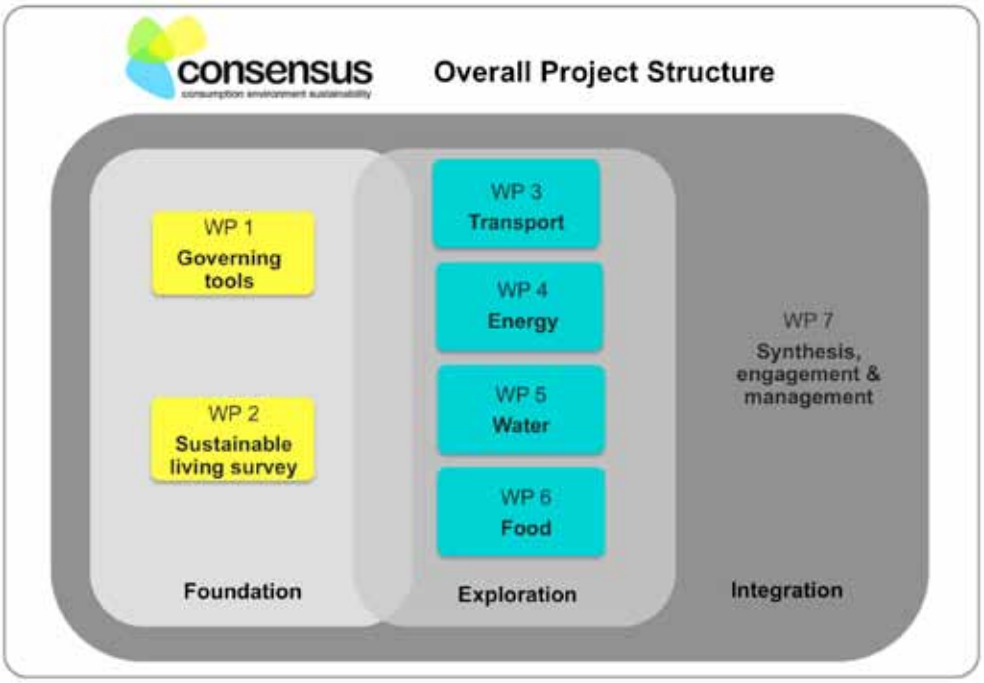

Figure 1.1. CONSENSUS project overview.

1 Full details of the CONSENSUS project and its findings are available at www.consensus.ie which functions as a resource and communication hub for consumption debates.

and policy stakeholders through the Sustainable Consumption Research Network (SCRN).

The Lifestyle Survey developed a baseline dataset providing vital information on attitudes and behaviour towards sustainable consumption, specifically focusing on transport, water, energy, food, and linkages to quality of life. Sections 4 to 7 synthesise the key findings from the exploratory phases of CONSENSUS which focused on key practices of household consumption. Section 4 addresses the significant issue of transport, mobility and the everyday consumption of distance. Using both qualitative and quantitative research methods, this aspect of the research investigated the socio-cultural determinants of transport and mobility in Ireland and identified and critically assessed ways of encouraging sustainable mobility patterns and transport uses. This included exploring potential for incentives and virtual mobility tools to encourage modal shifts.

Meanwhile, building on the recognition that top-down mechanisms for governing consumption behaviour have failed to achieve the scale of transformation required to achieve sustainability in household practices, Sections 5–7 document the process, outcomes and impacts of applying a practice-oriented participatory backcasting approach in order to identify alternative pathways to sustainable consumption for home heating (Section 5), personal washing (Section 6) and eating (Section 7). The research provided both the test bed for novel governing mechanisms (practice-oriented participatory [or POP] backcasting) to be evaluated for their innovative potential, while also enabling key assumptions about the nature of consumption behaviour drivers to be reconsidered. Fundamentally, it brought together stakeholders and citizens in neutral spaces to: allow them to be directly confronted with sustainability challenges; encourage them to think in creative ways about long-term solutions and desired future societies; stimulate creative thinking beyond the narrow confines of disciplines or existing business models; and create an opportunity for stakeholders who would not normally meet to engage in a face-to-face environment, thus opening up possibilities for future collaboration. Section 8 summarises the key findings and policy implications of the CONSENSUS project, and makes suggestions for further research.

1.3 CONSENSUS Aims, Objectives and Outputs

The aim of CONSENSUS was to establish general baseline data and in-depth sectoral knowledge of consumption with the view to progressing academic, citizen and policy debates both within Ireland and beyond. The academic objectives were to progress research on sustainable consumption through international peer-reviewed publications, presentations and conferences as well as to develop intellectual capacity on sustainable consumption through the training and mentoring of PhD students. The policy objectives were to conduct and disseminate an all-island of Ireland Lifestyle Survey and to critically review international good practice with regards to promoting, implementing and governing sustainable behaviour. In addition, a series of action plans for encouraging a transition to more sustainable lifestyles in terms of washing, heating, eating and moving were to be developed. Importantly, CONSENSUS sought to bring together academic researchers and policy stakeholders through the development of an international SCRN and project website. These aims and objectives have all been met and exceeded as detailed in Table 1.1. A full account of the research is detailed in the following sections with a full list of outputs available in Appendix 1.

Table 1.1. Summary of CONSENSUS outputs, 2009–2014.

Output Summary	Number
Publications (including two edited volumes)	28
Presentations (including posters)	98
Results dissemination (press releases, transition frameworks, factsheets, guidelines etc.)	27
Civic engagement initiatives (exhibitions, TV, events, reviews, modules, etc.)	37
Project outputs (online profiles, website, videos, theses, Sustainable Consumption Research Network Technical Progress Reports newsletter)	33
Total	**223**

2 Governing Sustainable Consumption

2.1 Key Issues

The CONSENSUS project was designed to provide a comprehensive response to international calls for action on sustainable consumption. Achieving this aim, the project makes a major contribution to the development of Irish policy aimed at promoting sustainable consumption in key areas such as transport and mobility, energy, water and food.

At an international level, policy instruments to address the challenges of sustainable consumption have witnessed a rapid proliferation in the past decade. However, countries have responded very differently to the introduction of consumption-related environmental directives (Rubik *et al*., 2009), not least in terms of policy instruments for transforming consumption behaviour. For example, various countries in the EU have combined legislative, economic and communicative instruments to address the challenges of sustainable consumption. Drawing on examples of international good practice, the research undertaken in work package 1 (WP1) assessed the effectiveness of existing sustainable consumption policies across the EU and identified tools for governing sustainable consumption that are applicable to Ireland. Further, while there has been a rapid proliferation of such policy instruments, there has been surprisingly little exchange of national experiences between authorities in European member states (Scholl *et al*., 2010). A key aim of WP1 was thus to provide networking opportunities for the international exchange of research and policy ideas in the arena of sustainable consumption.

Consequently, the key objectives of WP1 were five-fold:

1 Review the state of EU Directives on sustainable production and consumption and catalogue international good practice models and tools;

2 Building on this review, evaluate Ireland's performance in sustainable consumption and production (SCP) policies and evaluate their implementation;

3 Establish a network for sustainable consumption research to facilitate an international exchange of sustainable consumption research and policy experiences;

4 Building on the establishment of an active research network, an international workshop on sustainable consumption;

5 Publish an edited volume to help fill identified gaps in the existing literature in this topical and emerging area and disseminate CONSENSUS research findings to a wider, international audience.

2.2 Results

Drawing on the first two aims of WP1, two interim reports were generated that focused on the governance of sustainable consumption. Both reports are the result of a desktop study conducted between April 2009 and March 2010.

2.2.1 SCP Policy Review and Catalogue of International Good Practice

The objective of the first phase of the desk study was to review the state of EU Directives on SCP and catalogue international good practice models and tools in the area of sustainable consumption in Europe. The resulting report (Fahy and Pape, 2010a) outlines the progress that has been made in this arena in terms of SCP agenda setting, the development of policy instruments and the formation of strategies to tackle SCP challenges. Indeed, a multitude of instruments and frameworks were found to exist at both national and international scales. However, an 'implementation gap' is still evident (Rubik *et al*., 2009; Tucker *et al*., 2008). Important questions also remain about the effects of certain instrument mixes although combinations of instruments that target the same area of SCP seem to be more effective than the use of individual policy instruments (Tucker *et al*., 2008; OECD, 2008). Furthermore, the most successful instances of sustainable consumption policy exist as singular examples from individual countries and grassroots or 'niche' initiatives. How these examples of good practice can be mainstreamed is still unclear and is the subject of much ongoing debate.

The policy review also discusses the promising attempts that have been made to measure and evaluate SCP strategies both through national and international indicator sets and qualitative frameworks. Yet a more

cohesive and consistent way to evaluate SCP strategies is still missing. Meanwhile, scholars are increasingly questioning the equation between economic growth and well-being. There is growing evidence that improved well-being and a higher quality of life are not directly related to increasing levels of consumption (see Jackson, 2009; Tucker *et al*., 2008). Nonetheless, the dilemma remains that economic growth is unsustainable but the means to achieve sustainable development in a stable, just, fashion are highly contested.

This desktop review provided the basis for the second aim of WP1: to assess Ireland's performance in the area of SCP policies and to develop a model of good governance for sustainable living in Ireland. Guidelines developed by international organisations such as UNEP and policy examples from other national contexts were used as a framework and learning tools for the Irish perspective. In order to transfer these good practice examples to the Irish policy context, it was also necessary to explore the current political and institutional context, as well as the cultural and social norms that shape consumption patterns in Ireland.

2.2.2 Sustainable Consumption Policies in Ireland: An Evaluation

In the Irish context, prior to the commencement of the CONSENSUS project, research in the critical field of sustainable consumption was only in its infancy. The second report from WP1 demonstrates that although some progress has been made to address matters of sustainable consumption in both the Republic of Ireland (RoI) and Northern Ireland (NI), a lot remains to be done. The examples of good practice discussed in the report highlight areas where the RoI is catching up with other European countries and also identifies opportunities for policy learning from abroad. Recommendations have thus been developed for both the RoI and NI from this research phase (see Sections 2.2.5 and 2.3.4 of the Pape and Fahy [2010b] review for details[2]). These recommendations focus on strengthening institutional capacities to tackle sustainable consumption and developing specific SCP action plans in Ireland.

It is evident from this research that long-term changes in consumption patterns require a multidimensional approach that combines different strategies and regulatory instruments (see OECD, 2013). Many existing sustainable consumption policies and instruments have a propensity to represent top-down developments by government with little participation in their formation by consumers, householders and other stakeholders. However, interventions are reportedly most effective when formulated from a consumer perspective (OECD, 2013). The NI Sustainable Development Strategy (2010), developed through a public consultation process, was reviewed as part of this research phase and considered a useful step in this direction.

A need to recognise that consumption patterns have a systemic character and therefore cannot be changed by focusing on one aspect alone (e.g. information, morality, technology, financial incentives or cultural standards) is also crucial in the Irish, and other national, contexts. The mix of instruments and strategies that is most suitable for a specific context and a particular task can therefore only be identified through detailed analysis of the respective consumption context, as well as its continuously evolving socio-technical characteristics and its systemic links to other areas of consumption. Importantly, much more attention must be given to the particularities of the political-institutional context that influences consumption. Creative solutions are thus needed in the Irish context to develop tailor-made policy strategies to address the challenge of sustainable consumption. The CONSENSUS review provides some examples of how such solutions can be developed. For example, attempts to regulate consumption practices need to make visible the links between people's actions and their physical environment. This is particularly necessary given that many everyday practices are tacit and taken-for-granted and those who engage in them are often not consciously aware of their various material consequences (Shove, 2003; Spaargaren, 2003). Drawing people's attention to the consequences of their wants and needs thus represents a promising approach to behavioural change in the area of consumption. A need to raise such awareness and combine regulatory instruments is thus crucial for overcoming the challenge of sustainable consumption.

Nevertheless, some institutional challenges and tensions in the area of sustainable consumption in Ireland also

2 Available from the SAFER portal at: erc.epa.ie/safer/iso19115/ display?isoID=147

exist. In particular, questions of responsibility are ever pressing, with the problem of appropriate 'scales of governance' for sustainable consumption deserving increased reflection. Interestingly, to date some policy sectors have been dominated by state-led, top-down policy measures that rely heavily on economic tools (e.g. transport, energy) while others have been characterised by 'soft' approaches such as information and education campaigns (e.g. food safety and energy conservation behaviour). This reflects the diversity of policy actors (e.g. government, trade unions, NGOs) and their respective roles and influence in specific policy areas. For example, food policy typically involves many interested parties including NGOs, educational practitioners and farmers. This contrasts with energy and transport arenas that remain top-heavy and involve only a small number of key players (e.g. Department of Communications, Energy and Natural Resources and energy providers such as the ESB, EirGrid and Bord Gáis which are key actors in energy-policy development). However, recent initiatives, including the drawing- up of the 'Smarter Travel' policy in 2008, included exercises in public consultation processes. In addition, steps have been taken to change existing governance structures in Ireland, including recent local government reform announced in 2013 and passed in 2014 (Local Government Reform Act, 2014).

More generally, there are growing calls for a comprehensive reframing of green consumer policies through reflective deliberation among an increasing range of actors that includes consumers (Klintman, 2009: 55). Proponents argue that more participative and interactive policy-making will be more effective in achieving sustainable consumption over top-down awareness campaigns based on the information-deficit model, simplistic fiscal measures or command and control regulatory frameworks. Indeed, inclusive mechanisms allow stakeholders to be directly confronted with accelerating sustainability challenges.

Meanwhile, the potential for the current global economic recession to spell the end of neoliberal 'slim state' approaches to policy-making must be considered, as weaknesses of self-regulation ideologies are increasingly exposed. It is also possible that the current economic downturn may present an opportunity to place sustainable consumption firmly on the Irish policy agenda. For example, the 'smart-green economy' is being heralded as a potential panacea to current recession by way of developing a win-win situation for the economy and the environment. Indeed, the desktop review discussed how, during 2009, both the Comhar Sustainable Development Council and the Green Party in the RoI and stakeholders in NI published proposals for a 'Green New Deal'. This deal emphasises the creation of 'green-collar' jobs, investment in 'green' R&D (including in energy and transport arenas) and a movement away from fossil-fuel-based energy production through extensive investment in renewable energy, amongst other things. Drawing on these examples, the review concludes that while some emphasis has been placed on reviving and creating sustainable communities in urban and rural areas, there has been a strong focus on economical and technological solutions. The issue of sustainable consumption plays only a minor role in the context of these proposals. Overall, the prioritisation of production seems to suggest that (sustainable) consumption remains a secondary policy issue, in particular in times of economic crisis and rising unemployment.

A final important aspect in the Irish context relates to the need for an all-island focus on environmental issues. Although institutions that have been developed for cooperation between the RoI and NI touch upon aspects of sustainable development (e.g. cooperation between the RoI and NI on energy matters has been ongoing since 2003) they do not yet have a clear mandate for sustainable consumption. The use of these institutional structures and existing networks for more targeted cooperation around pressing questions of sustainable consumption would be beneficial for both the NI and RoI as a means of tackling the challenges of sustainable development and climate change.

2.3 Summary and Recommendations

The overarching aim of WP1 was to review existing policy, good practice and tools for governing sustainable consumption. As the results above indicate, WP1 achieved these aims by: (i) reviewing existing international SCP policy; (ii) cataloguing good governance practices for sustainable consumption and tools for governing sustainable living; and (iii) identifying key policy challenges, opportunities and

recommendations for the future. Key challenges identified for Ireland in this latter regard include:

- A lack of a coherent policy framework for sustainable consumption;
- Fragmented responsibility for sustainable consumption across government departments;
- Weakly developed consumer policy;
- Underdeveloped multistakeholder collaboration in sustainable consumption discussions.

Nonetheless, some opportunities in this area were also identified. For instance, evidence from recent initiatives indicates that (albeit with a time lag) Ireland appears to be 'catching up' in the introduction of 'good practice' policies to address sustainable consumption, with potential for further policy learning from good practice models identified abroad. Combining different instruments and strategies from across Europe, these suggestions could strengthen and extend existing sustainable consumption policies in Ireland. The need for cross-border institutional cooperation is paramount in this regard. Additional recommendations to emerge from WP1 include:

- The need to formulate interventions for sustainable lifestyles from a consumer perspective;
- Requirement for more attention on the particularities of the political–institutional context that influences an area of consumption;
- Scope to raise awareness of the material consequences of consumption amongst consumers and to combine regulatory instruments;
- The need to develop tailor-made policy strategies to address the challenge of sustainable consumption.

As one of the foundational work packages of the CONSENSUS project, the desktop studies conducted provide essential baseline data for subsequent work packages. Additional highlights and outcomes of the work package that served to address the other aims of WP1 are outlined below. This includes the establishment of an active sustainable consumption research network, the hosting of an international workshop and the publication of an edited volume.

2.4 Impact Highlights: Engagement, Presentations and Publications[3]

Publications

- Pape, J., Rau, H., Fahy, F. and Davies, A. (2011). 'Developing policies and instruments for sustainable consumption: Irish experiences and Futures', *Journal of Consumer Policy,* 34 (1), p25–42.
- Davies, A., Fahy, F. Rau, H. and Pape, J. (2010). 'Sustainable consumption: practices and governance', *Irish Geography,* 43 (1), p59–79.

Edited Volume

- Davies, A., Fahy, F. and Rau, H. (2014). *Challenging Consumption: pathways to a more sustainable future*, London, Routledge.

Review Reports

- Pape, J. and Fahy, F. (2010a) 'Review of state of EU Directives on production and consumption and catalogue of international best practice models and tools for Quality of Life Proofing', *Interim Report*, September 2010 [online]. Available at www.consensus.ie/wp/wp-content/uploads/2013/11/Fahy-and-Pape_2010_Review-of-international-SCP-initiatives.pdf
- Pape, J. and Fahy, F. (2010b) 'Measurement and evaluation of Ireland's progress regarding sustainable consumption policies', *Interim Report*, December 2010 [online]. Available at erc.epa.ie/safer/iso19115/displayISO19115.jsp?isoID=147

International Conference Organisation

- The CONSENSUS international conference (entitled 'Challenging Consumption: Pathways to a More Sustainable Future') took place at the National University of Ireland, Galway from the 18–20 May, 2012.The objective of the conference was to initiate an international forum of exchange for pioneering research in the field of sustainable consumption with a view to exploring potential research collaborations

3 See Appendix 1 for a full list of outputs from the CONSENSUS project.

between sustainable consumption researchers and networks. Succeeding in these aims, a series of presentations and panel discussions provided a landscape of the breadth and scope of research being undertaken by pioneering researchers in this field while networking opportunities between sessions provided the time and space to build connections for future collaborations. While the attendance was limited to 60 invited experts (including local and national policy-makers and internationally renowned academics), two keynote lectures were open to the public and over 100 participants attended these lectures.

- Dr Frances Fahy conducted interviews on Galway Bay FM and the conference made local news headlines (Galway Bay FM, 09:00 News, 17/5/12). Related articles were also published in the *Galway Advertiser* (17/3/2012) and *Environmental Solutions* (9/3/2012).
- Seven keynote lectures and panel discussions were recorded and are available for viewing on the EPA *YouTube* channel: http://www.youtube.com/watch?v=jyHQLxiuksM&list=PLFesobj_WT1Fh1R--638HySY0dgU-xf54J. To date, these videos have been viewed over 860 times.
- A summary of the conference proceedings were published and are available online at: www.consensus.ie/wp/wp-content/uploads/2013/10/Consensus_international_conference_proceedings_2012.pdf

Presentations

- Frances Fahy and Jessica Pape presented 12 conference papers on the data gathered for WP1. These papers were presented at national and international conferences and workshops including: the Social Platform on Sustainable Lifestyles in Brussels (October, 2009), Conference of Irish Geographers (May 2010), Association of American Geographers in Seattle, USA (April 2011), the Sustainable Consumption Conference: Towards Action and Impact in Hamburg (November 2011) and the European Roundtable on Sustainable Consumption and Production International Conference in Istanbul (June 2013).
- Frances Fahy gave three presentations on the CONSENSUS Project while on sabbatical in New Zealand, including as part of the Massey Geography Seminar Series, to the School of People, Environment and Planning and a public lecture in Palmerston North Public Library.

Establishment of SCRN

- The Sustainable Consumption Research Network (SCRN) was established and a newsletter regularly distributed to approximately 140 members (since May 2009) and via linkedin.com.
- Information exchange is also ongoing with international networks on sustainable consumption, while the three CONSENSUS work package leaders are founding members of SCORAI EU.

3 Sustainable Lifestyle Survey

3.1 Key Issues

Building on WP1, a need was identified for more in-depth understanding of household consumption behaviours and sustainable lifestyles in an all-island Irish context. In response, work package 2 (WP2) developed and conducted a Lifestyle Survey to generate the first Irish-specific baseline dataset of attitudes and reported behaviours towards sustainable household consumption and sustainable lifestyles in a sample of the Irish population encompassing both NI and the RoI. This cross–border research explored underlying factors that influence sustainable consumption behaviours in the areas of transport, water, energy and food. These baseline data are essential for informing future sustainable consumption policy across both policy regions.

The Lifestyle Survey fieldwork was conducted between June 2010 and April 2011 and included adults aged 18 years and over. A multi-stage cluster sampling technique was used to select three counties for the sampling frame: Derry, Dublin and Galway. A total of 1,500 domestic households were selected across 30 electoral districts using a stratified random sample with a 250 urban and 250 rural divide in each county. CONSENSUS researchers visited selected households to administer the questionnaire face to face, thus overcoming issues of literacy, and yielding a higher response rate than mail or telephone surveys (May, 2001).

Of the 1,500 individuals who participated, 59% were female and 41% were male. Respondents' ages ranged from 18 to 93 years, with an average age of 45 years. In total, 5% of all participants described their educational status as either 'no formal education' or 'primary level education only'; 41% of the sample had attained 'second-level education' and 54% had attained 'third-level education'. In terms of household composition, the majority of respondents shared their home with 'family members' (60%), while the average number of people living in a household was 3.1 persons. Presenting significant consequences for household consumption rates (including the increased use of energy and other resources (Sustainable Energy Authority of Ireland [SEAI], 2009; Abrahamse and Steg, 2009), this occupancy figure is higher than the average number of persons residing in private households in the RoI (2.7 persons) and NI (2.5 persons) (Central Statistics Office [CSO], 2011). The next section outlines key trends to emerge from the Lifestyle Survey dataset.

3.2 Results

3.2.1 Baseline Trends of Environmental Concern and Awareness

This study found encouragingly high levels of reported environmental concern across all age cohorts; 86% of respondents (n=1,289) stated that they were concerned about environmental issues. High levels of self-efficacy beliefs were also noted, with 82% of respondents believing that their personal behaviour could make a difference to the environment. Meanwhile, 58% felt that they needed 'to behave in a more environmentally friendly way'. From a sustainability perspective these findings are quite positive as studies have found environmental concern to be positively related to pro-environmental behaviour although relationships tend to be weak (Stern, 2000; De Groot and Steg, 2008). Indeed, respondents' reported willingness to act to protect the environment was not as promising. Results of this study found that 62% of respondents were not willing to support higher taxes to protect the environment. Similarly, 48.9% were not willing to pay increased prices for environmentally friendly goods and services. These findings are in line with research which reports consumer opposition to paying increased taxes or charges to address environmental problems (see OECD, 2011). Nevertheless, 42.7% agreed that they 'would be willing to pay higher prices for goods and services, if it helped to protect the environment'. Such reported willingness could provide a positive incentive for producers to employ less environmentally harmful techniques (Basu *et al*., 2003).

The Lifestyle Survey also found that approximately seven out of every ten individuals interviewed were willing to sacrifice personal comforts to save energy. Respondents in the lowest income brackets were the least likely group to state their willingness to accept cuts in standard of living however. These findings link

with recent calls to re-focus sustainable consumption policy messages towards the enhancement of quality of life (Doran, 2007; Hinton and Goodman, 2010). Such messages tend to have more cultural salience for individuals and hence are more likely to foster appropriate behavioural changes.

Regarding reported levels of environmental awareness, Ireland is in line with many European countries: 59% of respondents in this study stated that they felt well informed about the environmental impacts of products in comparison to 55% of respondents in a recent Eurobarometer Study of European citizens (2009). These results indicate progress on this matter since previous research was conducted in Ireland over a decade ago (see Drury Research Study, 2000), where over 75% of respondents reported they did not feel well informed about environmental issues.

3.2.2 Trends in Transport

The prominence of private car use was highlighted in the Lifestyle Survey data: 71% of respondents reported driving to work, school or college. Respondents who did not use available public transport viewed it as 'too restrictive' (42%), 'too unreliable' (11%) and 'too expensive' (7%). Rural Ireland appeared particularly affected by gaps in public transport provision, with almost half of all rural respondents (43%, n=208) reporting that there was no public transport available to them for their daily commute, compared to 27% of urban dwellers. When asked what would encourage a reduction in car journeys, 53% of the sample stated 'improved, more affordable public transport', 12% reported 'financial incentives to encourage walking and cycling' and a further 12% cited 'improved bike lanes, footpaths and pedestrian crossings'. These findings mirror suggestions by the OECD (2013) that 'improved public transport' and 'investment in public transport' would reduce car dependency. However, reported tendencies for a value-action gap concerning environmental values and behaviours may mean that individuals with 'green' values do not always act accordingly (Blake, 1999). This remains a significant challenge for transport policy development.

3.2.3 Water Consumption and Conservation

With the cost of providing clean drinking water escalating, and the proposed re-introduction of water charges for domestic dwellings looming, water conservation has become an important issue for policy-makers, businesses and consumers. When asked about water conservation, 80% of respondents surveyed (n=1,198) stated that there was 'a need to save water', though actual reported water-conservation behaviour was much lower. Indeed, almost 40% of respondents reported that they do not pay attention to the amount of water that they use. Perhaps reflective of past washing regimes, respondents in older age cohorts were more likely to report paying attention to household water use. Women were also found to have greater awareness of their water usage than men; with 62% of women stating that they paid attention to water used in their homes as opposed to 49% of men. Such findings are in keeping with CAP-NET (2006: 13) which reports that women and men tend to reduce environmental sustainability in 'different proportions', with women often having higher stakes in productive uses of household water globally. Greater awareness of water by one gender may be as a result of this reported bias in terms of global domestic labour division.

Meanwhile, more rural than urban dwellers felt that they should be entitled to use as much water and energy as they wished. However, on closer investigation, rural dwellers reported being more efficient with resources as opposed to their urban counterparts. For example, slightly more respondents residing in rural locations (61%) reported paying attention to the amount of water they used, compared to 53% of urban dwellers. Meanwhile, over one-third of participants (34%) reported drinking bottled water on a daily basis, with respondents in Galway reporting particularly elevated levels of bottled water consumption. Such variations between sample areas could be due to incidences of poor water quality or water contamination in certain locations, resulting in an increased (perceived) need for bottled water consumption. For example, a serious outbreak of *Cryptosporidium* in Galway in 2007 resulted in Galway City Council urging citizens to take precautions and use only boiled or bottled water (Galway City Council, 2007).

In relation to using less water in the future, 68% of Lifestyle Survey respondents stated that the reintroduction of a water charge would change their water usage. This is consistent with other research (see OECD, 2013; Grafton *et al*., 2011) which found that volumetric water charges are a key factor influencing both household water-saving behaviours and adoption of water-efficient devices. Respondents in the middle-

income cohorts were most likely to agree that a water charge would change their water behaviour as opposed to respondents in the highest- and lowest-income brackets. This suggests that water-metering and charging could have a variable impact on water use if applied in isolation from other interventions.

3.2.4 Energy Consumption

Across the island of Ireland, domestic energy consumption is increasing with Irish homes accounting for approximately a quarter of all energy used nationally (SEAI, 2009). Although reported intention to purchase energy-efficient appliances was high (91%), only 46% had purchased an energy-efficient appliance during the past five years. Results of the Lifestyle Survey thus indicate a value-action gap in relation to respondents' expressed willingness to act and their actual, household energy consumption. Many individuals also reported a willingness to purchase more environmentally friendly products as opposed to altering their consumption behaviours. For example, 93% stated that they were willing to buy products with less packaging. However, respondents were less willing to change or reduce their behaviours. For example, less than half (43.6%) were willing to reduce their car usage while 53.8% were not willing to share appliances or use communal appliances with neighbours or friends.

It is nonetheless important to view Lifestyle Survey energy results in context. In Ireland, over the past decade in particular, specific areas of consumption have been targeted by the introduction of economic (for example, taxes, levies and grants) and communicative instruments (for example, the 'Power of One' campaign) mostly aimed at individuals and households (Pape *et al*., 2011). Similarly, there are a range of home-energy savings schemes that are administered by the SEAI. This includes the 'Better Energy Homes' scheme which provides assistance to homeowners to reduce energy use, costs and GHG emissions and improve levels of comfort within the home. Hence, while the number of respondents who reported installing insulation (23%) could be viewed as encouraging, it could also be seen as disappointing in light of the current initiatives in place to promote this behaviour. Indeed, the Lifestyle Survey found that less than 5% of respondents had availed of grants or subsidies in the past five years. Based on these results, current policy and practice could be perceived as not making a significant impact in terms of meeting EU targets for energy efficiency put forward in the EU Energy and Climate Change Package in 2008. This package aims for a 20% efficiency improvement, 20% renewable energy penetration and 20% greenhouse-gas emissions reduction by 2020.

3.2.5 Food Consumption

Food has been identified as a key area for consideration in the challenge of sustainable consumption due to increasing evidence of the impact of the prevailing food system on the environment, local communities, and social justice (OECD, 2001). Results from the Lifestyle Survey however indicate that Irish householders base their food-purchasing decisions on largely tangible and pragmatic issues rather than on the more intangible considerations of food sustainability. Indeed, 'price' and 'health' were found to be the most influential factors when buying food in Ireland. So, while 65.8% of respondents agreed with the statement, 'I trust eco-labels', 67.1% claimed that 'food which is organic or fair trade is too expensive to buy'.

Within the sustainable food movement an additional concern is the large amount of waste occurring at every stage of the food chain (EPA, 2011). Recent reports estimate that wasted food costs each Irish household approximately €700 annually (EPA, 2011). In this survey, a third of participants claimed to never throw food away. The most common reasons for wasting food were that 'too much food is bought and it expires' (27%, n=396) and 'food goes off because of a change in plans' (21%, n=305). Nonetheless, a significant majority of respondents (89%) agreed with the statement 'I try to reduce the amount of food waste my household produces'. This indicates a certain level of awareness towards the importance of not wasting food. Further investigation is needed to identify the drivers behind this behaviour.

3.3 Summary and Recommendations

Although sustainable consumption policy may still be in its formative stages, Ireland is currently gaining momentum with regards to its sustainable consumption data and research direction. Indeed, the CONSENSUS data addresses the distinct knowledge gap in this regard for the island of Ireland, feeding into the growing body of international research focused on understanding sustainable consumption and development (for example,

by OECD and the Department of the Environment, Food and Rural Affairs [DEFRA]). Focusing on sustainable lifestyles and linkages to quality of life, WP2 developed the first extensive Irish-specific baseline dataset on attitudes and behaviour towards sustainable consumption across NI and the RoI.

To fully and efficiently utilise the CONSENSUS dataset, the next logical research step would involve employing a segmentation model to understand the links between people's environmental attitudes, values and current behaviours and related barriers and motivators. Increasingly, the employment of lifestyle-related, target group segmentation has been proposed in the context of social scientific environmental research to assess the relationship between attitudes and environment-related behaviour (DEFRA, 2011). Moving away from the traditional 'one-size fits all approach' to behaviour change in sustainable consumption policy, segmenting individuals into different groupings would also enable policy-makers to focus and tailor future policy implementation according to who they wish to influence in terms of sustainability actions and policy roadmaps. Indeed, current social-marketing policies seek to encourage behaviour change amongst citizens by identifying population segments with similar commitments to environmental practices as the basis for behaviour change initiatives (Barr *et al*., 2011). If applied to the CONSENSUS dataset, segmentation modelling would identify and assess the willingness and ability of various groups to undertake pro-environmental behaviours. Motivations and barriers for participation could also be explored. Ultimately, more refined and targeted approaches to policy and marketing communications could be developed, particularly in relation to key sustainable consumption priority areas or projects.

For now, results of the WP2 Lifestyle Survey revealed a number of positive findings from an environmental perspective, with respondents reporting high levels of environmental concern, awareness, self-efficacy and willingness to act in order to protect the environment. Although encouraging, these positive attitudes do not however necessarily translate into pro-environmental consumption behaviours. Indeed, a value-action gap was identified, with relatively low levels of environmental behaviour and action reported across all four areas of consumption (transport, energy, water and food). Although a greater commitment to pro-environmental behaviours is required on the part of individuals, so too is increased attention from government and businesses to wider structural, societal and political factors that can inhibit individuals' sustainable consumption choices. Together, policy-makers, businesses, NGOs and individuals can all make a positive environmental difference.

3.4 Impact Highlights: Engagement, Presentations and Publications[4]

There has been widespread dissemination of the Lifestyle Survey findings to date, including public dissemination, academic peer-reviewed papers, international and national conference presentations and a PhD thesis. Highlights of this dissemination are listed below.

3.4.1 Lifestyle Survey Factsheets

A series of nine factsheets was published presenting an overview of emerging trends in reported consumption behaviours and lifestyles identified through the Lifestyle Survey (available online from http://www.consensus.ie/papers-reports/). These factsheets were also distributed, both in hard copy and electronic format, to over 250 relevant stakeholders, including advisory board members, local and national media and local authorities. A set was also sent to the Association of Geography Teachers in Ireland (AGTI) in September 2012 and are currently available as a teaching resource on the AGTI website. Factsheet copies were also requested by Pat Macken for distribution to all Department of Education staff and the data has subsequently been cited in national policy reports (for example, the latest National Economic and Social Council (NESC) Report (2012) concerning *Ireland and the Climate Change Challenge: Connecting 'how much' with 'how to'*). Example factsheets include:

- Lavelle, M.J. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (2) Environmental concerns, National University of Ireland, Galway.

4 See Appendix 1 for a full list of outputs from the CONSENSUS project.

- Lavelle, M.J., Rau, H., Heisserer, B. and Hynes, M. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (3) Transport, National University of Ireland, Galway.
- Lavelle, M.J., Davies, A., Fahy, F. and Doyle, R. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (6) Water consumption, National University of Ireland, Galway.

3.4.2 PhD Thesis

- Lavelle, M.J. (2014) 'Towards sustainability: household consumption and lifestyles in the Republic of Ireland and Northern Ireland', unpublished thesis, National University of Ireland, Galway.

3.4.3 Publications

- Lavelle, M.J. (2013) 'Transitioning towards sustainable consumption: The importance of combining quality of life indicators with economic policy measures' in Hogan, M. (ed.) *Wellbeing in Ireland: Designing measures and implementing policies*, NUIG, Galway.
- Lavelle, M.J. and Fahy, F. (2014) 'Unpacking the challenges of researching sustainable consumption and lifestyles' in Davies, A., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future*, London, Routledge.
- Flannery, W. Fahy, F. and Lavelle, M.J. (under review) 'Expressed attitudes and reported behaviours towards water usage on the Island of Ireland', *Environmental Policy and Planning* (submitted).

3.4.4 Presentations

Twelve papers were presented based on WP2 data at national and international conferences and workshops, including: Conference of Irish Geographers (May 2010); Association of American Geographers, New York (February 2012); 19th Annual Colloquium of the International Geographical Union Commission/CSRS, Galway (August 2011); Sustainable Consumption Conference: Towards Action and Impact, Germany (November 2011); the RGS Planning and Environment Research Group Workshop, Exeter, UK (April 2013); and at the University of Otago, New Zealand (November 2013).

3.4.5 Media Engagement

There has been widespread public dissemination of Lifestyle Survey findings to date, including:

- *Irish Examiner* (2012). Water charge would significantly influence usage, survey finds, 8 March.
- *Irish Times* (2012). Water charges will change our consumption habits, say 68%, 8 March 2012.
- *Irish Times* (2012). Bio-fuelling a self-sufficient society, *Irish Times Special Supplement*, 10 July 2012, p4.

3.4.6 Wider Research Impact

As one of the foundational work packages within the CONSENSUS project, the Lifestyle Survey provided essential baseline data for the subsubquent work packages. Furthermore, two additional PhD students in NUI, Galway (Bridin Carroll and Mary Greene) have begun to explore the large CONSENSUS dataset in the context of local food and lifestage research. As a result, CONSENSUS project results will be cited and disseminated even further.

Similarly, the Lifestyle Survey instrument has been employed by a number of different disciplines (for example the School of Engineering and School of Sociology and Political Science at NUIG). A number of industry partners, such Helena McElmeel Architects and Cluid Housing Association, have also deployed parts of the Lifestyle Survey as part of ongoing projects. For example, elements of the questionnaire were employed in surveys conducted with residents in Highfields, Ballyshannon, Co. Donegal, pre- and post- retrofit work on their homes in December 2012 and February 2013. Informing and enabling further sustainable consumption research, this highlights the impact of the research across a range of public and private project arenas.

4 Sustainable Consumption of Distance

4.1 Key Issues

Carbon-dependent transport and mobility and the unsustainable 'consumption of distance' are key areas of concern in contemporary sustainability debates. The transport sector in Ireland remains one of the top three GHG emitters. According to the EPA (2013), emissions from the transport sector are predicted to rise by 12–22% between 2011 and 2020, depending on the scenario. The 'worst case scenario' (22% increase) assumes that no additional policies and measures are implemented beyond those already in place by December 2011. The 'best case scenario' (12% increase) assumes that government targets for 2020 will be fully achieved, returning transport emissions to 2009 levels (EPA, 2013, p7). Social factors that impact on people's transport and mobility decisions and their (un)willingness to change their mobility and transport practices are thus of primary concern to policy-makers seeking sustainable transport solutions. As Vigar (2002, p15) contends, '[t]ransport planning that meets the ecological and social demands […] requires changes in user behaviour, rather than government merely responding to established user behaviour patterns.'

Institutions and organisations – such as large employers, universities and schools – play a seminal role in shaping people's mobility practices. Choice of location and on-site transport infrastructure influence travel patterns by staff and customers while organisational schemes such as rewards for active commuting (e.g. walking, cycling) and car-pooling can encourage a modal shift away from the car. Efforts at the organisational level to either change how people travel (e.g. shift towards active commuting) or reduce their overall 'consumption of distance' (e.g. by introducing teleworking arrangements) need to complement attempts to change the travel behaviour of individuals and households. Changes in large institutions and organisations can also create significant spill-over effects into the wider community. For example, mobility management plans rolled out in hospitals, businesses and state organisations across Ireland have been shown to have considerable effects on people's modal choice (Dublin Transportation Office, 2001 and 2002).

CONSENSUS work package 3 (WP3) investigated the social, political and cultural determinants of personal mobility behaviour as well as structural and contextual reasons for the increasing 'consumption of distance' in Ireland. Combining theoretical and empirical work with an in-depth analysis of policy documents and national and international examples of good practice, this research moved beyond a sole focus on individuals and households to also study the role of organisations in making personal transport more sustainable.

4.2 Results

A central element of WP3 was the collection, analysis and dissemination of empirical evidence to develop practical steps to reduce the social, environmental and economic burdens of transport. Generating new knowledge to complement, expand, and potentially challenge well-established modes of thinking about unsustainable transport, WP3 focused on four key areas:

1 Current transport and mobility patterns in Ireland and their socio-cultural, economic and environmental causes and consequences;

2 National and international policy frameworks that shape Irish transport and mobility patterns;

3 Opportunities for a shift towards more sustainable transport modes through a workplace-based intervention;

4 Possibilities for an overall reduction in the work-related 'consumption of distance' through teleworking.

Another key objective of WP3 was the development of research tools that are relevant in an Irish context and that could be applied to transport policy arenas in the future. Adopting an innovative multi-method approach to mobility research, WP3 combined qualitative and quantitative research techniques, including questionnaire surveys, interviews, focus groups and observations in the field. This decision to deploy a range of complementary methods recognised the complexity of sustainability questions and their measurement in the area of transport and mobility and

beyond (cf. Rau and Fahy, 2013). For instance, WP3 research on teleworking combined several desktop studies to determine the usefulness of telework as an economic, social, and environmental measure. This was complemented by three surveys and 16 semi-structured interviews with teleworkers in an effort to appreciate the real-life experiences of such workers in Ireland today.

Meanwhile, a workplace-based intervention designed specifically for this work package formed a central pillar of the research on modal shift. Employees of a large firm in the West of Ireland were asked to participate in the 'Smart Moves Challenge' and to make their trip to and from work more sustainable by leaving the car at home at least once a week. Nine teams consisting of three members of staff each took part in the competition in Spring 2011. Team members were required to self-report their daily travel patterns online and a winning team was selected based on how many car trips they collectively saved over 30 days. The Smart Moves Challenge was accompanied by qualitative interviews and quantitative observation, prior to commencement (T1) and immediately after the programme ended (T2). This was intended to capture any changes in how people viewed and carried out their travel to work. A third wave of data collection (T3) took place three to four months after completion to establish whether participants had maintained their new travel practices. This longitudinal research design recognised the temporal aspects of attitudinal and behavioural change.

4.2.1 Summary of Key Findings

The decision to re-conceptualise mobility as 'consumption of distance' formed an important first step in WP3 and was shown to be highly successful by drawing attention to the resource implications of mobility practices as well as its social and cultural meanings. Research in WP3 repeatedly revealed how mobility is first and foremost a social practice. Changing an individual's mobility behaviour is thus likely to affect other people, including family members, neighbours and members of the community with unmet transport needs.

A combination of material, social and cultural influences shape people's commuting practices; either helping or hindering a modal shift away from the car. Workplaces are very suitable sites for interventions that are aimed at transforming everyday practices such as mobility. In WP3, a workplace-based mobility management plan was designed and implemented which combined conventional measures (e.g. information provision, infrastructure change and incentives) with a more targeted, innovative intervention that worked with small teams to encourage the adoption of more sustainable commuting practices. Qualitative evidence collected before, during and after these interventions suggests positive modal change.

Results of WP3 research on modal change also included a typology of commuting practices, identifying five distinct commuting types: (i) commuting in the city (car-based), (ii) commuting from the rural hinterland (car-based), (iii) trip chaining[5] (car-based), (iv) hybrid (car plus other modes) and (v) alternative (walking, cycling). Practitioners of each of these five commuting types encounter a specific set of actual and perceived barriers to changing their mobility practices, including a (perceived) lack of alternatives to the car. Sustainable commuting initiatives need to clearly distinguish between commuting types to be effective.

Teleworking has been presented in various Irish and international policy documents as a technology-driven method for suppressing work-related travel (e.g. *Smarter Travel* document issued by the Irish Department of Transport, 2009). However, policy initiatives to promote teleworking in Ireland have been inconsistent and largely ineffective, with national teleworking rates of 4.2% in 2005 remaining below the European average of 7% in the EU27 (European Industrial Relations Observatory, 2010). The economic, social and environmental consequences of teleworking also remain poorly understood. WP3 research revealed that teleworking shifts responsibility for some aspects of work-related resource consumption (e.g. space heating, water use) and associated costs from the employer to the employee. Most importantly, savings in the consumption of distance at the household level through telework remain negligible if other aspects of everyday life (e.g. school run, shopping) continue to be mobility intensive. Finally, telework can create new work conditions that may or may not be compatible

5 Linking of trips for different purposes (e.g. shopping, work, dropping children to school).

with people's social circumstances and that can present significant social sustainability challenges. For example, some teleworkers reported longer working hours and work intrusions into domestic life.

4.2.2 Behavioural Change I: Modal Shift and the Role of Organisations

Reducing people's over-reliance on the car remains a major policy challenge in Ireland and indeed globally. Based on an in-depth investigation of current travel patterns and their social, infrastructural and institutional contexts, WP3 recorded baseline transport data for Ireland and offered a suite of policy recommendations for the promotion of less resource-intensive alternatives to car-based commuting. Combining innovative conceptual work with multi-method empirical research, an original typology of commuting practices was produced and the effectiveness of mobility management initiatives for a large employer in the West of Ireland assessed. The results revealed the potential of meso-level organisations to champion sustainable commuting practices locally.

The practice-theoretical focus of WP3 also highlighted transport as an integral part of everyday life. It revealed how a combination of material, social and cultural influences shape people's commuting practices in complex ways, which can either hinder or enhance a modal shift away from the car. This approach emphasised the need for integrated, cross-sectoral policies that challenge the dominance of the car (and the underlying drivers, motivations and reasons behind this dominance) and account for the interconnectedness of social practices. Meanwhile, qualitative data from 3 focus groups and 42 in-depth interviews were used to develop the five-fold typology of commuting practices. This typology captured three different car-based commuting types whose practitioners face a mix of actual and perceived barriers to changing their travel patterns, including a (perceived) lack of alternatives. Any efforts to bring about a transition towards sustainable mobility thus needs to incorporate changes in the material and infrastructural environment so that people can avail themselves of actual alternatives. However, changing infrastructure is not enough: to succeed, a cultural shift in favour of alternative transport modes for sustainability efforts is also necessary.

A cursory review of existing employer-based mobility management plans in Ireland carried out for WP3 demonstrated their effectiveness in establishing alternatives to car-based transport. The two change programmes developed specifically for CONSENSUS – the conventional 'Earth Day Initiative' and the team-based 'Smart Moves Challenge' – were tested at a large multinational employer in Galway city. The qualitative findings showed that the team-based approach was key to reducing participants' car use and encouraging their uptake of new alternative routines. Social interaction on its own, however, is not sufficient. Rather, it was the combination of the two initiatives that encouraged participants to regularly use alternative modes of transport. Incentivisation through the cycle-to-work scheme and infrastructural improvements created the conditions that supported a modal shift, while the Smart Moves Challenge provided continuous motivation and support.

As regards concrete policy solutions, there is a need to develop a suite of novel programmes that prioritise 'soft' measures to transform how people view transport and what types of practices are available to them. These programmes should be delivered in a coordinated and synchronised fashion alongside appropriate infrastructural and regulatory supports, and rolled out in communities and workplaces to ensure maximum 'buy-in' from target audiences.

4.2.3 Behavioural Change 2: Teleworking and Virtual Mobility

While techno-optimistic approaches to environmental problems are increasingly challenged because of their often simplistic view of human behaviour (Hynes, 2013c), technology nevertheless continues to occupy a key role in sustainable consumption debates and policy. As WP3 demonstrates, the use of information and communications technologies (ICT) to facilitate telework and reduce the need for work-related travel constitutes a prime example of a socio-technological approach to the environmental crisis (Hynes, 2013a, b and c). Drawing on a critical comparison of seminal theories of Society-Technology-Environment-Interactions (STEI), a WP3 investigation of teleworking policies across Europe and teleworkers' experiences in Ireland reveals the absence of a coherent policy framework. It also

challenges mainstream thinking on technology as a tool for curbing the consumption of distance (and indeed other resources such as energy and water). Instead, the research shows how teleworking shifts responsibility for meeting some of the resource requirements of work (e.g. energy to heat work space and run equipment) from the employer to the employee.

Furthermore, WP3 research clearly demonstrates that teleworking, as currently espoused, can bring the three pillars of sustainability into conflict, leading to tensions between social justice, environmental protection and economic development goals. Because of the absence of an integrated policy framework that combines economic, social and ecological considerations, 'shallow' ecological modernisation thinking prevails where technology is assumed to drive a transformation in working arrangements with the additional environmental protection benefits of diminishing travel requirements. While economic and environmental interests appear compatible, social issues such as experiences of isolation, longer working hours and lack of opportunities for promotion associated with teleworking are largely ignored. Nuanced and partially negative experiences of teleworkers in Ireland who participated in the study further accentuate the potential for conflict. The environmental sustainability merits of telework are also questionable. Whilst there is some evidence that teleworkers reduce the frequency of their daily commute, this reduction is often offset by additional travel requirements and further 'hidden' consumption in the home.

Finally, the study revealed a paucity of policy initiatives with regards to telework in Ireland. Early enthusiasm for the practice among policy-makers declined rapidly in the early 2000s owing to a poor understanding of the issues and a lack of policy development and direction. Indeed, the topic of telework has received little or no attention from politicians, policy- and key decision-makers over the past number of years. Given the questionable environmental and social benefits of current telework practices, this continued lack of attention may be appropriate. However, research in WP3 clearly indicates the significant sustainability potential of future innovative and inclusive approaches to teleworking that reconcile economic and environmental efficiency gains with social and quality of life goals.

4.3 Summary and Recommendations

Behavioural change is a powerful tool for increasing sustainability in the transport sector, a fact which has been clearly shown in CONSENSUS WP3. While individual changes are undoubtedly effective if adopted by a large number of people, the challenge of far-reaching structural transformations remains. This research revealed the potential for large organisations and institutions to play a key role in advancing such transformations. In particular, it demonstrated the potential of employer-based mobility management initiatives that complement conventional policy measures with innovative, group-based interventions designed specifically for the company involved. A combination of the three 'Is' – information campaigns, financial (dis)incentivisation and infrastructural changes – and an in-house sustainability competition opened up new avenues for change (Heisserer, 2013; Heisserer and Rau, forthcoming). Similarly, WP3 research on teleworking revealed the potential of virtual mobility options for suppressing unnecessary commuting. Nevertheless, it also highlighted additional social and environmental implications associated with working from home, including the persistent need to consume distance for non-work-related activities such as shopping or the 'school run' (Hynes, 2013a, 2013b and 2013c). The findings highlight the need for future research to comprehensively measure the advantages and drawbacks of teleworking for society and the environment.

Reconceptualising mobility as 'consumption of distance' offers a promising departure from technocentric and economistic views of mobility that have dominated research, policy and practice to date. Drawing attention to social, cultural and material aspects of people's mobility practices, this innovative concept also serves as reminder that distance itself is both produced and consumed. How much or how little distance separates workplaces, schools, shops and residential areas is largely determined by transport and land-use policies. Similarly, how citizens and businesses consume distance and by what means (e.g. car use, walking and cycling, public transport, 'virtual mobility') frequently reflects wider economic, social and political conditions. These issues have been central to CONSENSUS mobility research.

Their investigation has highlighted the urgent need for cross-sectoral policy solutions to pressing transport problems experienced by people who consume too much distance and those who find themselves deprived of opportunities for personal mobility. Specific policy recommendations include:

1 Future sustainable transport initiatives need to rest on a more nuanced understanding of mobility practices, to recognise and work with people's existing habits and practices;

2 'Niche' sustainable mobility practices such as informal car sharing among staff working in the same company can complement the above efforts and deserve greater attention and promotion;

3 Use of typology of commuting practices developed in WP3 offers a promising policy and communications alternative to more generic sustainability messages and initiatives due to its focus on different practices and associated groups of practitioners;

4 Legislation and regulation that protects the interests of both the employer and employee in any teleworking scheme and that is mindful of issues of consumption and overall environmental protection needs to be introduced;

5 A robust training programme for teleworkers and their managers that is accessible to participating organisations and employees needs to be developed. Such a training programme needs to be mindful of the economic implications for both employers and employees, the social consequences of working from home, and environmental protection concerns.

Finally, it is important to emphasise that the consumption of distance changes over an individual's life course. Future research needs to identify 'mobility milestones' and their connections with key life events (e.g. the arrival of the first child, relocation, retirement). Detailed mobility biographies could thus facilitate more targeted policy interventions that suit people's life stages. Similarly, longitudinal teleworking research is recommended to establish the long-term impacts of this technology-aided work practice for society and the environment.

4.4 Impact Highlights: Engagement, Presentations and Publications[6]

Publications

- Hynes, M. (2012) 'The practices of technology: putting society and technology in their place', *The International Journal of Technology*, *Knowledge and Society*, 8 (3), p37–54.
- Rau, H. and Vega, A. (2012) 'Spatial (im)mobility and accessibility in Ireland: implications for transport policy', *Growth and Change,* 43 (4), p667–97.
- Hynes, M. (2013) 'What's "smart" about working from home: telework and the sustainable consumption of distance in Ireland?' in Fowley, C., English, C. and Thouësny, S. (eds) *Internet Research, Theory, and Practice: perspectives from Ireland*, Dublin, Research-publishing.net, p225–43.
- Heisserer, B. (2014) 'Changing everyday commuting practices' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge**.**
- Rau, H. (2014) 'Part II: Moving – Section introduction and summary', in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future*, London, Routledge, pp57–61 and 99–101.

PhD theses

- Heisserer, B. (2013) 'Curbing the consumption of distance? A practice-theoretical investigation of an employer-based mobility management initiative to promote more sustainable commuting', unpublished thesis, National University of Ireland, Galway, Ireland. (Available at http://aran.library.nuigalway.ie/xmlui/handle/10379/3449)
- Hynes, M. (2013) 'Mobility matters: technology, telework and the (un)sustainable consumption of distance', unpublished thesis, National University of Ireland, Galway, Ireland. (Available at http://aran.library.nuigalway.ie/xmlui/handle/10379/3814)

6 See Appendix 1 for a full list of outputs from the CONSENSUS project.

Presentations

- Henrike Rau, Barbara Heisserer and Michael Hynes presented more than 20 conference papers on the subject of mobility practices and their transformation, modal choice and teleworking. Targeted high-profile conferences included the International Sociological Association World Congress, Gothenburg, Sweden 2010; Sustainable Consumption Conference: Towards Action and Impact, Hamburg, 2011; Sociological Association of Ireland Annual Conferences 2010, 2011; SCORAI Europe Symposium, Istanbul, 2013; and the National Smart Cities Summit, Dublin, 2013.
- Barbara Heisserer and Henrike Rau delivered a plenary presentation entitled 'Transport, mobility and the consumption of distance' at the CONSENSUS Conference 2012 at NUI, Galway. Henrike Rau also showcased WP3 findings at the Euroscience Open Forum 2012 in Dublin where she participated in an interactive group presentation entitled 'Energy that works: practical solutions to our energy and climate crisis'.

Publicity, Impact and Outreach

- WP3 research featured repeatedly in local and national media including articles in *Galway Advertiser, Galway Independent* and *Connacht Tribune* and radio interviews with Mike Hynes on Galway Bay FM.
- Throughout the project, the WP3 team used social media and dedicated websites to showcase their research.
- Mike Hynes and Barbara Heisserer were shortlisted for the Globe Forum Early Career Researchers Contest 2010.
- Henrike Rau led a video-recorded conversation with Prof. Daniel Schrag, Director of the Harvard Centre for the Environment and member of President Obama's Council of Advisors on Science and Technology on the subject of attitudinal and behavioural transformation to tackle climate change. Her contributions touched on a number of WP3 research findings as well as CONSENSUS more generally. The event was part of the first Climate Gathering in February 2013 (www.ryaninstitute.ie/education-outreach/visiting-speakers/).

5 Sustainable Home Heating

5.1 Key Issues

Energy consumption in buildings for space heating, water heating and use of electric appliances is a key cause of environmental impacts. In 2009, these energy uses were responsible for approximately 25% of GHG emissions from energy use in EU-27 nations (EEA, 2011 in EEA, 2012). While the RoI and NI met their GHG emissions targets for the 2008–2012 period (Department of Energy and Climate Change [DECC], 2012; EPA, 2012b), much of this progress has been attributed to the recession and cannot be confused with real transformations towards sustainable living. Projections from the EPA in 2012 indicated that EU 2020 climate change targets will not be met even with the full implementation of all existing and planned measures. As a result, Ireland 'faces considerable challenges … in developing a low-carbon emission pathway to 2050' (EPA, 2012b: 1). In RoI, direct energy consumption in the residential sector accounts for around 25% of total primary energy consumption (SEAI, 2008) and 11.5% of national GHG emissions (EPA, 2012a). These figures are higher in NI where household energy use represents 39% of total final energy consumption (Dodds, 2012) and 19% of its GHG emissions (AEA, 2012). Indeed, Irish households are distinguished by their higher levels of energy use compared with the EU-15 (around 31% more in the ROI). This is largely attributed to bigger house sizes, inadequate home insulation, weather conditions and inefficient heating systems and boilers (SEAI, 2008). Within the home, space heating represents the largest home energy end-use at around 60%, followed by domestic hot water (*c.* 25%) and appliances and lighting (*c.* 13%) (SEAI, 2008). Space heating was thus selected as the key focus of CONSENSUS research on home energy consumption.

A number of social, environmental and economic issues compound the challenge of achieving sustainable home heating. Fuel poverty[7] is pervasive, affecting an estimated 19.4% of households in the RoI in 2008 (McAvoy, 2007). Other challenges include: poor understanding of the environmental need to reduce energy consumption amongst the public (confirmed by the CONSENSUS Lifestyle Survey); low visibility of energy consumption in the home (Darby, 2009); unconscious routines in heating practices (Hand *et al*., 2005); and rising societal expectations for higher, standardised indoor temperatures (Guy and Shove, 2000). Faced with these challenges, the standard policy focus has been on the provision of grants for home energy efficiency retrofits, the improvement of energy efficiency standards (in new build and electronic devices), information provision, and smart metering, due for introduction in the RoI between 2015 and 2019 (CER, 2012). While these measures have potential to contribute to energy savings, they are heavily materialised and financially intensive, and close off the consideration of alternative ways that practices of home heating could be performed. The research therefore sought to address the question of how the needs of home heating (namely warmth and comfort) might be delivered more sustainably in the future. In particular, the subjective and evolving nature of these needs and expectations of warmth were noted, as were the role of new devices, systems of provision and regulations in shaping them (Shove, 2003; Southerton *et al*., 2004). This framing informed the orientation of the backcasting process (outlined in Fig. 5.1).

5.2 Results

Participatory backcasting is a tool of innovation and governance. The process applied by CONSENSUS comprised the following key phases: (i) visioning; (ii) scenario development; (iii) sustainability evaluation; (iv) citizen–consumer feedback; and (v) transition phases. This section provides an overview of key outputs from the heating backcasting process, while further details can be found in Doyle and Davies (2013).

7 Fuel poverty is typically defined as when a household needs to spend more than 10% of its income on energy in order to maintain an acceptable level of heat (McAvoy, 2007).

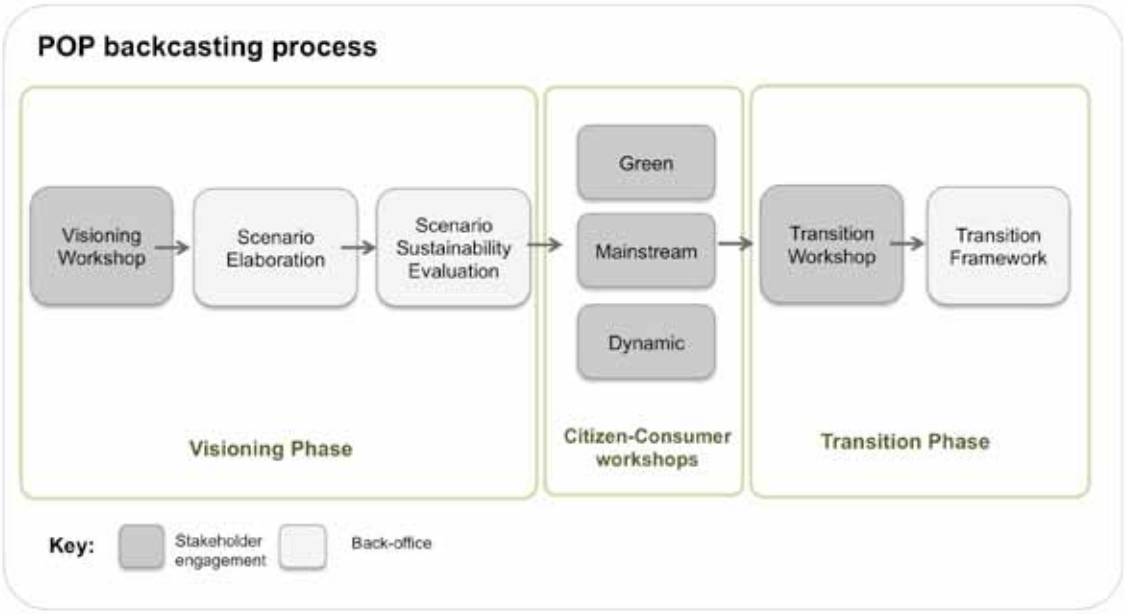

Figure 5.1. CONSENSUS Participatory backcasting process.

5.2.1 Three Future Scenarios: 2050 Visions for Sustainable Energy Consumption

The 'Visioning Workshop' was aimed at harvesting ideas for new heating practices in the year 2050. Twenty-one key stakeholders attended, representing a range of disciplines including architects, engineers, designers, policy-makers and educators from public, private and civil society sectors. Participants were asked to envision new kinds of practical knowledge, procedures, norms, expectations, regulatory structures, resources and hardware to enable the fulfilment of personal warmth needs more sustainably. The workshop resulted in the generation of 150 discrete concepts. These ranged from more conventional proposals – for example, the elaboration of energy-efficiency standards, renewable energy, and new regulatory controls – to more radical ideas, including direct body heat vests, embedded temperature sensors and novel forms of energy sources. After clustering and evaluating concepts around the varying degrees of socio-cultural, technological and organisational change they required, three scenarios were formed combining ideas that had similar implications for these metatrends. The **Community Core** scenario was characterised by concepts consistent with higher levels of socio-cultural and organisational change. It hinged upon the use of extra clothing layers, novel forms of household biofuel heating and space-adjusting interiors (Fig. 5.2). Its inhabitants accept lower ambient temperatures and are environmentally motivated. Another scenario, **Second Skin**, embodied high levels of technological and architectural advancement. It was distinguished by the use of direct body heating solutions (instead of central heating) and bioclimatic architecture for passive forms of temperature regulation (Fig. 5.3). The final scenario, **Carbon Control** is characterised by enhanced moral and citizenry duties to reduce carbon encouraged through tighter regulations, leading to the creation of a population skilled in carbon and energy management (Fig. 5.4). There is less adjustment in expectations of warmth compared with other scenarios whilst renewable energies and efficient technologies improve the efficiency of existing heating solutions. These scenarios were represented in both narrative and graphic format, providing an indication of how heating might be performed in 2050.

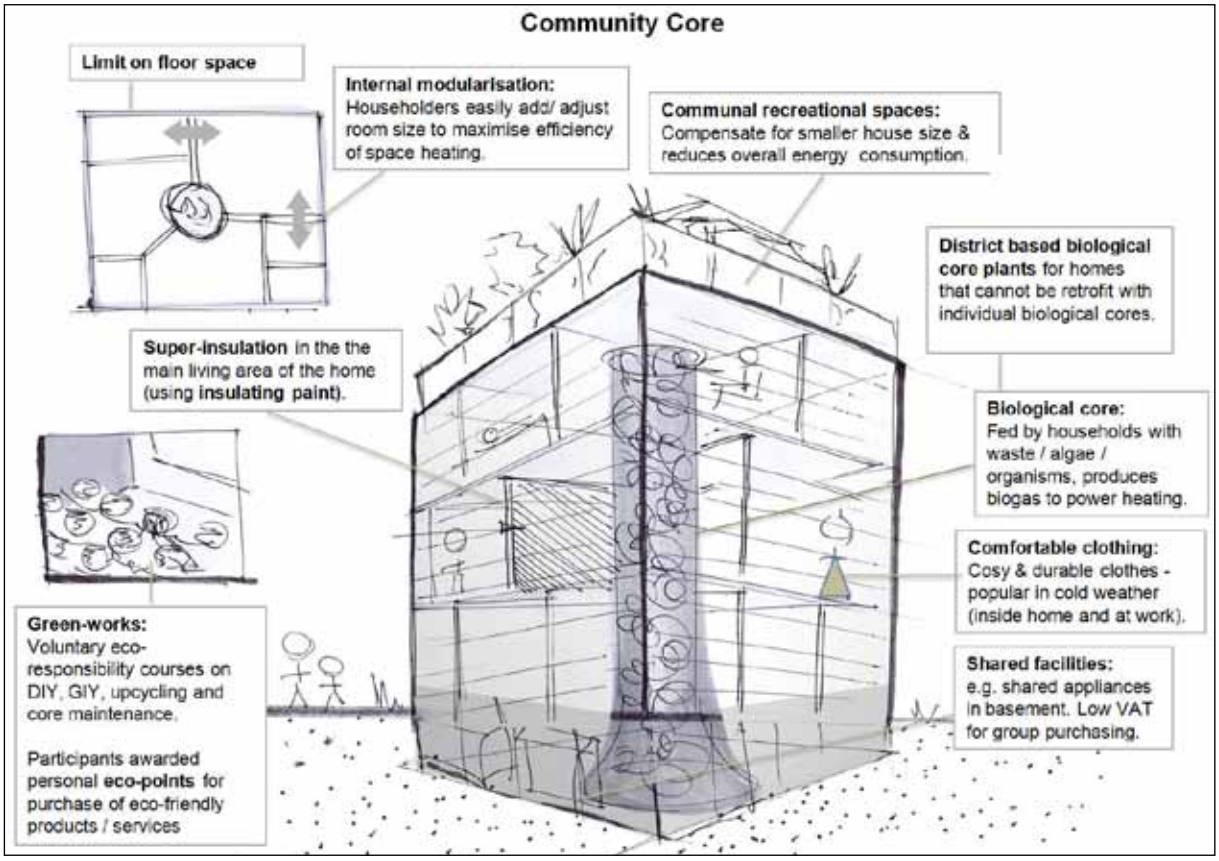

Figure 5.2. Community Core scenario.

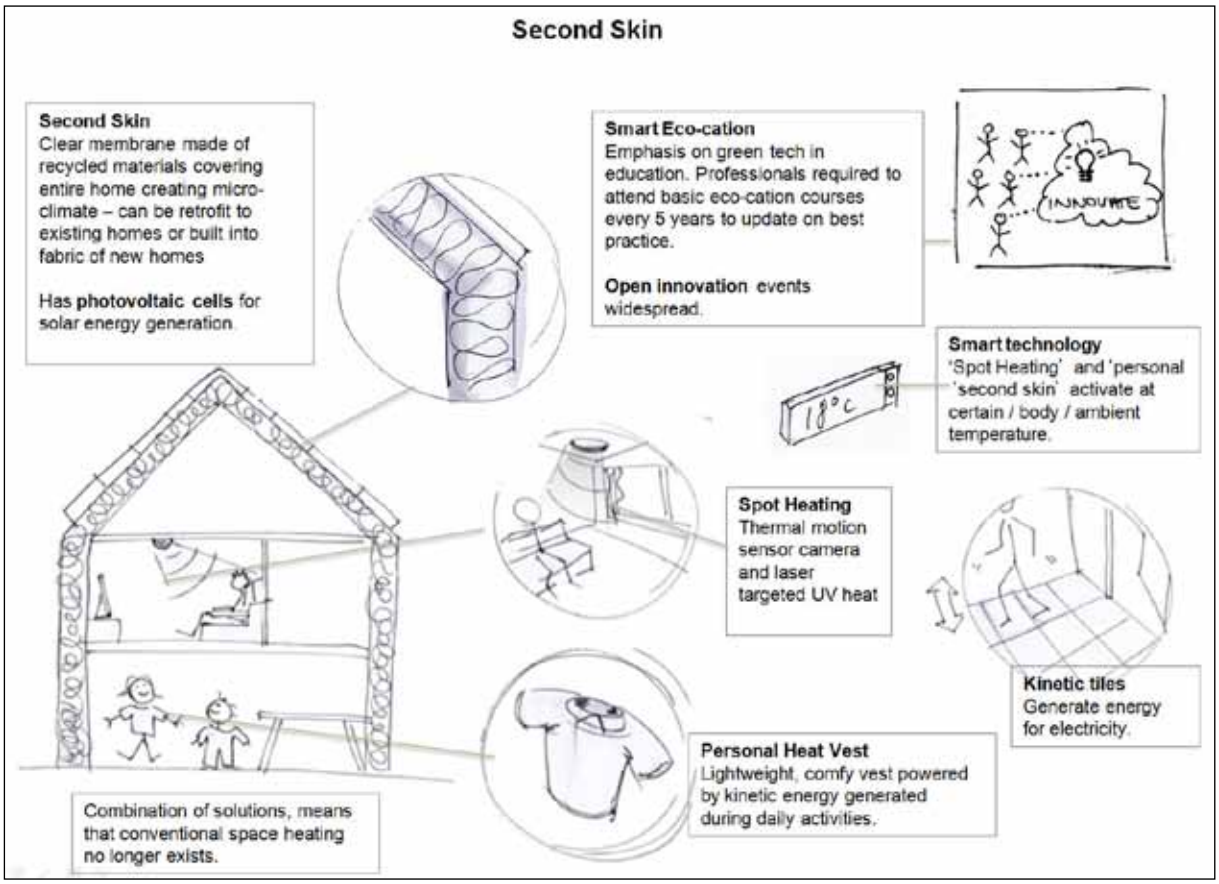

Figure 5.3. Second Skin scenario.

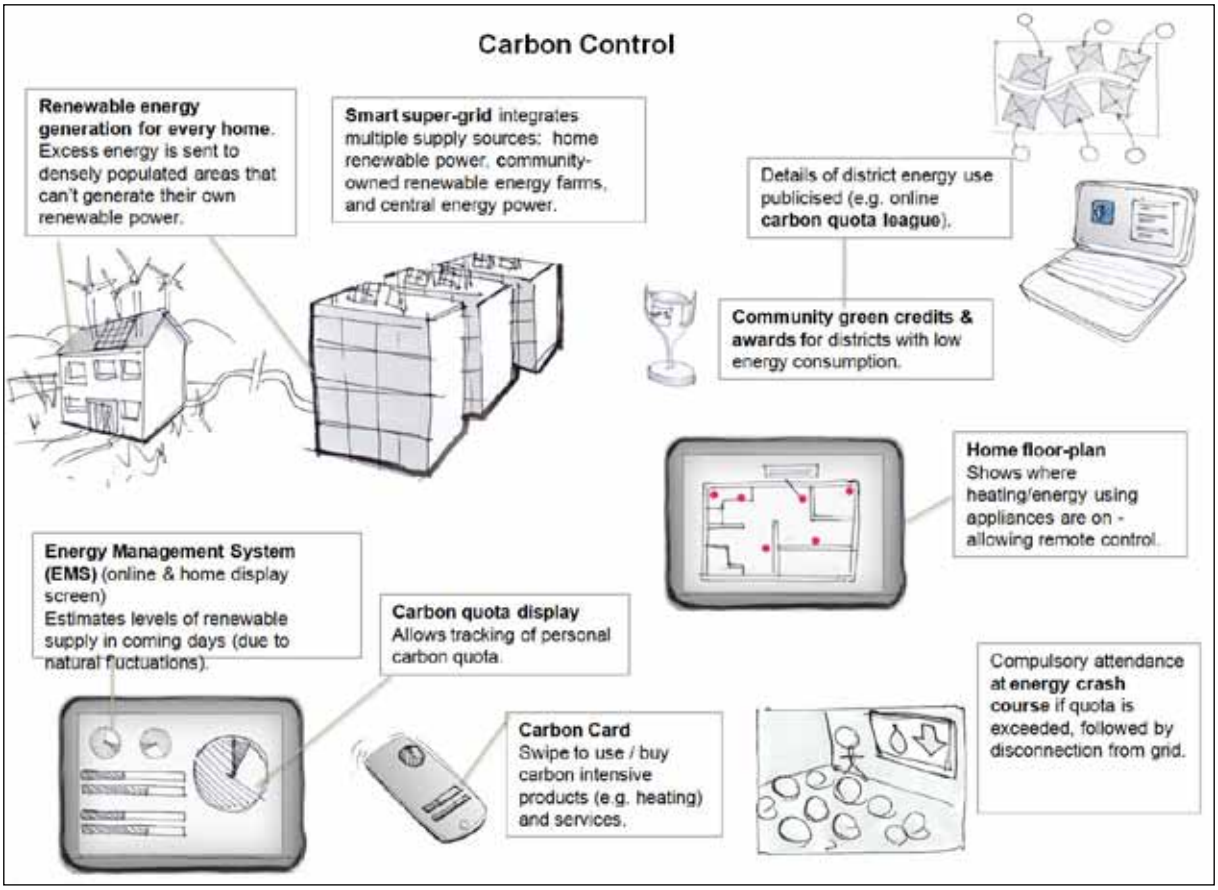

Figure 5.4. Carbon Control scenario.

5.2.2 Scenario Evaluation

After developing the future scenarios, it was necessary to evaluate their relative potential to improve the sustainability of heating practices. A qualitative 'new economics evaluation framework' was applied comprising six criteria: (i) localisation; (ii) new systems of provision; (iii) reduced ecological footprint; (iv) community building and collective action; (v) individual well-being; and (vi) economic sustainability. The Community Core scenario scored the highest (at 28 out of a maximum 48) against these sustainability criteria. With its freedom from centrally administered energy systems, its use of natural, cosy clothing indoors, and condensed living space, the scenario scored well against 'localisation' and 'new systems of provision' indicators. Carbon Control and Second Skin received similar scorings of 25 and 23 respectively (see Fig. 5.5 for more information).

Although Community Core scored the highest in the sustainability evaluation, Carbon Control and Second Skin emerged as the most popular scenarios in citizen–consumer workshops. The supposed 'communal' elements of Community Core were the subject of divided opinion and seen to undermine valued preferences for privacy and individualisation in daily life. Second Skin was considered intriguing and attractive, and its 'home second skin' was received positively by the majority along with the 'personal heat vest' which creates an optimum body temperature using kinetic power. Citizen-consumers showed an instinctive negative reaction towards technologies that were seen as being based on excessive automation and control due to the potential risks of technology malfunction and the loss of practical 'skills' to perform practices (Shove *et al*., 2008). Within Carbon Control, for example, the 'carbon quota scanner' was conceived of as a technology

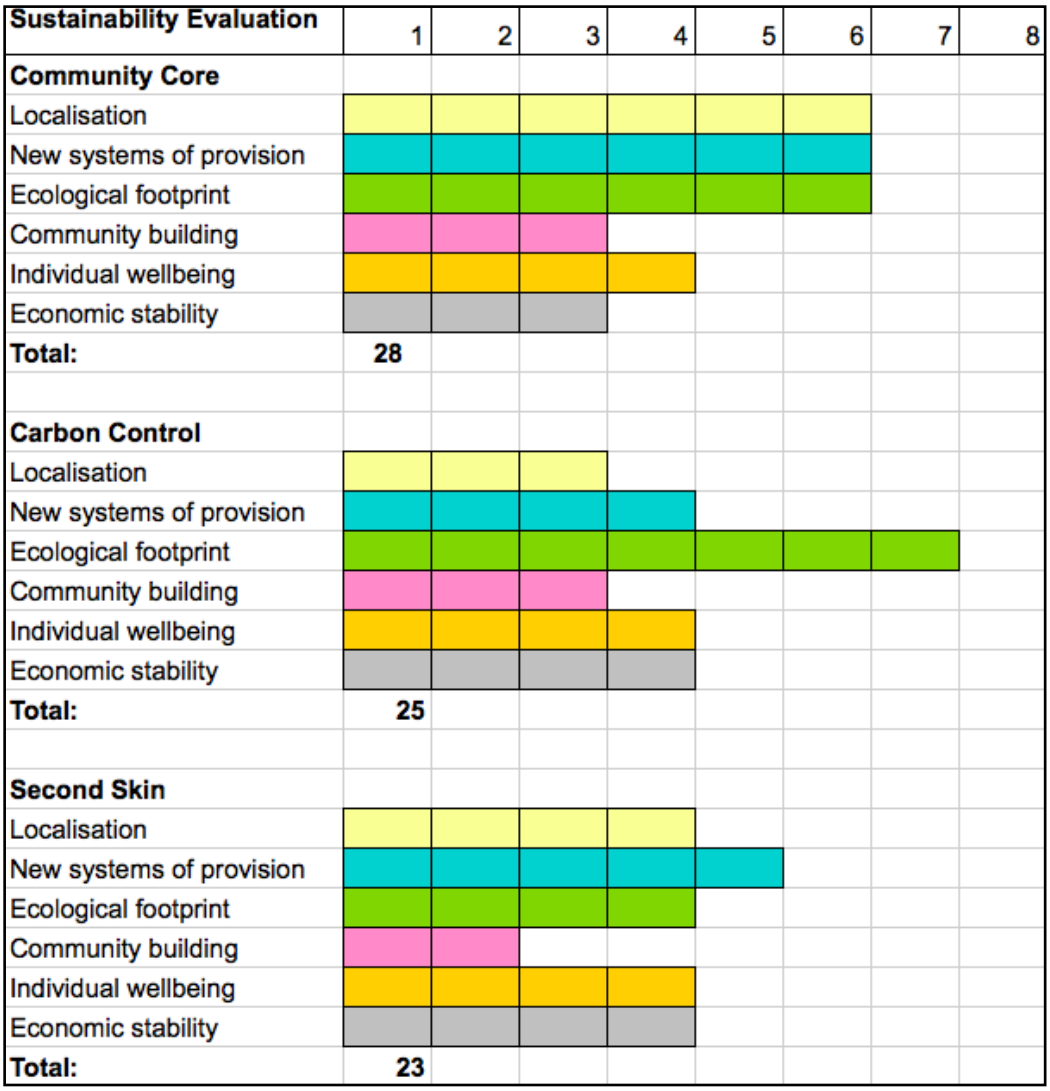

Figure 5.5. Scenario Sustainability evaluation summary.

of control. By comparison, technologies that promoted frugality, transparency and efficiency in personal energy consumption were universally appealing. A primary observation was the acceptance of restrictions on energy consumption as long as principles of equity and fairness were adhered to and the outcome did not impinge majorly on other 'normal' everyday practices such as entertainment (Doyle and Davies, 2013).

5.2.3 Promising Practices and the Development of the Transition Framework

Considering the appealing qualities of the future scenarios identified by citizen-consumers and the results of the sustainability evaluation, a shortlist was created of the most promising concepts for the final Transition Phase. Concepts from across all three scenarios were grouped and three 'Promising Practices' were created. The first, **Thermal Awareness**, reflects the observed preference within focus groups for direct heating options, flexibility and personal adaptability in practices of heating. It requires an acute awareness of bodily needs and a shift away from ambient space heating. **Managing Carbon** depicts future practices of heating governed by high awareness of energy issues and active monitoring of personal energy usage. Consumption visibility, rewards systems and advanced ICT assist this energy management. Lastly, **Adaptable Homes**

embodies the preference for bioclimatic architecture and more variable, environmentally connected concepts of warmth delivered by adjustments to the building fabric. The core qualities of each Promising Practice are summarised in Table 5.1 along with existing concepts that draw on similar trends. They underline the importance of considering the societal meanings, expectations and values that interventions intend to cultivate – whether they are targeting the hardware involved in practices, the rules governing them, or individual motivations – it is the collective interface between these components which ultimately give a practice its shape (Doyle, 2013).

These Promising Practices served as end-points to work towards at the Transition Workshop which contained a similar profile of cross-sectoral and interdisciplinary stakeholders as the Visioning Workshop. Brainstorms were held where facilitators encouraged participants to think in terms of three key intervention categories: (i) policy (e.g. new economic tools, design and building regulations), (ii) education and engagement (e.g. educational programmes, community initiatives and awareness campaigns) and (iii) research, technology and business (e.g. research & development agendas and economic investment strategies). Participants prioritised and planned these up to the year 2050, considering broader barriers, enablers and identifying relevant actors. A back-office phase elaborated intervention proposals into a comprehensive Transition Framework document (Doyle and Davies, 2012) containing a 'timeline' of bundled interventions (Fig. 5.6 provides an illustration of this; the full document can be downloaded from the CONSENSUS website: www.consensus.ie).

Table 5.1. Promising Practices: sustainable heating.

Promising Practice	Overview
Thermal Awareness	**Strategy:** Direct body heat and active management of temperate (bodily and space). Adaptive comfort – moving towards acceptance of variable indoor temperatures. **Motivations / knowledge:** People are bodily aware, attuned to space and personal temperature levels and needs (assisted through technology). **Core concepts:** 'Cosy' clothing, 'personal heat vest', ambient temperature displays and thermostat controls – used according to variable, personal needs. **Present trends:** 'Slankets', advanced materials (e.g. outdoor clothing) ambient intelligence (electronic environments sensitive to presence of humans)
Managing Carbon	**Strategy:** Home heating use governed by high levels of energy management promoted through carbon quotas, energy visibility advancements and technologies. **Motivations / knowledge:** Widespread desire to avoid energy wastage and to be low carbon citizens. **Core concepts:** Carbon quota system, energy management systems & programming, rewards systems **Present trends:** Energy management apps, NuSpaarpas, Tweet-a-watt (that involves tweeting personal energy consumption levels on Twitter), informative billing and benchmarking
Adaptable Homes	**Strategy:** Warmth is bioclimatic architecture, passive heating, health and well-being enhanced through connection with climate. **Motivations/knowledge:** Freshness and well-being are desirable qualities of home ambient temperature. **Core concepts:** Adaptable internal space, modular home units, home 'second skin' (ventilation membrane for passive & natural heating/cooling) **Present trends:** Bioclimatic and biomimetic architecture, 'pod living', 'transformer' apartments.

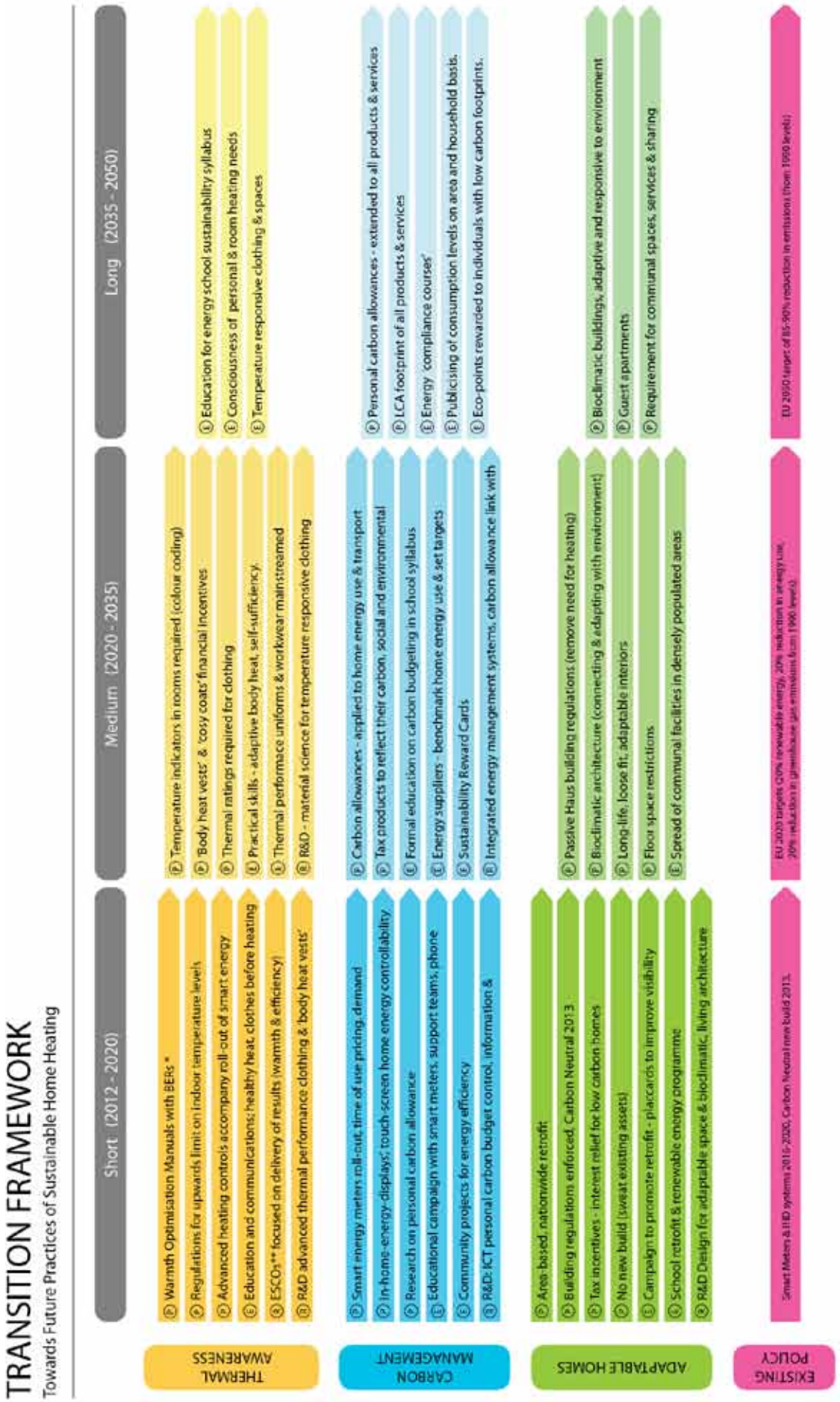

Figure 5.6. Heating Transition Framework.

5.3 Summary and Recommendations

Work package 5 aimed to evaluate how adopting heating practices as a unit of analysis in a participatory backcasting process might lead to the identification of novel interventions and insights for sustainable household energy consumption. Taking the end-results of the practice rather than disjointedly improving existing practice elements led to the imagining of alternative ways of achieving end-goals of personal comfort and warmth in the home, and broader options to leverage change. The social practice conceptualisation was highly rated by professional participants who were used to focusing on particular parts of the system and reported that it led to the re-evaluation of underlying framings (Davies *et al*., 2012). This is encapsulated by a comment from an architect at the Heating Visioning Workshop: 'The workshop highlighted areas other than building regulation, control and upgrades that I'm familiar with, and showed that education is vitally important'.

Crucially, the resultant scenarios promoted understanding of how material arrangements, including infrastructure, heating technologies and the home design, reproduce current heating practices and related expectations. This illuminated the collective (yet perhaps underappreciated) influence of supply-side actors, including designers and regulators, in perpetuating lock-in to current norms and forms of heating. It brought to the fore typically unarticulated and unqualified assumptions about household heating practices and temperature preferences. Citizen-consumers showed variable responses to the new concepts and their implied re-distribution of competency and agency in performing heating practices. This undermined the conception of a 'generic' practitioner and the design of home heating based on standard preferences, especially with respect to temperature standards. Citizen-consumers were open to alternative arrangements for the delivery of warmth, reflected in the endorsement of direct body-heating strategies. This could occur by normalising the use of existing warm clothing solutions, or through advancements in material sciences and the elaboration of embedded sensors in clothing and the home fabric to collect temperature data and activate appropriate heating responses. Strategies such as these would need to occur with as little material input as possible to avoid rebound effects, and would require collaboration across disciplines and spheres along with engagement with everyday citizens in their design. The Transition Framework further demonstrated what a long-term approach to shaping consumption practices could look like revealing creative, synergistic linkages across people, policy and technology interventions.

5.4 Policy Implications and Future Directions

5.4.1 Engagement & Thermal Adaptability

Citizen-consumers show a preference for engagement and empowerment in carrying out heating practices according to personal preferences. Current heating systems show limited capacity to adjust and control temperatures and thus research and product development should be focused on this area. Interventions in this regard should be careful not to overburden householders with information and need to negotiate the fine line between automation and user control.

5.4.2 Targeted Heat

Direct on-body heat delivery, targeted heat in particular rooms, and super-insulated 'pod' rooms have potential to reduce energy consumption compared to whole-home heating strategies. More research should evaluate how to enable variance in temperature in different parts of the home at different seasons and times, and in accordance with the number of household occupants.

5.4.3 Equity & Well-being

Interventions, especially those of a regulatory nature or requiring household investment, should be aligned with personal health and well-being with provisions made to ensure equity in their application.

5.4.4 User Assumptions

Many stakeholders on the supply-side gave inadequate attention to how their activities directly or indirectly shape ultimate practices associated with energy use. Practice innovation is not just about technology or pricing fixes, but about people's perceptions, emotions and interactions with each other and their physical surroundings. This strengthens the case for greater co-design and user research.

5.5 Impact Highlights: Engagement, Presentations and Publications[8]

Publications

- Davies, A.R., Doyle, R. and Pape, J. (2012) 'Future visioning for sustainable household practices: spaces for sustainability learning?', *Area*, 44 (1), p54–60.
- Doyle, R. and Davies, A.R. (2013) 'Towards sustainable household consumption: exploring a practice oriented, participatory backcasting approach for sustainable home heating practices in Ireland', *Journal of Cleaner Production*, 48, p260–71.

PhD Thesis and Related Outputs

- Doyle, R. (2013) 'Towards a future of sustainable consumption: A practice oriented, participatory backcasting approach for sustainable home heating and personal washing in Irish households', unpublished thesis, Trinity College Dublin, Ireland.
- Doyle, R. and Davies, A.R. (2012) 'Transition Framework: Towards future practices of sustainable home heating', Trinity College Dublin, Ireland. (Available at www.consensus.ie)
- The Transition Framework was promoted in the following media in February 2012: *IEN Newsletter, Enviro-Solutions, SCORAI, Sustainable Development Research Network*.

Presentations

- Doyle, R. (2010) 'Future visions for heating practices in Irish households: a discussion of the methodological framework employed by the Consensus research project', European Roundtable on Sustainable Consumption & Production (ERSCP), TU Delft, The Netherlands, 27 October 2010.

Invited to submit paper to special issue of the Journal of Cleaner Production *on the back of this presentation.*

- Davies, A. (2012) 'Sustainable home heating', EPA Greenhouse Gas emissions workshop, Science Gallery, Dublin, October 2012.

Engagement

Engagement with stakeholders took place at various phases during this work package, including:

- Twenty-one stakeholders participated in the Visioning Workshop.
- Seventeen stakeholders at the Transition Workshop (8 repeat attendees).
- Twenty-two citizen-consumer participants in three counties: Belfast, Dublin and Galway.
- Transition Framework documents sent to 40 stakeholders (including workshop attendees, Steering Committee and government department officials).
- Eighty-four per cent of energy Transition Workshop attendees responded positively to the feedback survey question of whether they 'would draw on the output of today's workshop'.
- Seventy-three per cent of energy Transition Workshop attendees stated they would consider using the CONSENSUS research processes (visioning, backcasting and interdisciplinary collaboration).

Online Dissemination

- Doyle, R. (2013) 'Why understanding the forces behind social practices could change behaviour', *The Guardian*, 'Sustainable Business' section, 11 December 2013 [online]. Available at: http://www.theguardian.com/sustainable-business/behavioural-insights/understanding-social-practices-change-behaviour
- Doyle, R. (2013) 'From behavior change to transforming everyday practices: the latest in behavioral science', *Sustainable Brands*, 4 December 2013 [online]. Available at: http://www.sustainablebrands.com/news_and_views/behavior_change/ruth-doyle/behavior-change-transforming-everyday-practices-latest-beh

Policy and Other Impact

- Submission made to RoI public consultation on 'A Framework for Sustainable Development in Ireland', March 2012.
- Ruth Doyle – Invited expert at SPREAD 'Sustainable Lifestyles 2050' workshop in Milan, Italy, September 2011.

8 See Appendix 1 for a full list of outputs from the CONSENSUS project

- Ruth Doyle – Participant at RESPONDER 'Knowledge Brokerage' event on Green ICT and Sustainable Consumption event in Vienna, January 2013.
- Ruth Doyle – Selected as Climate Advocate on the British Council's Challenge Europe programme. For this she developed and analysed an online survey (n=1700) of people's perceptions of home warmth and awareness of retrofitting.
- Anna Davies – An independent member of the NESC consulted in the shaping of NESC advice to Government on climate change policy, which includes reference to CONSENSUS research findings.
- Davies, A. (2012) 'Response to NESC Climate Change Policy Review', *International Institute of European Affairs*, Dublin, October 2012.

6 Sustainable Personal Washing

6.1 Key Issues

Large disparities are apparent in daily per capita water consumption worldwide – from just 20 litres per day in parts of sub-Saharan Africa, to 116 litres in Denmark, 150 litres in Ireland and over 330 litres in Canada[9] (Dáil Éireann, 2004). Denmark's figure is comparatively low by Western standards, and often attributed to high volumetric water charging. In comparison, in Canada almost half the population are unmetered and Ireland is only introducing metered household charges in 2015. Evaluations of metering programmes report reductions in water consumption of between 5 and 15%, with the highest levels achieved where display systems and customer services provide easily understandable, real-time and historic data on consumption (Darby, 2009). However, differences in models of water charging are only one influencing factor and patterns of water use are shaped by a myriad of cultural norms, technologies and societal relations. In response, an integrated analysis of water-using practices in Ireland was conducted by CONSENSUS. This used a POP backcasting process that identified novel interventions, innovations and a Transition Framework for sustainable household water consumption, the findings of which are summarised in this section.

Water consumption by the household sector accounts for over 50% of abstracted water usage in Ireland and the United Kingdom (DEFRA, 2012; EPA, 2006b). Within Ireland and other western countries, drinking and cooking uses account for the lowest quantities of water consumption. Nevertheless, most water is treated to drinking-water quality standards, a situation considered by many to be unnecessary and wasteful of financial and natural resources (Le Quesne *et al*., 2011). In the average Irish household, personal washing (including showering, bathing and wash-basin usage) is the most consumptive end-use comprising around 38% of an individual's daily water consumption (EPA, 2006b). While a once-weekly bath was the norm in the middle of the twentiety century, many studies report escalating grooming expectations such that it is now almost socially unacceptable to wash less than once a day (Waterwise, 2008). Modern plumbing and water-heating systems, together with a growing market for power showers (consuming between 10 and 20 litres per minute), have contributed to water consumption in this area. Average consumption for personal washing stands at around 60 litres of water in the UK and Ireland – where a typical eight-minute shower consumes 62 litres, a bath 80 litres, while one eight-minute power-shower can consume up to 130 litres (Pullinger *et al*., 2013). These quantities are well above the United Nations' minimum guidelines of 15 litres per day for healthy personal showering and bathing (Gleick, 1996) Extrapolating from current bathing trends in Britain, HM Government (2009) forecast an increase of 50% in hot water consumption per household by 2050 due to economic growth, a higher number of water-using appliances, and an increased intensity in their usage. This has clear implications for associated energy use. A recent study estimated that energy to heat water for bathing, cooking and cleaning accounts for 25% of home energy bills and over 5% of total UK GHG emissions (Environment Agency UK, 2009). In Ireland and other European countries, the primary focus of attention to water within the policy arena has been on improving surface water quality, driven by the European Water Framework Directive (2000/60/EC), with interventions biased towards capital-intensive water supply and infrastructure repair projects (Le Quesne *et al*., 2011; Brandes *et al*., 2010).

However, in the context of a changing climate (which will itself alter freshwater availability), combined with present fiscal constraints, there is a strong case for examining potentially less capital-intensive strategies based on reducing water demand in the home. For example, Brandes *et al*. (2006) report that simple efficiency fixtures coupled with behavioural changes can result in household water savings of between 33% and 50%, at lower costs and more quickly than new supply projects designed to meet escalating demand.

9 The Canada breakdown is: toilet, 30%; bathing and showering, 35%; laundry, 20%; drinking and cooking, 10%; cleaning, 5%. http://www.canadiangeographic.ca/magazine/mj00/water_use.asp

The POP backcasting process adopted within CONSENSUS focused on the demand for water within the domestic sphere. Specifically, it identified potential solutions to enable more sustainable washing practices, the most resource-demanding area of water consumption in Irish households. The POP backcasting process, presented in Fig.6.1, firstly involved stakeholders in the collaborative generation of desirable, sustainable washing scenarios for the year 2050. These scenarios contained a mixture of existing, emerging and latent socio-technical innovations that could be extrapolated to 2050 to create an alternative means for fulfilling the needs of personal washing. To enhance learning, spin-off and creativity, representatives from a range of fields including policy, planning, architecture, engineering, design, technology development, communications, education, industry development, research and civil society were involved. A central premise was that expectations and norms relating to washing practices are malleable and thus can be shaped using deliberate governance processes (Hajer and Wagenaar, 2003). Drawing upon social practice theory, participants were encouraged to brainstorm innovations for: new artefacts (for example, new showering solutions or washing products); new skills (on how and when to use those artefacts); alternative socio-cultural meanings (including norms and expectations of washing); and new systems or provision and regulation governing the supply and delivery of water. This brainstorm led to the generation of over 130 concepts. Grouping similar concepts, three scenarios were then created, each emphasising one dominant axis of either technological, social or organisational change (Doyle and Davies, 2013). The resultant scenarios are described below, along with key results of the citizen-consumer and Transition Framework backcasting phases.

6.2 Backcasting Results

6.2.1 Washing in 2050: Three Future Scenarios

The first scenario developed, **Aqua Adapt,** depicted a future where rainwater is the main water-source for personal washing. Practices are thus adapted according to fluctuations in rainwater availability. The scenario sees the widespread roll-out of rainwater harvesting, which, according to Li *et al*. (2010), would cost between €1,500 and €4,000 per household, and in combination with greywater systems could cover roughly 94% of Irish domestic water needs. The second scenario, **Efficiency-Sufficiency**, involves the highest levels of regulatory intervention of all the scenarios, coupled with in-home greywater systems and low-flow fixtures. In the final scenario, **De-Waterise**, major technological advancement has occurred and the needs of washing are fulfilled using innovations that dramatically reduce, or entirely do away with, the need for water use. This scenario draws upon nanotechnology developments, trends for dry shampoo/gel cleaners and particle-

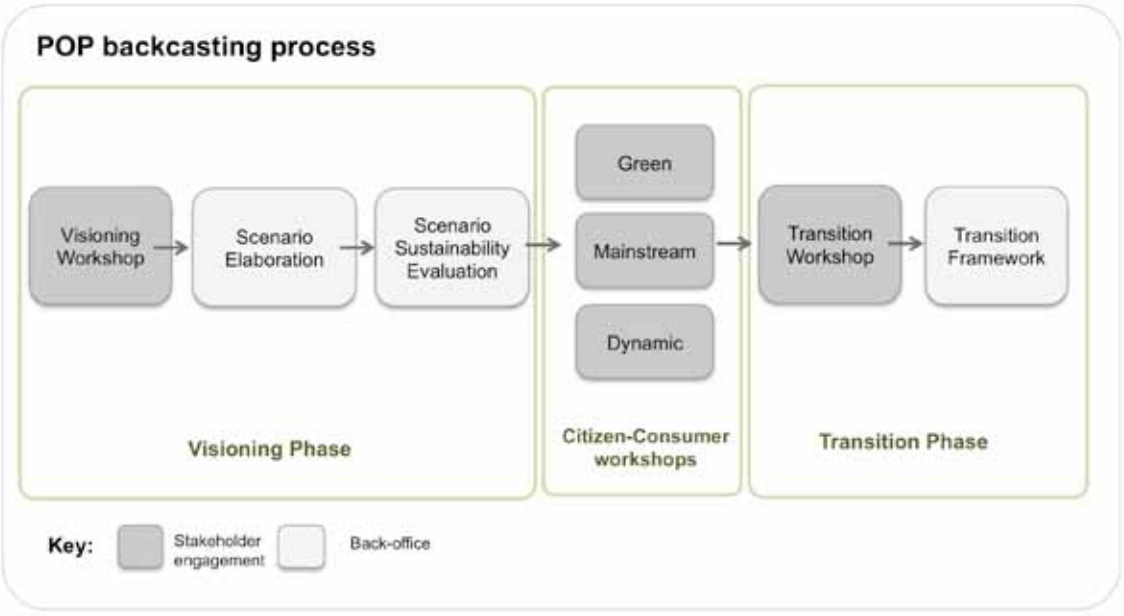

Figure 6.1. CONSENSUS POP backcasting process.

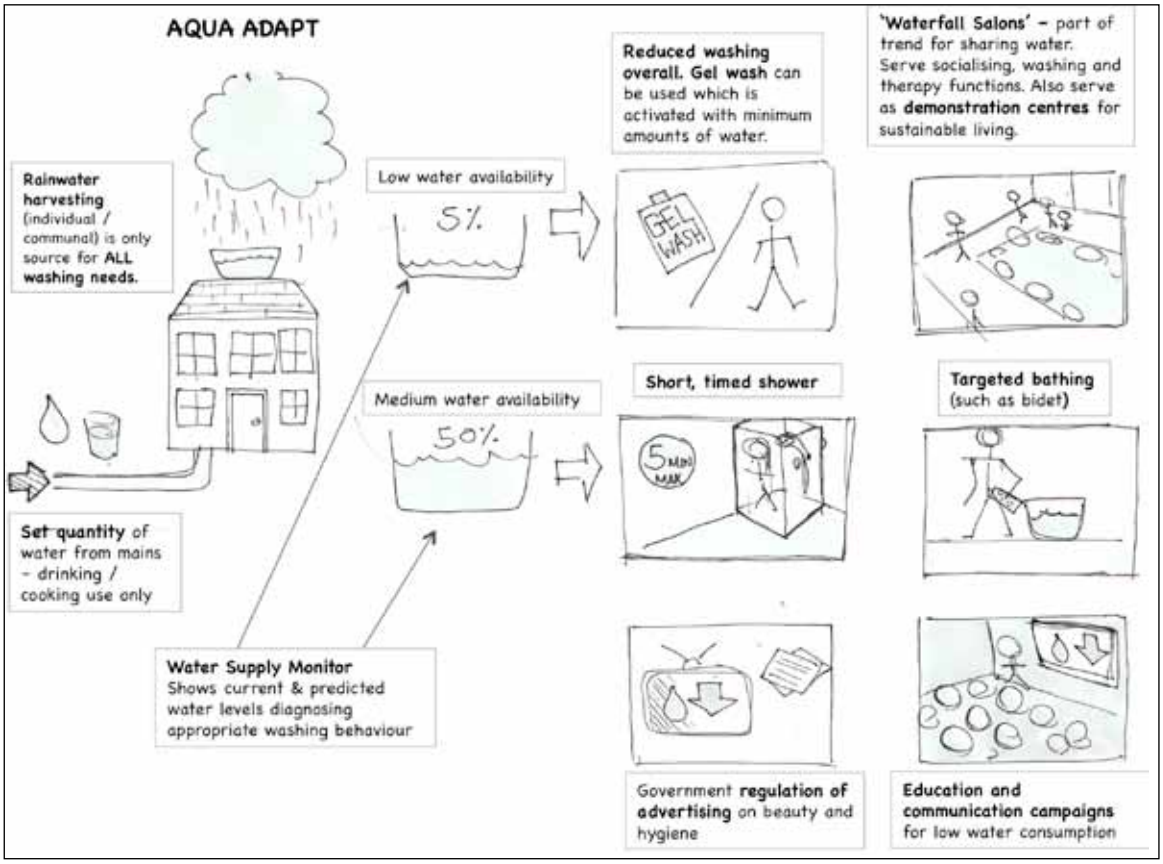

Figure 6.2. Aqua Adapt scenario.

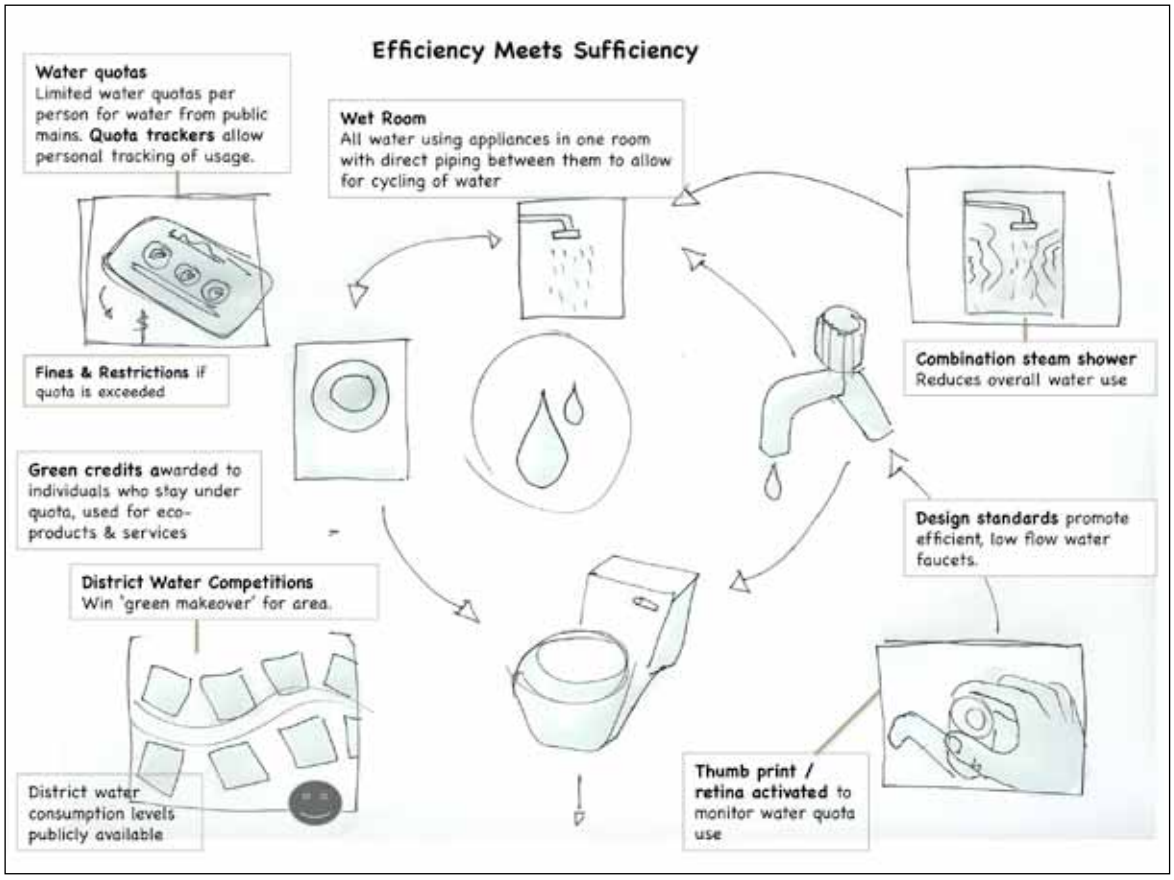

Figure 6.3. Efficiency-Sufficiency scenario.

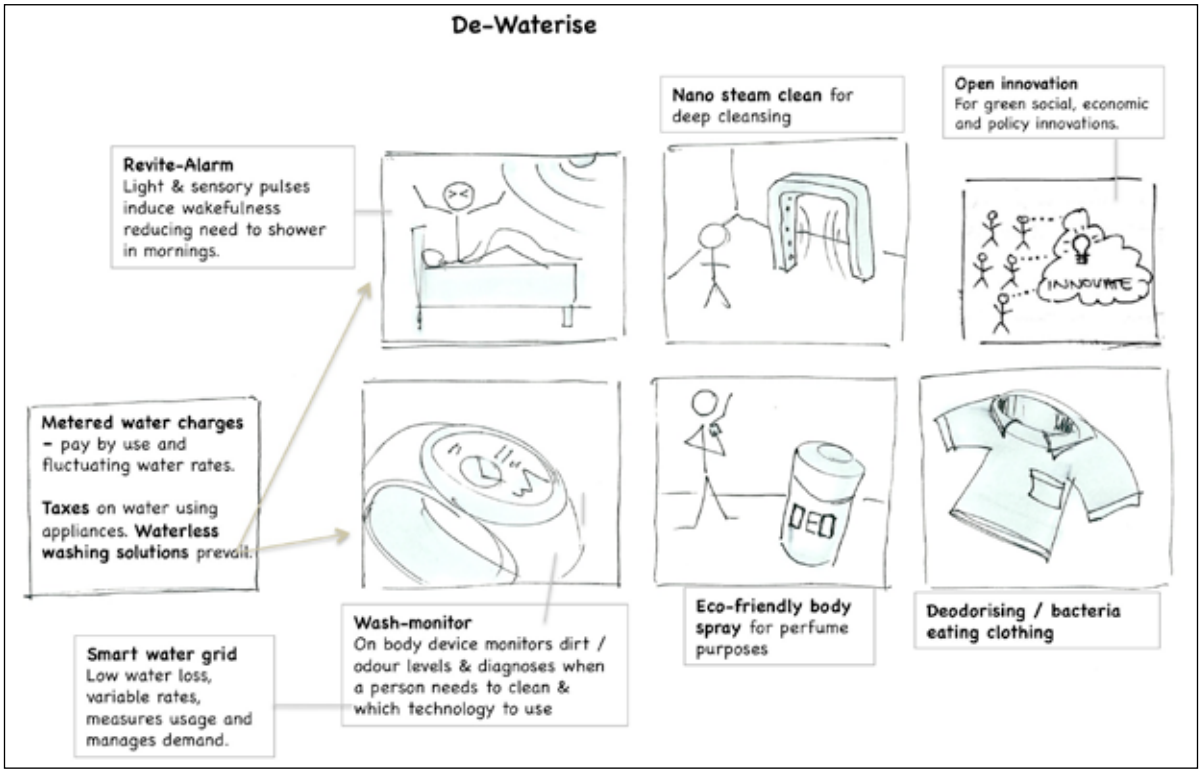

Figure 6.4. De-Waterise scenario.

cleaning.[10] Illustrated images were created for each scenario (presented in Figs 6.2–6.4) along with narratives explaining the motivations and actions of their inhabitants.

6.2.2 Sustainability Evaluation of Scenarios and Citizen-consumer Workshops

Using a qualitative 'new economics' sustainability framework (after Seyfang, 2009 and described in Section 5.2.2 above), each scenario was evaluated for its sustainability implications. The resultant ratings (Fig. 6.5) reveal that Aqua Adapt received the highest score (at 29 out of a maximum of 48) while Efficiency-Sufficiency came next receiving 21, followed by De-Waterise at 18. These results closely reflected citizen-consumer preferences where Aqua Adapt achieved the highest number of votes followed by Efficiency-Sufficiency and De-Waterise. Aqua Adapt's rainwater harvesting concepts received the most positive response of any scenario proposals and participants showed immediate enthusiasm for what they framed as the 'naturalness' of the scenario. Efficiency-Sufficiency's 'water quota' concept and related 'thumb print' activator were a source of unease for some for reasons of privacy and data protection and were often conceived as a threat to the 'politics of entitlement' perpetuated by the state provision of free water services. Nevertheless, the underlying principles of frugality and valuing of water were largely accepted and considered desirable attributes. Efficiency-Sufficiency's closed loop of greywater re-use within the home and the scenario's low-flow devices were largely appealing given their interpretation as 'technologies of efficiency', rather than 'technologies of control'. By contrast, the dramatic reductions in water use facilitated by De-Waterise's novel technologies were considered more controversial and concerns were voiced that they would be ineffective and diminish the pleasure of hot-water bathing. This reflects findings from previous studies reporting upon the valued therapeutic, relaxation and emotional needs served by showering and bathing (Pullinger *et al*., 2013), and further demonstrates the influence of internal drivers on daily practices rather than solely being determined by rational assessments or technical controls.

10 For example of gel wash, see https://www.headboy.org/drybath/ (accessed 05.11.14) & particle cleaning: www.xeroscleaning.com/ (accessed 05.11.14).

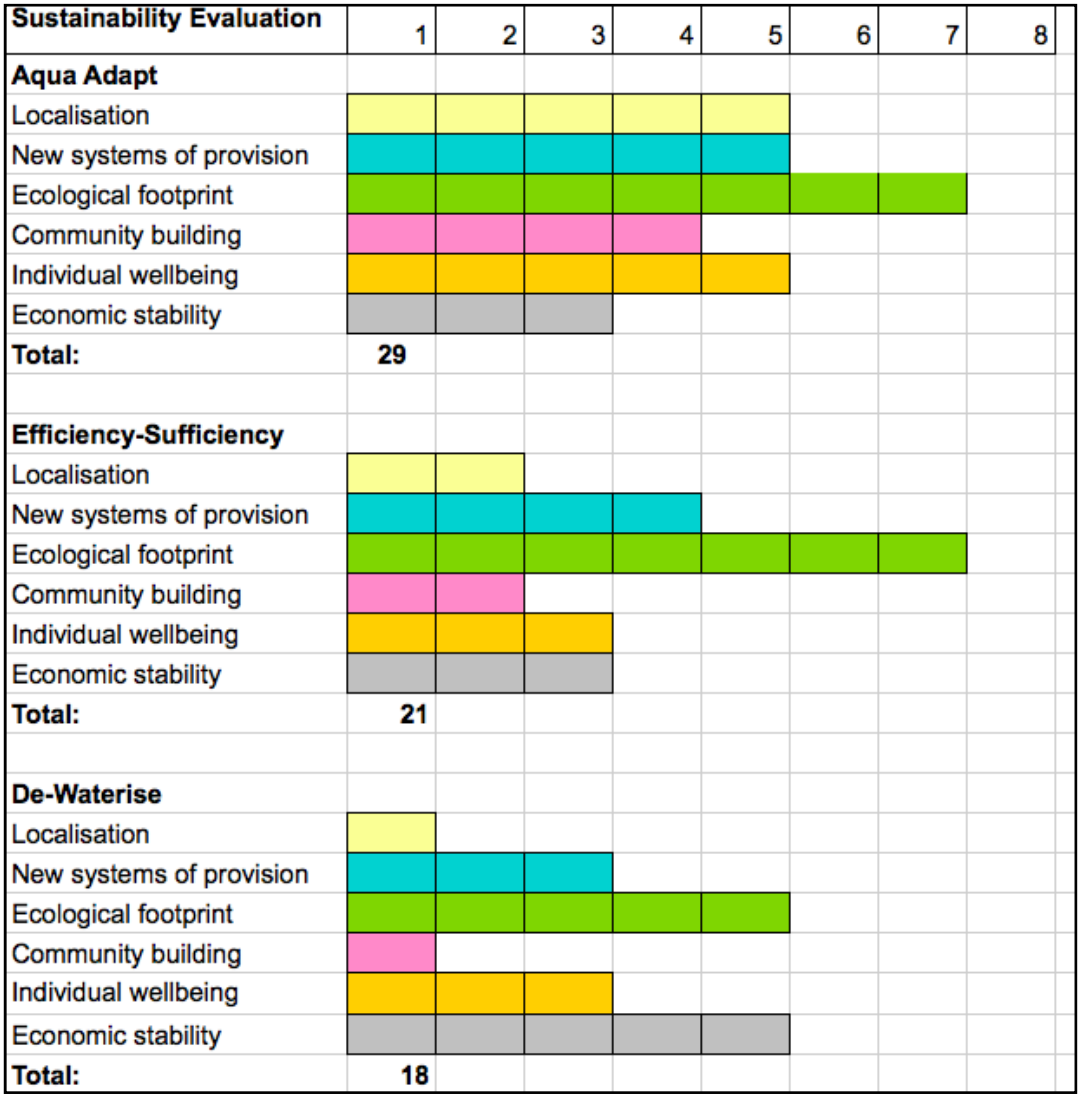

Figure 6.5. Scenario Sustainability evaluation summary.

Advanced technologies conjured by participants and drawing upon trends in wearables such as the 'wash-watch'[11] (which diagnoses bodily cleaning needs), and the 're-vite' alarm (which wakes people up feeling refreshed with no need to shower) were identified as potentially serving personal well-being needs above environmental needs. Overall, the findings showed the importance of considering the values inscribed within interventions to ensure that they mutually reinforce one another and are sensitive to local opinions and contextual circumstances.

11 http://www.artefactgroup.com/content/designing-the-business-of-wearable-tech/

6.2.3 Transitioning towards Promising Practices of Sustainable Washing

Before the Transition Workshop, one last iteration of the scenarios was necessary to build upon insight gained from the previous phases. Towards this end, three 'Promising Practices' were identified, prioritising concepts that were evaluated positively in citizen-consumer and sustainability evaluations. These were **Adaptive Washing**, **Efficient Washing** and **Connecting with Nature**. Table 6.1 outlines their core strategies, underlying motivations, and key technological and regulatory concepts which may be drawn upon to inform future policy goals and interventions. 'Adaptive washing' alludes to

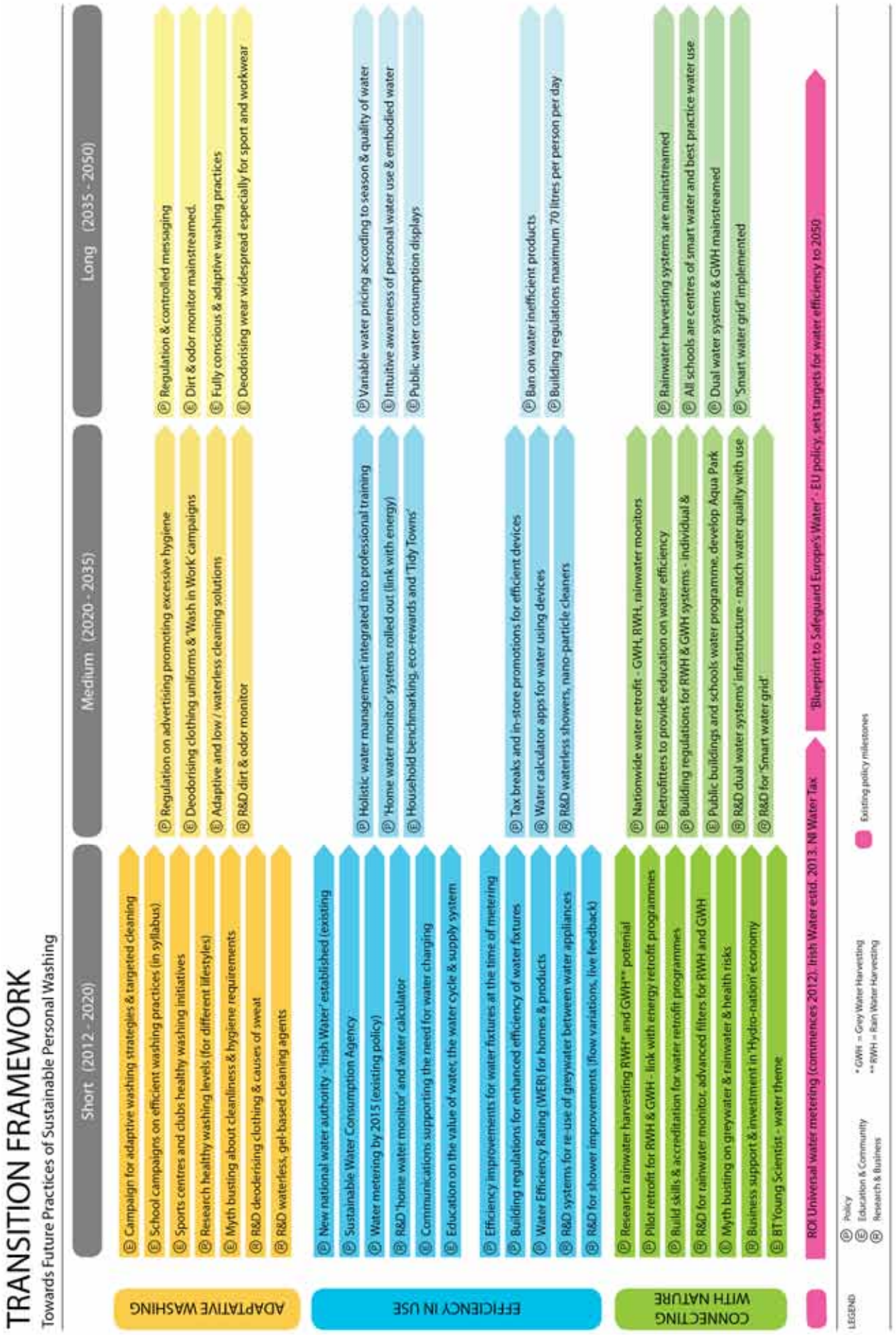

Figure 6.6 Washing Transition Framework

innovations designed to script tailored or adaptive practices that prioritise splash and targeted bathing over water-intensive showering. 'Efficient washing' involves the deployment of greywater re-use and appliance efficiency solutions, along with active management of personal water usage and advanced ICT systems to communicate volumetric and seasonally fluctuating pricing systems. Lastly, the Connecting with Nature practice reflects the preference amongst citizen-consumers and stakeholders for rainwater harvesting systems designed to help householders 'recalibrate' their washing behaviours with natural rhythms. It taps into existing trends for localisation, such as 'eat local' campaigns, along with trends for 'natural' non-chemical laden beauty products. At the Transition Workshop stakeholder participants, many of whom participated in the Visioning Workshop were encouraged to think of interventions to achieve these three Promising Practices according to the following three key categories: (i) policy (e.g. economic tools, design and building regulations), (ii) education and engagement (e.g. educational programmes, community initiatives and awareness campaigns), and (iii) research, technology and business (e.g. research & development agendas and economic investment strategies). Participants prioritised and planned these up to the year 2050 considering broader barriers and enablers and identifying relevant actors. A back-office phase elaborated these proposals into a comprehensive Transition Framework (see Doyle and Davies, 2012) and the resultant intervention timelines are presented in Fig. 6.6.

6.3 Summary and Recommendations

This research generated proposals for regulatory, socio-cultural and technical innovations for sustainable water consumption in Irish households. The POP backcasting process resulted in the development of discrete outputs in the form of scenarios and Transition Frameworks, but also served as an important learning tool for those who participated (Davies *et al.*, 2012). Such collaborative learning experiments are vital for

Table 6.1. Promising Practices: sustainable washing.[12]

Promising Practice	'Strategies' and 'Motivations' outlined below represent potential goals to advance in water demand management policy, while 'Core Concepts' and 'Present Trends' may be explored in future research and development activities.
Adaptive Washing	**Strategy:** Conscious evaluation of personal washing requirements and adoption of varying practices including splash-and-flannel washing, gel cleaner along with measured showering. **Motivations:** People are aware of personal cleanliness needs and there is a cultural movement away from standardised, routinised water-intensive practices. **Core concepts:** Gel cleaners; splash-washing; basin-washing; wash-monitor; deodorising clothing. **Present trends:** Gel sanitisers; dry shampoo; advanced sports materials (e.g. odour-eating sports clothing), olfactory technologies.
Efficiency in Use	**Strategy**: Fulfiling washing needs through highly efficient washing devices, close monitoring of water prices, and use of greywater. **Motivations:** Desire to be efficient water citizens, reduce water costs and improve efficiency. Acceptance of greywater. **Core concepts***:* Greywater re-use within household appliances, low-flow, timed and cyclical showers, daily and seasonal variations in costs, water-management systems. Present trends: Low-flow fixtures, water-monitoring, Water Pebble, low-flow showers.[12]
Connecting with Nature	**Strategy:** Matching washing practices with levels of harvested rainwater and/or availability within the public water mains, thus attaining greater connection with natural fluctuations. **Motivations**: Widespread desire to re-calibrate and connect with natural cycles to advance personal and ecological well-being. **Core concepts:** Rainwater harvesting, closed-loop systems, advanced ICT to allow tracking and monitoring of water availability. **Present trends***:* Rainwater harvesting, energy-management systems, local food, self-provisioning movements.

12 See: quenchshowers.com/, www.h2oscore.com

Table 6.2. Sustainable washing: policy lessons and future research.

Practice-oriented innovation – Water (or any other network-bound resource) is used to service a variety of needs in the home, for example, personal hygiene and refreshment, clothes-cleaning, sewage treatment/ removal and oral hygiene. If we take these end-goals as starting points, this opens up other opportunities for their fulfilment that may make large reductions in resource usage and promote commercial innovation.

Embodied scripts & meaning – The research showed that norms of water-using practices are shaped by material environments (including the structure of the home, washing products and technologies), along with regulatory systems, commercial messaging and socio-cultural expectations. Potential for greater shift in practices occurs through considering and shaping the societal values and norms that are embodied in these material and immaterial forces. Social practice working groups could be created, containing cross-societal stakeholders to consider these values and identify a set of optimum behavioural goals for the most environmentally damaging household practices with a commitment to implement interventions.

Managing demand – Demand management should be a core strategy within Irish Water's new policy framework. A dedicated demand-management team should be established and tasked explicitly with developing quantifiable targets and actions for reduction in water across a range of practices (for example, collectively aiming at an 80 litres per capita per day target for household water use by 2020). Strategies could involve educational programmes within schools to encourage more adaptive washing practices, myth-busting on the hygiene implications of greywater use and reduced washing, along with low-flow fixture programmes delivered in association with community partners (further details in Doyle and Davies, 2012).

Efficiency regulations – The EU Blueprint to Safeguard Europe's Water policy will require progressive attention to water efficiency targets. Irish Water should adopt anticipatory actions to extend beyond the EU's emerging eco-design recommendations for building and appliance water efficiency by applying practice-based goals for water reduction and applying demand management tools.

Equity & well-being – Water metering and regulatory interventions should include assistance for lower-income households. The link between water use and environmental damage can be more effectively communicated with initiatives that enhance the visibility of water provision and wastewater systems. An opportunity also exists to highlight how environmentally efficient washing can co-exist with personal health and hygiene.

Water research – A number of R&D opportunities have been identified by this research, including research into healthy washing levels, dirt and odour monitor devices, waterless washing/gel based solutions, rainwater-forecasting systems, water-efficiency calculators, multi-purpose washing devices with recycling of greywater, phased showering, ambient consumption displays and water-use benchmarking initiatives.

high-order learning which is essential for promoting new ways of problem-framing and solving, potentially contributing to a paradigm shift within policy circles. The results strengthened the case for attention to 'soft-path' water-planning paradigms that identify opportunities for cultural changes rather than solely advancing infrastructural development to meet escalating demands. By focusing on interventions to encourage adaptable, efficient and environmentally connected washing practices through the integration of product-based, regulatory and educational interventions, more sustainable washing practices could be cultivated. Coordinating across the diverse set of actors that shape consumption practices is, however, a considerable challenge. This is particularly the case under conditions of economic globalisation where there is little control over the diffusion of new, potentially environmentally damaging products, alongside a preference for non-interventionist governing strategies. The involvement of a variety of actors from business, policy, non-governmental and civil society fields within this POP backcasting study however represents one governance mechanism for coordinating and aligning long-term policy and business goals for shifts in unsustainable consumption practices. Furthermore, action plans were identified for the range of actors involved, including those that may present green business opportunities. The next step is to prototype identified interventions under modified regulatory and lifestyle conditions in real-life settings, or living laboratories, to evaluate their capacity to reduce water consumption.

6.4 Impact Highlights: Engagement, Presentations and Publications[13]

Publications

- Davies, A.R. and Doyle, R. (2015) 'Waterwise: extending civic engagements for co-creating washing futures', *ACME*: *An International E-Journal for Critical Geographies* (forthcoming).

13 See Appendix 1 for a full list of outputs from the CONSENSUS project

- Davies, A.R. and Doyle, R. (2015) 'Shiftshaping: practice-oriented socio-ecological transformation in household consumption', *Annals of the Association of American Geographers, Special issue: 'Futures: Imagining socio-ecological transformations*' (forthcoming)

PhD Thesis and Related Outputs

- Doyle, R. (2013) 'Towards a future of sustainable consumption: A practice oriented, participatory backcasting approach for sustainable home heating and personal washing in Irish households', unpublished thesis, Trinity College Dublin, Ireland.
- Doyle, R. and Davies, A. (2012) 'Transition framework: towards future practices of sustainable personal washing', Trinity College Dublin, Ireland.
- Doyle, R. and Davies, A. (2013) 'Consensus backcasting guidelines' [online]. Available at http://www.consensus.ie/wp/wp-content/uploads/2013/10/Consensus-backcasting-guidelines_F01.pdf
- Davies, A. and Doyle, R. (2012) 'Sustainable futures and household water usage', *Geography Directions* [online blog]. Available at blog.geographydirections.com/2012/01/09/sustainable-futures-and-household-water-usage/

Presentations

- Doyle, R. (2011) 'WaterWise', International Surface Tension Symposium with GradCam, Science Gallery, 19 November 2011 [invited speaker].
- Doyle, R. (2012) 'CONSENSUS: Scenarios of future household water consumption', Technical Discussion Meeting, International Association of Hydrogeologists, Geological Survey Ireland, Dublin, 6 March 2012 [invited speaker].
- Davies, A. (2012) 'Waterwise' – washing futures in civic geographies: securing geography in civic life', Exhibition and Panel Session, Royal Geographical Society Conference, Edinburgh, July 2012.
- Doyle, R. (2013) 'Future wash: Exploring new norms, procedures and technologies for sustainable washing practices through a backcasting approach', SCORAI International Conference, Clark University, Worcester, Massachusetts, USA, June 2013.
- Davies, A.R. (2013) 'WaterWise: The importance of water in our world, ECOUNESCO Youth EcoForum: Young Citizens for Water', Dublin, 28–29 November 2013.

Engagement

- Thirteen hundred hits on *Consensus Blog* – consensussustainableliving.wordpress.com/
- Twenty-one stakeholders at Water Visioning Workshop.
- Nineteen stakeholders at Water Transition Workshop (six repeat participants).
- Nineteen citizen-consumers attended focus groups in Dublin, Galway and Belfast.
- Water Transition Framework documents sent to 40 stakeholders (including workshop attendees, Steering Committee and Government department officials).
- Designed 'Waterwise' exhibit for the 'Future of Water Exhibition', Science Gallery, Dublin [October 2011 – January 2012]. Selected as one of 25 out of 500 applicants.
- WaterWise was mentioned in the journal *Nature*. The exhibit was shown at the New York Eyebeam Art + Technology Center as part of the World Science Festival (30 May–11 August 2012) and 'The Museum' in Kitchner, Ontario in 2013.
- Doyle, R. (2011) 'Surface Tension – Waterwise: Washing Futures', *YouTube* video [online]. Available at www.youtube.com/watch?V=5vkbh_bxthm

Other/Impact

- Ruth Doyle was selected as one of the top 15 candidates in the all-Ireland *Globe Forum Early Career Researchers competition*. She was rewarded by the TCD Innovation Alliance for this achievement.
- CONSENSUS submission in response to 'Consultation on the establishment of a public water utility and the future funding of water services in Ireland', February 2012.
- Ruth Doyle and Anna Davies – *EcoEye* filming for RTE – including sustainable washing futures segment drawing on WP5 of the CONSENSUS project, September 2013.

7 Sustainable Eating

7.1 Key Issues

The fundamental need to eat has ensured continuous global attention to the means and mechanisms of food-provisioning. This attention, primarily focused on the increased intensification of agricultural production through industrialisation and technological innovation, has without doubt led to significant increases in the amount of food produced globally. Considerable developments in transport, processing and storage technologies have also ensured that food can be moved more widely, and kept fresh and safe for increasingly longer periods. Indeed, the Food and Agriculture Organisation of the United Nations (FAO) reports that the world produces enough food to feed everyone, with world agriculture producing 17% more calories per person than it did 30 years ago despite population increasing by 70% (FAO, 2010). However, it is still the case that almost 900 million people around the world are undernourished (FAO, 2013). Given these figures, it is clear that simply focusing on food production in isolation from wider issues of food distribution and accessibility, as well as ignoring patterns and drivers relating to the actual consumption of food, will not solve matters of hunger (Davies, 2013).

In addition, and as with many technologically driven developments (Beck, 1992), the industrialisation of agriculture and the flows of food globally, have created a host of environmental and social impacts (Foster *et al*., 2006; Lang, 2013). Heavily reliant on intense resource extraction, the embedded land, carbon and water use of food production alone presents significant environmental consequences, including climate change, biodiversity loss and wider environmental destruction (Dirzo and Raven, 2003). Indeed, around one-quarter of global GHG emissions reportedly result from land clearing, crop production, and fertilisation (Burney *et al*., 2010) with the global food footprint steadily increasing. According to research conducted by the World Wildlife Fund and the United Nations Environment Programme (UNEP) under the Living Planet Reporting process, the food system in 1961 occupied 27% of the global biocapacity. This has risen to more than 47% since the early 2000s. More broadly, food is believed to account for between 20–30% of total GHG emissions (Audsley *et al*., 2009; Which, 2013). However, consumer awareness of these effects, as well as additional environmental impacts regarding waste, pollution and biodiversity, is reported to be generally low (Which, 2013). At the same time, structural food wastage is estimated to account for between 30 and 50% (or 1.2–2 billion tonnes) of food produced around the world (Institution of Mechanical Engineers, 2013). In combination, these impacts of modern food production create landscapes of unsustainable eating: landscapes that will not be positively transformed simply by predicting food demand and producing more food (Davies, 2013). Ensuring that the needs of eating are met more sustainably in the future thus demands attention to both production and consumption and all the phases of the food chain that lie in between.

While there is no agreed definition of what sustainable eating might look like, all definitions recognise the essential unsustainability of current practices and call for transformations in the ways food is produced and the types of, and means through which, food is consumed. Drawing together a number of definitions of sustainable eating (including, for example, Friedl *et al*. [2006], Reisch [2010] and Videira *et al*. [2013]), the CONSENSUS project developed an expansive understanding of sustainable eating. This understanding emphasises: food with high resource efficiency; regional rather than imported food; organically produced food; lower amounts of bottled beverages; and reduced (or meatless) diets. With this broad definition in mind, WP 6 focused on imagining and planning for interventions that would transform current eating practices (including shopping, cooking, eating and food-waste disposal) onto sustainable pathways The process of POP backcasting was then applied (see Fig. 7.1).

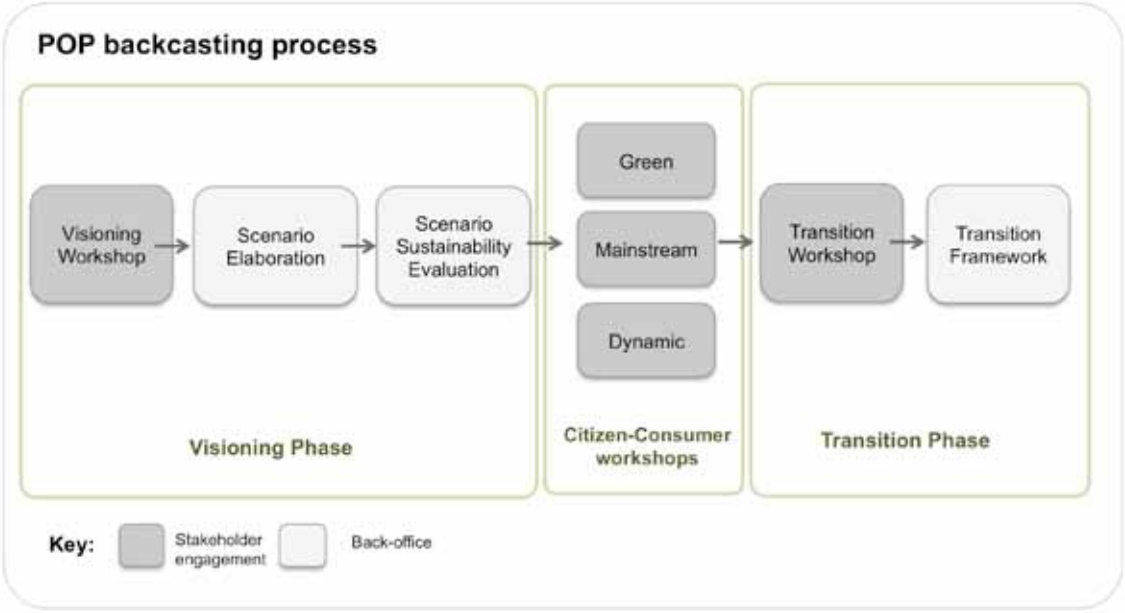

Figure 7.1. CONSENSUS participatory backcasting process.

7.2 Results

7.2.1 Three Future Scenarios: 2050 Visions for Sustainable Food Consumption

Representing the first step of the backcasting process, Visioning Workshops were conducted with public and private stakeholders from across the food chain to generate innovative ideas for more sustainable food consumption in the future. Eighteen stakeholders from a variety of backgrounds participated in this workshop, including representatives from consumer and government bodies, producers, retailers, regulators, researchers, designers and NGOs. During this initial phase over 100 ideas were proposed, with participants encouraged to free themselves from the constraints of existing frameworks and to withhold criticism. Within this brainstorming phase, participants discussed conflicting desires for convenience food (fast food), recognising that such food, and the reasons for desiring it (generally fast-paced lifestyles), were not conducive to savouring high-quality meals with friends and family. Tensions between the individualised benefits of current food purchasing and consumption practices versus the underplayed potential benefits of community-based practices were also debated along with the perceived need to reframe conceptions of responsibility across the food chain to change how food is presented and consumed. Allied to this was a call for greater engagement by consumers to reflect upon the food that they consume and the associated benefits (or drawbacks) of this consumption.

At the end of the session, the ideas generated by the Visioning Workshop were evaluated and clustered leading to the development of three scenarios that illustrated different degrees of organisational, technological and social change for more sustainable eating (see Figs 7.2–7.4 below). The first scenario, **Smart Eating**, is based on high technological change (including the installation of new devices for sustainable eating in the home), low lifestyle change (individualisation and 'fast' lifestyles dominate) and medium organisational change (some subsidies and regulation are required). This scenario embodies closed loop systems for energy recovery in the kitchen, integrating food growing, preparing and waste practices so that no food or energy source is lost (Fig. 7.2). The second scenario, **Community Eating**, contains more social and communal elements, encompassing pronounced ethical and moral dimensions (such as mindfulness and collaborative grassroots activity). Primarily, it is distinguished by 'slow lifestyles' with low technological change, high lifestyle change and medium organisational change. Social innovations (for example, slow-food events and online food-distribution communities) are organised and initiated through bottom-up, citizen-led approaches (Fig. 7.3).

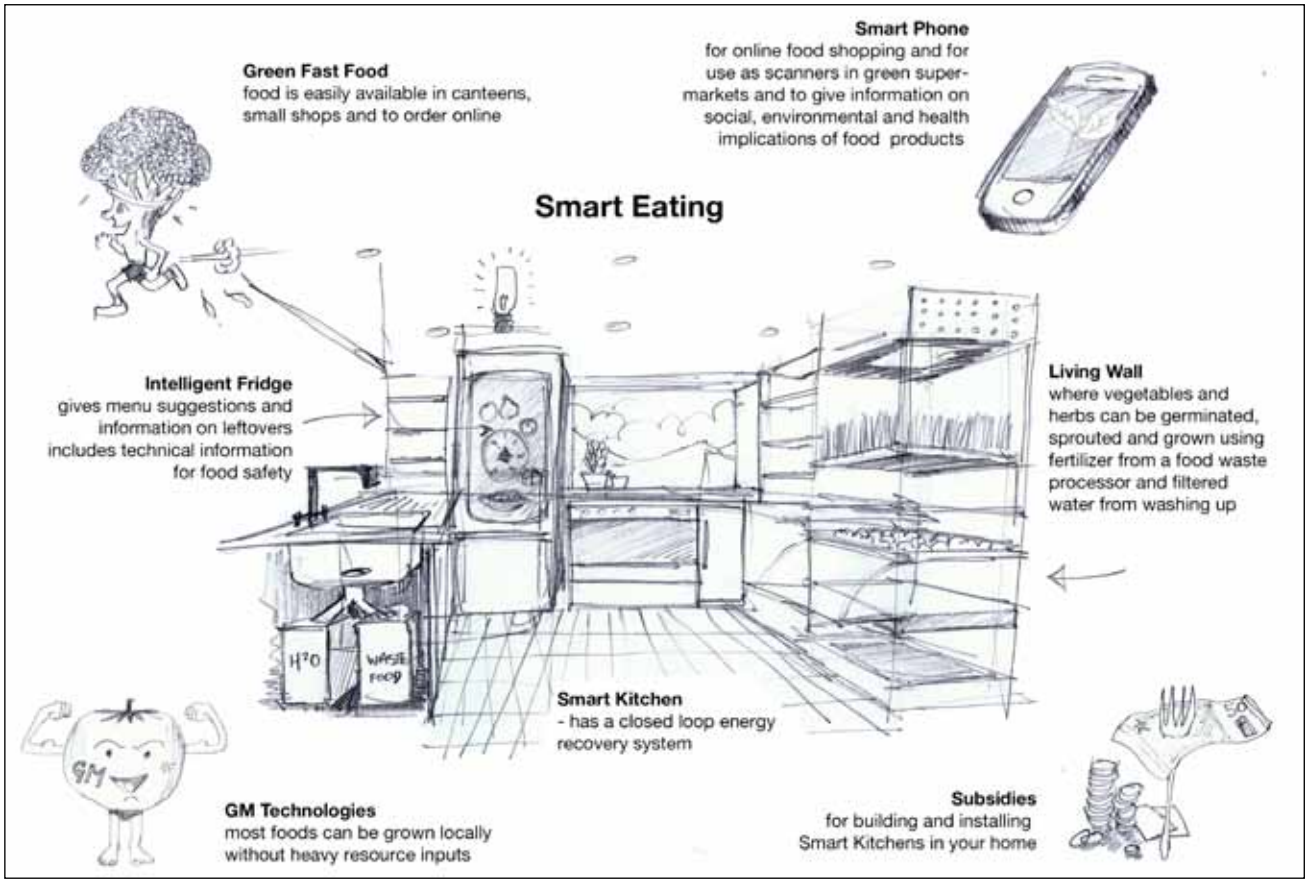

Figure 7.2. Smart Eating scenario.

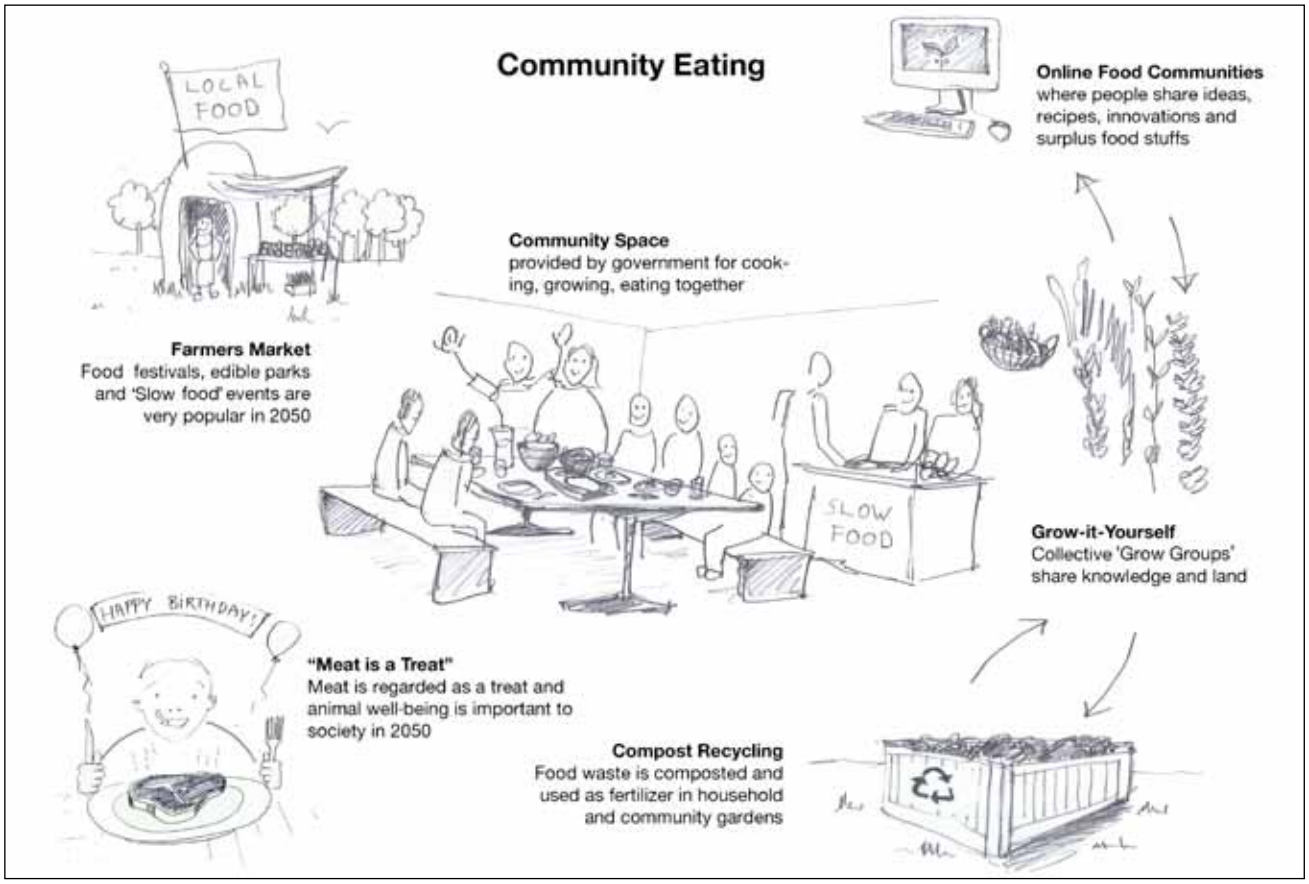

Figure 7.3. Community Eating scenario.

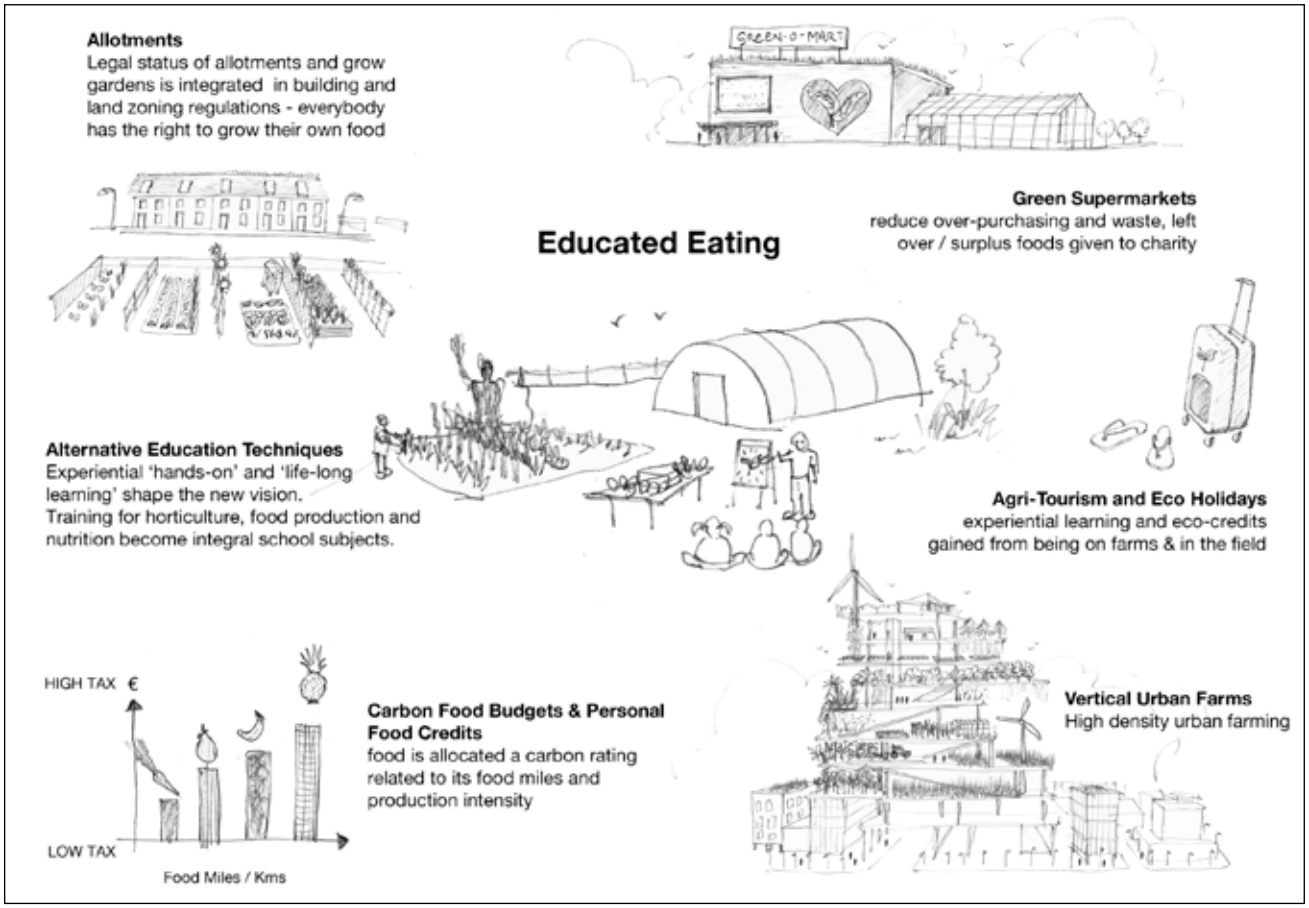

Figure 7.4. Educated Eating scenario.

Finally, **Educated Eating** presents new systems of provision to facilitate sustainable food consumption. For instance, green supermarkets, vertical farms and specifically zoned allotments dominate the food landscape, aided by new regulations and incentives for behaviour change. Characterised by medium technological change, medium lifestyle change and high organisational change, necessary infrastructures and educational initiates are provided to facilitate such transitions (Fig. 7.4).

7.2.2 Scenario Evaluation

Following the development of the three scenarios, a qualitative sustainability assessment was conducted that assessed scenarios against a range of indicators of sustainable consumption, modified from Seyfang (2009), and outlined in Section 5.2.2 above. This indicator set encompassed factors relating to localisation, reducing ecological footprints, community-building and collective action, new infrastructures of provision, economic sustainability and individual well-being and health. Table 7.1 shows the outcome of that evaluation, facilitating a reflection on the strengths and weaknesses of each scenario according to each criterion. Community Eating scored the highest mark (36) in the selected indicator framework, indicating that it would have the highest impact in terms of combined sustainability effects. Educated Eating was next, achieving a total sustainability score of 33. Finally, Smart Eating received the lowest mark (29) in this sustainability assessment, performing particularly poorly in its ability to build community spirit and individual well-being.

Sustainability Evaluation	1	2	3	4	5	6	7	8
Smart Eating								
Localisation								
Ecological footprint								
Community building								
Individual wellbeing								
New systems of provision								
Economic stability								
Total:	**29**							
Community Eating								
Localisation								
Ecological footprint								
Community building								
Individual wellbeing								
New systems of provision								
Economic stability								
Total:	**36**							
Educated Eating								
Localisation								
Ecological footprint								
Community building								
Individual wellbeing								
New systems of provision								
Economic stability								
Total:	**33**							

Table 7.1. Sustainability Assessment for food scenarios.

Such sustainability assessment concerns were indeed mirrored in the next backcasting phase: the citizen-consumer workshops. Despite having not been presented with the assessment data, citizen-consumers spoke about their dislike of the Smart Eating scenario, believing it to lack significant human, community and social components. Additional concerns arose amongst participants regarding a potential de-skilling of consumers through such a reliance on technology. Thus, while some elements were perceived in a positive light (for example, the closed-loop system for energy recovery), a certain level of ambivalence towards technology was recorded. Indeed, no citizen-consumer voted for the Smart Eating scenario as their preferred scenario.

Meanwhile, Community Eating and Educated Eating were equally well received by consumers, indicating a willingness on behalf of citizen-consumers to inhabit either future vision. Designated spaces for sustainable food growing and distribution in the Educated Eating scenario proved particularly popular, including the development of vertical farms and green supermarkets. The need for sustainability education further cemented the popularity of this scenario, although aspects of subsidised farming holidays and personalised food credits received some criticism. The top-down, regulatory feel of this scenario was also unpopular with some consumers. In comparison, the most promising sustainable scenario according to the sustainability assessment, Community Eating, was also found to represent the least controversial scenario amongst consumer groups. Indeed, the only element that received some criticism involved the practice that 'only local food is permitted', with consumers seemingly unwilling to relinquish exotic and imported goods such as coffee and chocolate (Davies, 2013). Meanwhile, positive reactions were obtained regarding the pursuit of slower lifestyles (facilitated by less working hours), alternative food education regimes and the presence of edible parks, slow-food events and food-growing

spaces. Potential clashes with current desires for individualism, privacy and to own (rather than share) land in Ireland were nonetheless mentioned as potential challenges.

Furthermore, it is important to note that while many participants across workshops (particularly those affiliated with environmental sectors) intuitively favoured the Community Eating scenario for its sustainability potential, many believed it to be too voluntaristic in its requirements. In this regard, many deemed it essential to have more regulatory elements for mainstream sustainable behaviour change to be wholly achieved. Challenging this, however, several 'mainstream' citizen-consumers (that is, those with no overt environmental affiliations) highlighted more resistance towards the regulatory elements of the scenarios. Thus, overall, it appears that the 'greener' the consumer, the more likely the belief that bottom-up processes will not motivate the majority of the population to change unsustainable behaviours. This has important implications for the development of both current and future environmental policy, with techniques of regulation, force and power (albeit contested and unpopular for some) deemed necessary to mobilise the majority to a sustainable consumption lifestyle.

7.2.3 Promising Practices and the Development of the Transition Framework

Following the evaluation phase, three 'Promising Practices' were developed based on specific elements of the three scenarios that received positive ratings from the workshops and the sustainability assessment. The first Promising Practice, **Spaces for Sustainable Eating**, embodies the spaces of sustainable food evident throughout the scenarios, highlighting the numerous opportunities for cooking, growing and eating together desired by consumers. This includes, for example, in 'edible parks' (public parks that have food-growing spaces for people to collectively work on and eat from), slow-food events (where the time and care taken to source, prepare and eat food is celebrated), schools and workplaces. A reduced working week forms a significant part of this promising practice, facilitating engagement with these new and developed spaces. Innovations for the intelligent use of space also support this practice, including the development of 'vertical farms' (farms in urban areas that are located in hi-rise buildings) for commercial purposes and 'living walls' (where surfaces of buildings are used for growing plants) in households for domestic food. Opportunities to adjust both physical and temporal space thus dominate the first promising practice.

The second Promising Practice, **Food Awareness**, focuses on the power of alternative education techniques and sustainable food training to trigger lifestyle changes. Affordable, nutritional and sustainable food becomes widely available in shops, canteens and restaurants as a result of new 'informed' demands. Subsequent pressures for responsive pricing also allow consumers to note the environmental footprint of food products (including its carbon, water and biodiversity impact), with intelligent food phones and scanners to inform people about the environmental, social and health consequences of the foods they buy. Finally, a third Promising Practice incorporates the potential for technology, communications and innovation to solve problems of sustainability. Entitled **Smart Food**, it centres on the development and utilisation of interactive smart technologies in the home to ensure, for instance, appropriate energy recovery from food, the prevention of food waste, and safe food choices. Skills training sessions and public participation in smart application design also prevail, so that consumers can utilise such technologies effectively and easily. Green supermarkets which have strict sustainability standards and which participate in food-redistribution networks (aided by innovative ICT applications) are established.

As a final research step, stakeholders were invited to develop pathways and interventions through which these promising sustainable food practices could be achieved. Participants were specifically encouraged to think about relevant policies (for example, new zoning regulations, taxes and subsidies), education and engagement initiatives (such as communication and awareness campaigns) and necessary research, technology and development (including industry R&D and related investment strategies). Developing short-, medium- and long-term action plans, participants charted these ideas up to the year 2050. These ideas are summarised in the Transition Framework that includes an identification of the potential drivers, challenges and actors required to implement the interventions (see Pape and Davies, 2012 and related summary in Fig. 7.5).

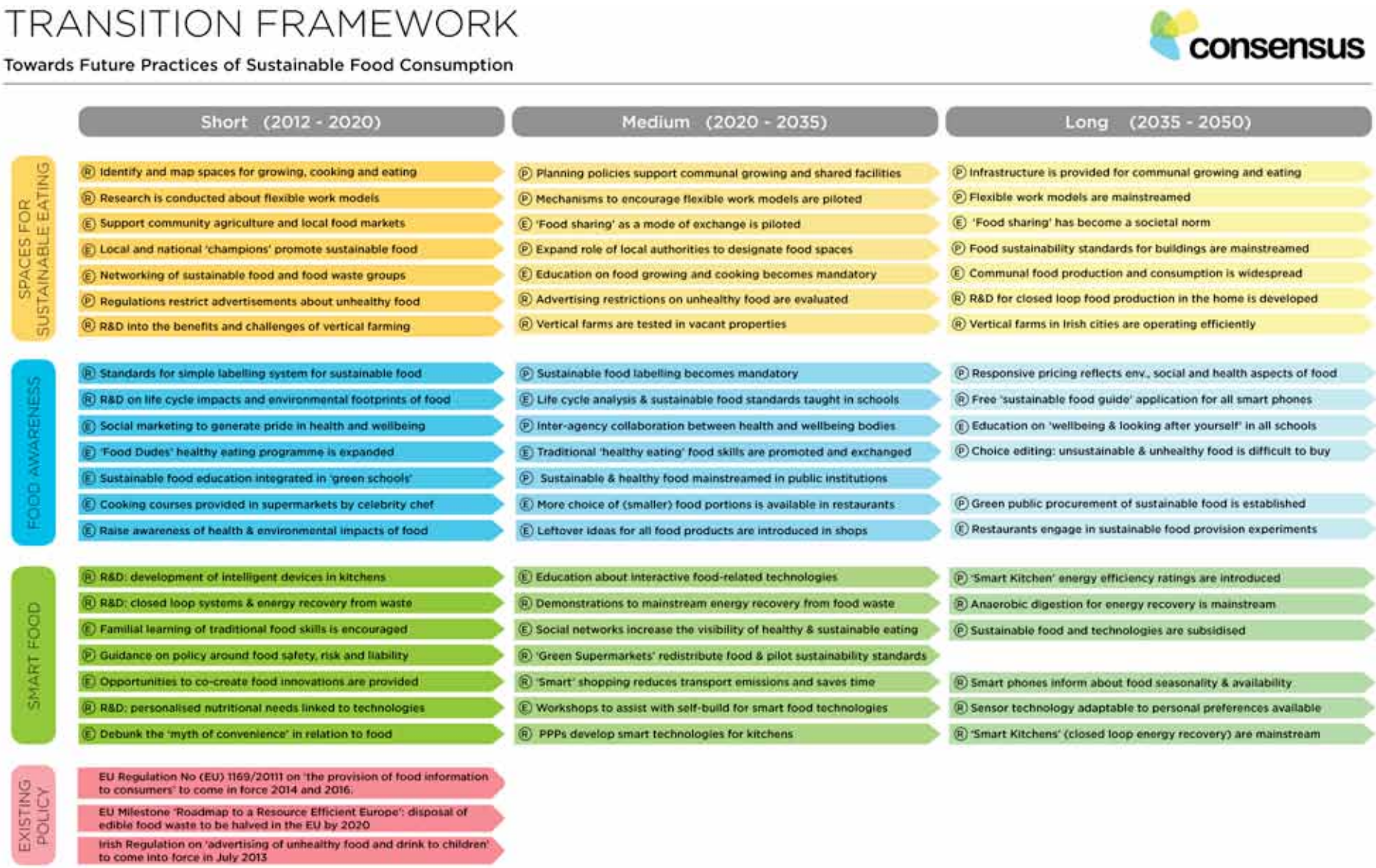

Figure 7.5. Food Transition Framework.

7.3 Summary and Recommendations

Examining the technological, organisational and social factors that affect household shopping, cooking and eating practices, this work package developed a novel framework for sustainable eating that could be realisable by 2050. This brings a consumption focus to debates which are often lacking in policy, practice and research. Employing a participatory backcasting approach, a diverse range of stakeholders engaged in the process through workshops and focus groups. Constituting a participatory co-design approach, this diversity contributed to the variety and originality of the ideas developed, as well as ensuring degrees of collaborative learning amongst workshop attendees. Indeed, the majority of participants commented positively on the workshop experience, backcasting process and multistakeholder involvement that allowed participants to innovate and share ideas with others whom they would not normally come into contact. The focus on the year 2050 freed participants from current constraints, enabling the development of imaginative, creative and innovative scenarios and practices. The Transition Framework, which was collaboratively developed thereafter provides actionable measures that can be taken to achieve a more sustainable food future. Linking people, policy and technology, the need for an integrated and holistic approach to sustainable food consumption across stakeholder groups is apparent in this timeline.

The delivery of the Transition Framework is clearly contingent upon a number of key issues. First, the potential role of ICT to reduce the unsustainabilities relating to food-purchasing and waste deserves consideration. ICT could connect spaces for sustainable eating, educate about food sustainability in an interactive, experiential manner, and make consumption smarter. The potential for iPhone and Android applications, innovative scanners, online food communities and virtual redistribution networks represents a few, very realisable, examples in this regard. Drawing on the emerging links between technology and food – but moving away from controversial food-production technologies that typically spark concern amongst consumers (e.g. GM technologies or invitro-meat) – ICT could thus facilitate transitions to a more sustainable food future. Although this is an emerging area of interest (for example, see the 'greenlicious app' for sustainable food recipes: www.greenlicious.org/index.php/en/ and the food share application for food redistribution, www.foodcloud.ie), its potential is currently underplayed in food-consumption spheres. It thus represents an area that requires further attention and research. The execution of living laboratory style research in households, for example, could develop current understanding of the human–technology interface and examine how consumers interact and use these technologies in practice. The restraints, challenges and limitations that interventions may face could also be explored through such an applied research context. Building on the high-impact dissemination of CONSENSUS, living laboratory research would further assist in achieving the overall project aim of influencing policy-making, business and research innovation in Ireland and abroad.

Meanwhile, to overcome some of the technological ambivalence uncovered in this research (including fears of de-skilling and over-reliance), the need for accompanying organisational change (such as technological regulation and appropriate levels of government intervention) is obvious (Davies, 2013). This is essential to ensure that consumer trust, privacy and control is maintained. Additional supports and educational initiatives will also be required to overcome concerns relating to the risks of relying on technology. Issues of affordability must also be addressed (echoing concerns of the mainstream consumer group) with potential for subsidies to play a role here.

Finally, the conflict between having a diverse and global diet and achieving this in a sustainable manner was obvious across workshops. The most striking example lay in the contrast between consumer desires for a varied diet (laden with exotic fruits, chocolate and coffee) and their unwillingness to accept GM technologies that have the potential to produce these items in a more local and less resource-intensive (sustainable) way (Davies, 2013). Fears of the unknown, perceived risks and emotional dislikes of the production method dominated. Further, citizen-consumers believed that the perceived current inabilities of regulators to contain GM risk would also not be resolved by 2050. This once again highlights the need for continued organisational, institutional and regulatory change alongside any technological developments in the future. As with 'green' citizen-

consumer perceptions that top-down regulatory control is required to induce sustainable behaviour change across mainstream society, the findings highlight the limitations of relying on a purely technical fix to resolve the complicated practices of unsustainable eating. Overall, many factors including issues of risk and trust, relationships with nature, consumer expectations and dietary desires interact to influence current and future eating practices. Such issues must be considered concurrently if unsustainable eating practices are to be adequately resolved.

7.4 Impact Highlights: Engagement, Presentations and Publications[14]

Publications

- Davies, A.R. (2013) 'Food futures: co-designing sustainable eating practices for 2050', Eurochoices, *Agricultural and Food Economics*, 12 (2), p.4–11.
- Davies, A., Devaney, L. and Pape, J. (2014) 'Sustainable eating: visions, practices and the role of technology' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future*, London, Routledge.
- Davies, A.R. (2014) 'Co-creating sustainable eating futures: technology, ICT and citizen-consumer ambivalence', *Futures: The Journal of Policy, Planning and Futures Studies,* 62 (B), p.181–193

Presentations

- Pape, J. (2011) 'Sustainable food consumption in Ireland: challenges and opportunities', Workshop on Sustainable Lifestyles and Life-courses, The University of Northampton, UK, 20 April 2011.
- Davies, A. (2011) 'Kitchen stories: imagining eating practices in 2050', Association of Agricultural Economics Society of Ireland Annual Conference, Teagasc Conference Centre, Dublin, 24 November 2011 [Keynote presentation].
- Davies, A. (2011) 'Kitchen stories: ICT and imagined eating practices in 2050', ICT and Urban Food Futures Conference, Oxford Internet Institute, University of Oxford, December 2011.
- Davies, A.R. (2013) 'Guiding good food: potentials and pitfalls in the pursuit of the good life and sustainable eating practices', Structural Prerequisites for Sustainable Societies and the Good Life, University of Muenster, Germany, March 2013.
- Devaney, L. (2013) 'Food risk governance in Ireland', Food Safety Professionals Association Annual Conference 2013, Royal Hospital Kilmainham, Dublin, 15 November 2013.
- Davies, A.R. (2013) 'Challenges in food consumption practices in 2050: Transitions towards sustainable eating', OECD Workshop on long-term scenarios for food and agriculture, OECD, Paris, 3–4 December 2013.

Engagement

Engagement took place with stakeholders across public, private, semi-state and civil society spheres throughout the completion of WP6, including:

- Eighteen stakeholders participating at the Food Visioning Workshop.
- Twenty-two stakeholders at the Food Transition Workshop.
- Twenty-five citizen-consumer participants across Dublin, Belfast and Galway.
- Sustainable Eating Transition Framework documents sent to *c*.40 stakeholders (including workshop attendees, the CONSENSUS advisory board and government representatives).
- Eighty-five per cent of Food Transition Workshop participants responded positively to the question of whether they 'would draw on the output of today's workshop'.
- Seventy-five per cent stated they would consider employing the CONSENSUS research processes in their own work.
- Participant in OECD development of long-term scenarios for food and agriculture project, Paris, 2013–2014.

Other Outputs and Impacts

- Transition Document: Pape, J. and Davies, A. (2012) 'Transition framework: towards future practices of sustainable food', Trinity College Dublin, Ireland.

14 See Appendix 1 for a full list of outputs from the CONSENSUS project

- Laura Devaney: Participant at RESPONDER Multinational Knowledge Brokerage Event on 'Shaping the Future of Sustainable Food Consumption', Lisbon, Portugal, April 2013.
- Laura Devaney – *EcoEye* Filming for RTE – including sustainable food futures segment drawing on WP6 of the CONSENSUS project, September 2013 aired in January 2014).

8 Conclusions and Recommendations

8.1 Findings

It is clear from the findings detailed in this synthesis report that consumption remains an archetypal 'wicked problem' with no clear pathways to resolution, and that interdependencies within systems mean that prescribed solutions may create new problems of their own. Yet, equally apparent is the unsustainability of current trajectories of consumption. This conclusion is not unique to CONSENSUS and the importance of sustainable consumption is widely articulated in policy rhetoric, particularly at global and supranational scales. This is particularly clear in the European Commission's *Roadmap to a Resource Efficient Europe* (EC, 2011), where sustainable consumption and production are seen as essential elements towards resource efficiency. The Roadmap formulates the following milestone for sustainable consumption:

> By 2020, citizens and public authorities have the right incentives to choose the most resource efficient products and services, through appropriate price signals and clear environmental information. Their purchasing choices will stimulate companies to innovate and to supply more resource efficient goods and services. Minimum environmental performance standards are set to remove the least resource efficient and most polluting products from the market. Consumer demand is high for more sustainable products and services.(EC, 2011, p.5)

While both CONSENSUS and the Roadmap converge around the importance of reorienting consumption, their visions of the future diverge when conceptualising the triggers that will stimulate sustainable behaviour. As indicated in the quote above, there remains a commitment within European circles to a reductive view of consumption as an individualised activity that is guided by rational economic decision making. That is, there is an assumption that people make autonomous and free rational choices about their consumption based on full disclosure of uncontested information and accurate, full environmental and economic-costing. This simplistic attitude-behaviour-choice 'ABC model' (Shove, 2010) is intuitively appealing to policy-makers as it creates a linear system where interventions can be made at discrete stages of the consumption chain. Yet, it does not reflect the reality of decision-making. Consumption decisions are in fact influenced by many factors, including economic factors, the marketing of products, technological innovation, regulations governing consumption, and not least by the powerful influence of social norms propagated through family, friendships and the media.

Ultimately, if consumption challenges are to be confronted seriously a reframing of consumption is required so that sustainable consumption is viewed as a progressive means of achieving a good quality of life, rather than a sacrificial return to some bygone era of austerity. It will not be possible to design effective governing interventions until such reconceptualisations become more widely accepted. There are signs of a shift in the research–policy interface, with research into innovative approaches to policymaking emerging based on new systems thinking about the dynamics of innovation and entrepreneurship for sustainable consumption. This body of work identifies the need for transitions in the systems that fulfil key societal needs like mobility, shelter, food and energy (see Geels *et al*., 2008; Tukker *et al*., 2008). However, and this is a crucial point, innovative system-oriented policy instruments do not fit easily into existing institutional structures and isolated departmental frameworks of governments. Ultimately, it will be a political decision as to whether it is better to continue to focus on incremental changes to the way people consume that are less disruptive, but which may produce little reduction in the impacts of consumption in the short term, or whether to make more radical changes that will require more dramatic shifts in behaviour across public, private and civil society spheres.

Whether radical or reformist approaches are adopted, there will be no silver bullet to achieve sustainable consumption. New, imaginative means of intervening in consumption practices must be developed alongside the fiscal and regulatory measures that currently predominate. As detailed in other studies,

and supported by the CONSENSUS findings, there is strong evidence that only a complementary mixture or 'bundle' of tools will shift the juggernaut of consumption from its current trajectory (Sonigo *et al*., 2012; OECD, 2011).[15] Combinations of push-and-pull strategies are likely to be needed alongside careful choice-editing (DEFRA, 2008) that provide appropriate mechanisms to prevent rebound effects and the regressive impacts of policy on disadvantaged populations and marginalised communities (e.g. low-income households or rural populations). Additionally, some means to break the cycle of dependency or 'lock-in' is required whereby industry and product developers can work with communities to develop new low-impact products or services, enabling consumers to reflect on their consumption practices. This might include expansion or up-scaling of service contracts alongside guarantees of durability in products that equate with quality goods and services. It is also likely to require the mediating possibilities provided by ICT developments (e.g. cloud computing facilitating collaborative consumption). To some extent, smart technology may also automate certain decision processes, thereby removing the influence of habitually unsustainable behaviour, perhaps regulating heating and lighting in uninhabited residences.

Certainly, more effective consumption policy will require closer cooperation between policy fields, including energy, transport, corporate social responsibility (CSR), employment, education, agri-environmental policy and spatial planning, but more fundamental is the framing of policy (Crompton, 2010; Mudgal *et al*., 2011). As indicated in Section 2, there is a reluctance to be interventionist in consumption policy, with a preponderance of voluntary mechanisms and awareness campaigns. However, it is important to recognise that policy is never neutral and that it shapes our thinking (Jackson, 2005a). For example, in terms of GHG reductions, Jänicke (2012) has shown that countries with low environmental targets often do not reach them, whereas those with higher achievable targets tend to surpass them. Policy focused on achieving more sustainable consumption will need to be mainstreamed, appropriate to context and consistent with policy made in other areas (such as industry, energy and agriculture). As revealed in the backcasting workshops (detailed in Sections 5–7), it is unlikely that the wider citizenry will be convinced of government commitment to sustainable consumption if the consumption behaviour of government offices is poor and procurement practices do not support green purchasing of goods and services.

Only though adapative forms of governance – which are flexible and integrated – will the complexity of consumption be managed more effectively and the social-ecological systems and their associated services be suitably conserved. Under an adaptive governance approach, as Prins and Rayner (2007: 975) suggest, 'governments would focus on navigation, on maintaining course and momentum towards the goal of fundamental technological, organisational and behavioural change, rather than compliance with precise targets' in isolated activities. However, for adaptive governance to succeed in significant transformation and not simply dissolve into a *laissez faire* approach which rejects targets for action, it is essential that the ethos of the approach is adopted by key figures in business, government and society – what we term 'shapeshifters'. These shapeshifters not only provide the driving force at the top-level of policy-making but they are also charismatic innovators within grassroots initiatives. These figures potentially play leading roles in developing and mainstreaming activities through supporting change in wider regimes. System transformation will require fundamental social, technical, political and institutional change, involving all sections of society from government, through to business and grassroots activity. Such co-ordinated activity was at the heart of research across the CONSENSUS project, with high-level policy advisors, retailers, product designers, and companies as well as policy officers, scientists and NGOs engaged in the co-creation and testing of alternative ways of consuming (see Fig. 8.1).

As a result, the project has built capacity not only within the Irish research community and amongst the team members, but also within public, private and civil society spheres through the multistakeholder workshops, conferences and presentations.

15 A complementary mix of various types of policy instruments addressing different groups of actors is likely to increase the effectiveness of policy implementation in the field of SCP (OECD, 2010; Rubik *et al*., 2009; Jackson, 2005b; Jackson and Michaelis, 2003).

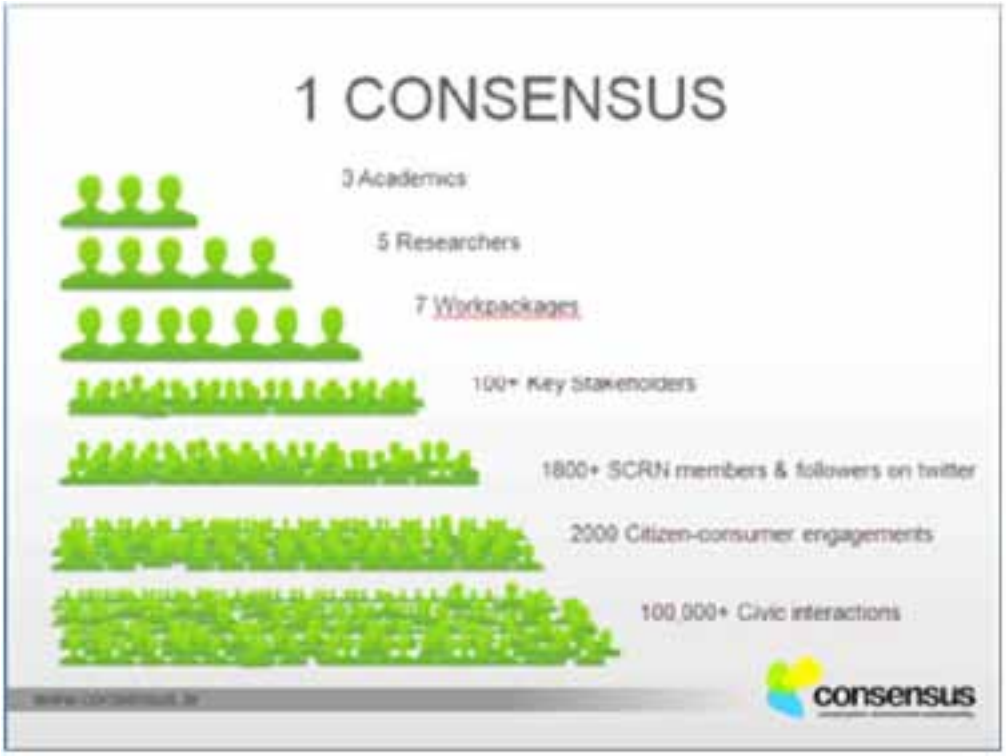

Figure 8.1. CONSENSUS diagram of engagement.

8.2 Sustainability Learning

The engagement processes developed and tested in this project certainly provided novel opportunities for creating and disseminating more sustainable consumption practices. Participants' preconceptions about innovating for sustainable practices of heating, washing, eating and moving were often challenged, sometimes modified and even radically altered by the interactions developed through CONSENSUS. Individuals from different professions, normally operating in rather contained spheres (both physically and intellectually) with quite exclusive professional vocabularies, and diverse motivations and drivers, were willing to come together, at least temporarily, with the common purpose of imagining alternative and more sustainable ways of doing things. The impacts of the engagements have travelled beyond the confines of the discrete research events, albeit in unpredictable ways. Informal interactions as well as more structured elements of the interventions led to animated networking and requests were made to circulate attendee lists following workshops, conferences and presentations. The opportunity for participants to meet, engage, challenge and create would not have occurred without the physical interventions of the CONSENSUS research. While such interventions need not necessarily be directly physical (indeed virtual interfaces are now commonplace for many communities of interest), the face-to-face setting of many CONSENSUS interventions was found by participants to be effective in promoting engagement among people who would not normally interact. In contrast to much popular discussion of sustainability, frequently characterised by scenarios of impending doom, CONSENSUS interventions provided for solutions-focused activity, creating 'spaces of hope' (Harvey, 2000), at least in the short term. Nevertheless, the interventions of CONSENSUS will remain isolated experiments in interaction, creativity, reflection and innovation unless they are taken up by actors and organisations associated to the fields of consumption. Learning impacts may be transient unless 'tacit' or context specific knowledge gained by workshop participants can be successfully translated into 'explicit' knowledge that can be incorporated into the *modus operandi* of the organisations from which participants derived.

More longitudinal studies of personal, interpersonal and organisational change are necessary to fully evaluate degrees of learning beyond the

CONSENSUS interventions. Influencing social, technological and regulatory change remains highly complex with no agreed blueprint for successful transition management. That said, the collaborative, multistakeholder processes inherent in CONSENSUS are far more expansive and deliberative than any current decision-making procedures concerned with household practices, certainly within Ireland, both North and South. Ultimately, the evidence from the CONSENSUS interventions suggests that both higher and lower order sustainability learning can and does take place at both personal and interpersonal levels. Whether this learning can be translated into more wide-ranging and embedded change demands both extensive and expansive longitudinal studies of socio-technical systems and an intricate analysis of links between individual and organisational decision-making.

8.3 Recommendations

Each of the preceding sections has detailed recommendations for sector-specific action across organisational, behavioural and regulatory arenas. For example, the Transition Frameworks (available from www.consensus.ie) detail extensive interventions for policy-makers, education and community workers, research and business innovators alike, to achieve greater sustainability in home-heating, washing and eating over the short, medium and long term. Similarly, opportunities and challenges associated with teleworking and employer-based mobility management initiatives are explored in the context of complementing conventional transport policy to achieve the sustainable consumption of distance. In addition to these sectoral suggestions for change, there are a suite of general actions that would support the development of more sustainable consumption. These are detailed below:

- Establish a sustainable consumption innovation network that includes *shapeshifters* (i.e. highly influential actors or game-changers) from public, private and civil society sectors. This high-level task force should consider everyday practices as units of analysis to develop integrated green economy, policy and educational action initiatives.
- Create an inter-departmental working group within national government to ensure sustainable consumption policy consistency and complementarity (for example, similar to traditions of more deliberative environmental governance that engages a diverse range of societal actors within a transition management framework in the Netherlands [Kern and Smith, 2008]).
- Move policy attention beyond a focus on 'efficiency' to a focus on 'sufficiency' which includes technology efficiency improvement targets *and* consideration of goals for cultural changes (in norms, values and behaviours) with respect to a range of everyday consumption practices.
- Immediate-term SCP policy actions should be accompanied by processes that are designed to set out long-term sustainable consumption goals. This would fit with trends for long-termism evident in other environmental governance spheres e.g. World Business Council for Sustainable Development's *Vision 2050: the New Agenda for Business*, and the EC's *Roadmap for Moving to a Competitive Low Carbon Economy in 2050*. In Ireland, the National Economic and Social Council has been assigned responsibility to outline a 'vision' of how Ireland can become a leader in the transition to a low carbon, resource efficient and climate resilient economy. This vision needs to move beyond a focus on the green economy to incorporate goals for sustainable consumption *and* socio-cultural changes to achieve real sustainability transitions.
- Behaviour-change interventions informed by practice theory have the potential to create greater change given the number of influences that interact to shape consumption routines. Strategies across public and private spheres aimed at inducing sustainable consumption must integrate educational and policy measures along with those that target the products we use and physical infrastructure to create more transformative and enduring behaviour change.
- Complement conventional change initiatives based on information provision, use of (dis) incentives, and infrastructure development with practice-oriented programmes at household

and organisational levels. Practice-oriented programmes integrate synergistic product, policy and educational interventions.

- Identify and discontinue state subsidies for unsustainable consumption practices in the public sector.
- Ring-fence support for sustainable consumption education and living initiatives from environmental taxation.
- Integrate the topic of, and teach the skills for, sustainable consumption in primary, secondary and tertiary curricula.
- Develop a catalogue of recommendations for businesses and public sector organisations to encourage sustainable consumption practices in their workplaces and distribute through IBEC, ISME and trade unions. This could elaborate and improve upon Green Business initiatives currently operational by the EPA.

8.4 Outputs

A detailed list of CONSENSUS outputs is available in Appendix 1. Output highlights include:

- Publications: Twenty-eight peer-reviewed publications produced by the CONSENSUS team up to 2013.
- Edited volume: *Challenging Consumption: pathways to a more sustainable future*, Published June 2014 by Routledge, London
- International presentations: Ninety oral papers and eight posters have been presented internationally up to 2013.
- CONSENSUS international conference: This dedicated CONSENSUS event hosted more than 20 distinguished speakers and in excess of 35 additional international attendees. Conference proceedings are available online, have been disseminated through informational networks (including the Sustainable Development Research Network and the Critical Geographers Forum) and featured in the *International Journal of Sustainability in Higher Education*. Recorded lectures from the conference have been uploaded to the EPA *YouTube* channel and viewed over 860 times.
- Governing tools: A catalogue of international best practice sustainable consumption models and a review of Ireland's progress in this field have been produced (see Section 2).
- Policy engagement: CONSENSUS team members have submitted recommendations for sustainable development, national transport, energy and water policies. Team members also participated in a review of climate change for NESC, with CONSENSUS findings referenced in the final report to government.
- Lifestyle Survey factsheets: Disseminated to over 250 relevant stakeholders; including advisory board members, local and national media and local authorities (see Section 3)
- Media communications: Numerous press releases and radio interviews relating to sustainable transport, mobilities and the overall CONSENSUS project have been conducted.
- Transition Frameworks: Three Transition Framework documents have been disseminated to 120 stakeholders (*c.*40 each for energy, water and food) and are also available online (see Sections 5–7).
- WaterWise Exhibit: Showcased in Dublin, New York and Canada, receiving more than 100,000 views from gallery visitors.
- Alternate results dissemination: CONSENSUS findings have also been communicated through a dedicated website and newsletter, online social media, SCRN, and the EPA SAFER portal. Team membership of international communication networks such as SPREAD, RESPONDER, SCORAI and the Global Network on Sustainable Lifestyles has further extended the dissemination of project results internationally.
- Extended communications and online dissemination: Redesigned public platform in the form of the new CONSENSUS website (launched November 2013), with seamless integration of CONSENSUS Twitter (1849 followers to date), LinkedIn, Pinterest, online blog and other social media activities. The new website has received over 947 visits to date (with an average viewing of 2.5 pages per visit), while additional articles

outlining the CONSENSUS research have also been published in *The Guardian*'s 'Sustainable Business' section and on the *Sustainable Brands* website. Combined, these two articles have been re-tweeted by over 140 people and posted to Facebook pages 135 times.

- Video short animations: Three innovative motion graphics have been produced based on the CONSENSUS research project methods and findings. Combined, these videos have been viewed 1,263 times to date.

8.5 Further Research

As a result of the research and analysis undertaken by the CONSENSUS project, several areas emerge that merit further investigation. These include:

- Longitudinal analysis of the participatory backcasting approach to explore longer-term impacts of the collaborative approach.
- Testing the suite of interventions and Promising Practices identified by CONSENSUS's washing, heating and eating work packages, to identify the restraints, challenges and opportunities that the interventions might face in real-life households. This would lead to the development of new product-development agendas for the commercial sector, as well as policy interventions, education and communications recommendations for wider societal and governing actors.
- Progressing ideas and interventions generated at the household level towards the creation of sustainable cities and regions.
- Probing the potential for ICT to facilitate transformations in everyday behaviour (for example, reducing waste or automating reactions in response to unsustainable behaviours in the home), de-mystify the human-technology interface to design more effective ICT for sustainable consumption and determine the likelihood of, barriers to and motivations for, uptake amongst consumers.
- Further detailed factor and segmentation analyses of the CONSENSUS large-scale dataset to establish and profile a set of sustainable lifestyle types to identify what practices certain groups are undertaking and what further behaviour changes they are (un)willing to undertake.
- Longitudinal research on (un)sustainable consumption practices across the life-course and their connections with key life events, focusing in particular on mobility milestones (e.g. purchase of first car) and biographies.
- Add basic resource-use indicators to future time-use surveys in the Republic of Ireland and Northern Ireland to measure the 'ecological footprint' of everyday practices.
- Consider how a practice-oriented approach to sustainable consumption governance could be coordinated across different scales (from local to global), along with the effects of inter-regional and international trends on household consumption patterns.

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Acronyms and Annotations

ADEME	French Environment and Energy Management Agency
DECC	Department of Energy and Climate Change
DEFRA	Department of the Environment, Food and Rural Affairs.
EC	European Commission
EEA	European Environment Agency
GHG	Greenhouse gas
ICT	Information and communications technologies
NI	Northern Ireland
NUI	National University of Ireland
OECD	Organisation for Economic Co-operation and Development
POP	Practice-oriented participatory
RoI	Republic of Ireland
SCP	Sustainable consumption and production
SCRN	Sustainable Consumption Research Network
STEI	Society-Technology-Environment-Interactions
TCD	Trinity College Dublin
UNEP	United Nations Environment Programme

Appendix 1 CONSENSUS Project Outputs, 2009–2013

Work Package 1 – Tools for Governing Sustainable Living

Dr Frances Fahy, Dr Jessica Pape

Publications

- Davies, A., Fahy, F., Rau. H. and Pape, J. (2010) 'Sustainable consumption: practices and governance', *Irish Geography*, 43 (1), p59–79.
- Pape, J., Rau, H., Fahy, F. And Davies, A. (2011) 'Developing policies and instruments for sustainable household consumption: Irish experiences and futures', *Journal of Consumer Policy* 34 (1), p25–42.
- Fahy, F. and Rau, H. (2013) 'Researching complex sustainability Issues: Reflections on current challenges and future developments' in Fahy, F. and Rau, H. (eds) *Methods of Sustainability Research in the Social Sciences*, London, SAGE.
- Rau, H. and Fahy, F. (2013) 'Sustainability research in the social sciences – concepts, methodologies and the challenge of interdisciplinarity' in Fahy, F. and Rau, H. (eds) *Methods of Sustainability Research in the Social Sciences*, London, SAGE.
- Davies, A., Fahy, F. and Rau, H. (2014) 'Introduction – Challenging Consumption' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future*, London, Routledge.
- Fahy, F., Doyle, R., Davies, A., Rau, H. and Pape, J. (2014) 'Situating sustainable consumption in a policy context' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future*, London, Routledge.
- Rau, H., Davies, A. and Fahy, F. (2014) 'Conclusion: Moving on: Promising pathways to a more sustainable future' in Davies, A.R., Fahy, F. and Rau, H (eds) *Challenging Consumption: pathways to a more sustainable future*, London, Routledge.

Edited Volumes

- Fahy, F. and Rau, H. (2013) *Methods of Sustainability Research in the Social Sciences*, London, SAGE.
- Davies, A.R., Fahy, F. and Rau, H. (2014) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.

Policy Reports

- Pape, J. and Fahy, F. (2010) 'Review of state of EU Directives on production and consumption and catalogue of international best practice models and tools for Quality of Life Proofing', *Interim Report*, September 2010 [online].http://www.consensus.ie/papers-reports/
- Pape, J. and Fahy, F. (2010) 'Measurement and evaluation of Ireland's progress regarding sustainable consumption policies', *Interim Report,* December 2010 [online] Available at http://erc.epa.ie/safer/iso19115/displayISO19115.jsp?isoID=147

Presentations

2009

- Rau, H. and Fahy, F. (2009) 'Sustainable consumption: concepts and cases', Policy Making: Implications for Innovation and Communities, ISSP Irish Social Sciences Summer School, National University of Ireland, Galway, 22–26 June 2009.
- Pape, J. (2009) 'ConsEnSus: consumption, environment and sustainability', 3rd Annual ECI Research Open Day, Environmental Change Institute, National University of Ireland, Galway, 24 June 2009.
- Pape, J. (2009) 'ConsEnSus: A cross-border household analysis of CONSumption, ENvironment and SUStainability in Ireland', Social Platform on Sustainable Lifestyles, Brussels, 20 October 2009.
- Fahy, F. and Pape, J. (2009) 'Introduction to ConsEnSus', ERC/ECI networking event, National University of Ireland, Galway, 16 December 2009.

2010

- Fahy, F. (2010) 'Geographies of sustainable consumption', Special Session, Conference of Irish Geographers, National University of Ireland, Maynooth, 1 May 2010.
- Davies, A. (2010) 'From sticks and stories to a practice-oriented approach: a reflection on shifting pathways of household consumption in Ireland', Conference of Irish Geographers, National University of Ireland, Maynooth, 1 May 2010.
- Fahy, F. (2010) 'Establishing collaborative partnerships for sustainable outcomes: the case of Galway 21', Conference of Irish Geographers, National University of Ireland, Maynooth, 1 May 2010.
- Pape, J. (2010) 'Developing policies and instruments for sustainable consumption: Irish experiences and futures', Conference of Irish Geographers, National University of Ireland, Maynooth, 1 May 2010.
- Pape, J. and Heisserer, B. (2010) 'Sustainable consumption: conceptualization of the term and evaluation of measurement tools', European Consortium for Political Research graduate conference, Dublin City University, 31 August 2010.

2011

- Rau, H. and Fahy, F. (2011) 'Sustainable consumption: policy and practice', ISSP post-doctoral research seminar, Innovation & Public Policy Module, National University of Ireland, Galway, 2 March 2011.
- Fahy, F. (2011) 'Exploring policies and instruments for sustainable household consumption in Ireland', Association of American Geographers Annual Meeting, Seattle, 11–18 April 2011.
- Fahy, F. and Rau, H. (2011) 'Conflict, compromise and ConsEnSus: Opportunities and challenges of policy relevance in sustainable consumption research', Sustainable Consumption Conference – Towards Action and Impact, Hamburg, Germany, 6–8 November 2011.

2013

- Rau, H. (2013) 'How Can we Change Attitudes to Climate Change?', Video-recorded conversation with Prof. Daniel Schrag (advisor to US President Obama) [online] Available at http://www.ryaninstitute.ie/education-outreach/visiting-speakers/, February 2013.
- Fahy, F. and Rau, H. (2013) 'Methods of sustainability research in the social sciences', Keynote Speech, ERDID 2013 Conference: Sustainability Research in the Social and Human Sciences, Quimper, France, April 2013 [Invited Keynote].
- Rau, H. and Fahy, F. (2013) 'Future consumption research priorities: Where to from here?' European Roundtable Discussion on Sustainable Consumption and Production ERSCP – EMSU 2013 Conference, Istanbul, Turkey, 5–7 June 2013.
- Davies, A.R. (2013) 'Creating space: Lessons from collaborative backcasting for sustainability learning', European Roundtable Discussion on Sustainable Consumption and Production ERSCP – EMSU 2013 Conference, Istanbul, Turkey, 5–7 June 2013.
- Davies, A.R. (2013) 'How to govern a city where everyone is a decision-maker', Panel discussion, Informed Cities Forum 2013 & InContext Final Conference: How to create space for change? Rediscovering the power of community, Berlin, Germany, 6–7June 2013.
- Fahy F. and Rau, H. (2013) 'Sustainability research – challenges, opportunities and dissemination strategies', School of People, Environment and Planning Seminar Series, Massey University, Palmerston North, New Zealand, September 2013.
- Fahy F. (2013) 'Trash talk – Exploring the social dimensions of waste', Public lecture, Palmerston North Library, New Zealand, 19 September 2013.
- Fahy F. (2013) 'Communicating sustainability research', Social Theory Seminar Series, School of Environmental Sciences, Victoria University, Wellington, New Zealand, October 2013.
- Fahy F. (2013) 'Communicating sustainability research', Centre for Sustainability, University of Otago, Dunedin, New Zealand, 21 November 2013.

Conference Chairing and Participation

- Rau, H. (2013) Participation in Climate Change workshop at NUI, Maynooth and The Climate Gathering at Burren Art College, February 2013.
- Fahy, F. (2013) Chair of international sustainable consumption workshop, Structural Prerequisites for Sustainable Societies and the Good Life, University of Muenster, Germany, March 2013.
- Fahy, F. (2013) Conference Chair, 45th Conference of Irish Geographers, Transformative Geographies: Critical Reflections on Environment, Sustainability and Governmentality, NUI Galway, 16–18 May.
- Fahy, F. (2013) Chair of session: 'Values and Visions' Sustainable Consumption Research Action Initiative (SCORAI) Workshop: Bridging Across Communities and Cultures Towards Sustainable Consumption, Bogazici University, Istanbul, Turkey, 4 June 2013.

CONSENSUS International Conference

The CONSENSUS International Conference, *'Challenging Consumption: Pathways to a More Sustainable Future',* was held in the NUI Galway, from the 18–20 May 2012.

Proceedings from the conference were disseminated through a number of informational networks and e-newsletters (for example, the CONSENSUS website and Twitter feed, the EPA, the Sustainable Development Research Network and the Critical Geographers Forum). The proceedings also featured in the *International Journal of Sustainability in Higher Education*, 4 (3).

- Devaney, L. (2013) 'Challenging Consumption: Pathways to a More Sustainable Future, CONSENSUS International Conference May 2012', [online] Available at: http://www.consensus.ie/papers-reports/

Team presentations at the event included:

- Davies, A. (2012) 'Introduction and Overview: CONSENSUS Project', CONSENSUS International Conference, National University of Ireland, Galway, 18–20 May 2012.
- Doyle, R. (2012) 'Envisioning future sustainable consumption practices: practice oriented, participatory backcasting in the CONSENSUS research project', CONSENSUS International Conference, National University of Ireland, Galway, 18–20 May 2012.
- Fahy, F. (2012) 'Challenges and opportunities for sustainable consumption in the Irish context', CONSENSUS International Conference, National University of Ireland, Galway, 18–20 May 2012.
- Rau, H. and Heisserer, B. (2012) 'Transport, Mobility and the sustainable consumption of Distance', CONSENSUS International Conference, National University of Ireland, Galway, 18–20 May 2012.

Poster Presentations

CONSENSUS team poster 'Challenging individual consumption patterns in Ireland, in the areas of energy, water, food and transport' was presented at several events including:

- At a visit of the Minister for Science, Technology and Innovation, Mr Conor Lenihan T.D, to NUI Galway, 1 October 2009.
- National Bike Week Launch Event, Galway, 18 June 2011.

Work Package 2 – Sustainable Living Survey

Dr Frances Fahy, Dr Mary Jo Lavelle

Publications

- Lavelle, M.J. (2013) 'Transitioning towards sustainable consumption: The importance of combining quality of life indicators with economic policy measures' in Hogan, M. (ed) Well-being in Ireland: Designing measures and implementing policies, NUI Galway, Galway.
- Lavelle, M.J. and Fahy, F. (2013) 'Unpacking the challenges of researching sustainable consumption and lifestyles' in Davies, A., Fahy, F. and Rau, H. (eds) Challenging Consumption: pathways to a more sustainable future, London, Routledge.

- Flannery, W., Fahy, F. and Lavelle, M.J. (under review) 'Expressed attitudes and reported behaviours towards water usage on the Island of Ireland', Environmental Policy and Planning (submitted).

PhD Thesis

- Lavelle, M.J. (2014) 'Towards sustainable consumption: An empirical investigation of attitudes and behaviours towards household consumption and sustainable lifestyles in Northern Ireland and the Republic of Ireland', unpublished thesis, National University of Ireland, Galway.

Book Review

- Lavelle, M.J. (2012) 'Material geographies of household sustainability' in Lane, R. and Gorman-Murray, A. (eds), *Irish Geography*, 45(1), p112–15 (Available at http://dx.doi.org/10.1080/00750778.2012.680723).

Presentations

2010

- Lavelle, M.J. (2010) 'Sustainable consumption: quality of life and standards of living', Social Sciences Research Centre Workshop on Sustainable Consumption, National University of Ireland, Galway, 26–27 March 2010.
- Lavelle, M.J. (2010) 'The examination of the attitudes and behaviours towards sustainable household consumption and sustainable lifestyles', Conference of Irish Geographers, National University of Ireland, Maynooth, 1 May 2010.

2011

- Lavelle, M.J. (2011) 'Exploring the barriers and motivations underlying sustainable lifestyles: a case study from Ireland', Association of American Geographers Conference, Seattle, 11–18 April 2011.
- Lavelle, M.J. and Fahy F. (2011) 'Exploring sustainable household consumption in Ireland: a comparative overview of urban-rural and cross cultural trends', 19th Annual Colloquium of the International Geographical Union Commission/ CSRS, National University of Ireland, Galway, 1–7 August 2011.
- Lavelle, M.J. (2011) 'Exploring the existing and emerging trends in domestic consumption behaviour: a case study from Ireland', Sustainable Consumption Conference – Towards Action and Impact, Hamburg, Germany, 6–8 November 2011.

2012

- Lavelle, M.J. (2012) 'Geographies of sustainable household consumption and sustainable lifestyles: a case study from Ireland', Association of American Geographers Conference, New York City, 24–28 February 2012.
- Lavelle, M.J. (2012) 'Shifting environmental policy focus: An exploration of sustainable lifestyles and social marketing techniques', Planning and Sustainability Research Cluster Day, National University of Ireland, Galway, 16 November 2012.

2013

- Lavelle, M.J. (2013) ''Living the Good Life'? A focus on sustainable consumption and quality of life on the island of Ireland', RGS Planning and Environment Research Group Workshop, University of Exeter, UK, 25–26 April 2013.
- Lavelle, M.J. (2013) 'Sustainable consumption and quality of life: A cross-border study from the island of Ireland', Research Seminar Series for Health Promotion Research Centre, National University of Ireland, Galway, 5 September 2013.
- Fahy, F. (2013) 'ConsEnSus – Consumption, environment and sustainability: exploring trends in sustainable household consumption in Ireland', Centre for Innovation, University of Otago, Dunedin, New Zealand, 22 November 2013.

Conference Session Chairing

- Lavelle, M.J. (2013) Chair of two sustainable consumption sessions, 'Charting new pathways towards sustainable consumption: Policy challenges and promising practice', Conference of Irish Geographers, NUI, Galway (16–18 May, 2013).
- Lavelle, M.J. (2013) Co-ordinator for 45th Conference of Irish Geographers' poster presentation session, Conference of Irish Geographers, NUI, Galway (16–18 May, 2013).

CONSENSUS Lifestyle Survey Factsheets

- Lavelle, M.J. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland (1) Methodology and profiling, National University of Ireland, Galway.
- Lavelle, M.J. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (2) Environmental concerns, National University of Ireland, Galway.
- Lavelle, M.J., Rau, H., Fahy, F., Heisserer, B. and Hynes, M. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (3) Transport, National University of Ireland, Galway.
- Lavelle, M.J., Carroll, B. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (4) Food consumption, National University of Ireland, Galway.
- Lavelle, M.J., Carroll, B. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (5) Food waste, National University of Ireland, Galway.
- Lavelle, M.J., Davies, A., Fahy, F. and Doyle, R. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (6) Water consumption, National University of Ireland, Galway.
- Lavelle, M.J., Davies, A., Fahy, F. and Doyle, R. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (7) Energy consumption, National University of Ireland, Galway.
- Lavelle, M.J. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (8) Information and Awareness, National University of Ireland, Galway.
- Lavelle, M.J. and Fahy, F. (2012) Consensus Lifestyle Survey – Report on public attitudes and behaviours towards sustainable consumption and sustainable lifestyles in Ireland: (9) Summary and conclusions, National University of Ireland, Galway.

Public Dissemination of Lifestyle Survey Findings

- *Irish Examiner* (2012) 'Water charge would significantly influence usage, survey finds', 8 March 2012.
- *Irish Times* (2012) 'Water charges will change our consumption habits, say 68%', 8 March 2012,
- *Irish Times* (2012) 'Bio-fuelling a self-sufficient society', *Irish Times Special Supplement*, p4, 10 July 2012.

Civic Engagement

- Lavelle, M.J. (2012) 'Behavioural geography research: sustainable household consumption', Geography in Practice: Introduction to Geographical Research at National University of Ireland, Galway, 9 May 2012.
- Lavelle, M.J. (2012) 'Human geography: exploring issues concerning household consumption behaviours', Geography Awareness Week Programme, National University of Ireland, Galway, 12 and 14 November 2012.

Social Media

- Lavelle, M.J. and Doyle, R. (2013) 'All-island survey on attitudes and behaviours towards sustainable living in Ireland', CONSENSUS Survey Info-graphic, Available at http://www.youtube.com/watch?v=0iRLHMgQ2HU&feature=share&list=PLZjaikyuqeXyvRZIYuuDCIdrqF4bp9Rqs&index=2&noredirect=1

Work Package 3 – Sustainable Transport

Dr Henrike Rau, Dr Barbara Heisserer, Dr Michael Hynes

Publications

- Rau, H. (2010) '(Im)mobility and Environment-Society Relations: Arguments for and against the "Mobilisation"' of Environmental Sociology' in Gross, M. and Heinrichs, H. (eds) *Environmental Sociology: European perspectives and interdisciplinary challenges*, Dordrecht, Springer, p237–53.
- Single-authored, peer-reviewed book chapter (in German) based on WP3 literature review and exploratory fieldwork:
  - Rau, H. (2011) 'Das "neue" Mobilitätsparadigma als Regulierungsansatz für die Wechselbeziehungen von Umwelt, Politik und Gesellschaft', in Bärlocher, B. and Kruse, S. (eds) *Natur und Gesellschaft: Gestaltung und Regulation der Natur-Gesellschaftsbeziehungen, Proceedings of the 6th NGU Conference 2009, Basel, Switzerland,* Basel, Gesowip, p93–128.
- Rau, H. (2011) 'The ties that bind? Rural (im) mobilities and the transformation of rural–urban relationships' in Hedberg, C. and do Carmo, R.M. (eds) *Translocal Ruralism: mobility and connectivity in European Rural Space*, Dordrecht, Springer, p35–54.
- Hynes, M. (2012) 'The Practices of Technology: putting society and technology in their place', *The International Journal of Technology, Knowledge and Society*, 8 (3), p37–54.
- Rau, H. and Vega, A. (2012) 'Spatial (im)mobility and accessibility in Ireland: implications for transport policy', *Growth and Change,* 43 (4), p667–97.
- Hynes, M. (2013) 'What's "smart' about working from home: telework and the sustainable consumption of distance in Ireland?' in Fowley, C., English, C. and Thouësny, S. (eds) *Internet Research, Theory, and Practice: Perspectives from Ireland*, Dublin, Research-publishing.net, p225–43.
- Rau, H. (2014) 'Part II: Moving – Section introduction and summary' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.
- Heisserer, B. (2014) 'Changing everyday commuting practices', in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.
- Hynes, M. (2014) 'Consuming distance or (all) consuming work? The Case of telework' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.
- Rau, H., Hynes, M. and Heisserer, B. (2014) 'Decision-making in turbulent times: Transport policy and governance during and after the "Celtic Tiger"', *Transport Policy* (submitted for peer review on 27 June 2014).
- Heisserer, B. and Rau, H. (forthcoming). Capturing the consumption of distance: A practice-theoretical investigation of everyday travel. Journal of Consumer Culture (submitted for peer review in November 2014).

PhD Theses

- Heisserer, B. (2013) 'Curbing the consumption of distance? A practice-theoretical investigation of an employer-based mobility management initiative to promote more sustainable commuting', unpublished thesis, National University of Ireland, Galway, Ireland (Available at: http://aran.library.nuigalway.ie/xmlui/handle/10379/3449)
- Hynes, M. (2013) 'Mobility matters: technology, telework and the (un)sustainable consumption of distance', unpublished thesis, National University of Ireland, Galway, Ireland (Available at: http://aran.library.nuigalway.ie/xmlui/handle/10379/3814)

Presentations

2008

- Rau, H. (2008) 'The road to sustainable transport? Rural transport programmes and policies in Ireland', Research Seminar Series 2008–9, Institute of Social Ecology, IFF, AAU Klagenfurt, Austria, 12 November 2008.

2009

- Rau, H. (2009) 'The ties that bind? (Im)mobilities and rural–urban relationships in Ireland', XXIII ESRS Congress, Vaasa, Finland; 17–21 August 2009.

2010

- Heisserer, B. and Hynes, M. (2010) 'Smart moves Galway', Earth Day at Thermo King, 22 April 2010.
- Heisserer, B. (2010) 'Changing travel behaviour?', Social Sciences Research Centre Workshop on Sustainable Consumption, National University of Ireland, Galway, 26–27 March 2010.
- Hynes, M. (2010) 'No silver bullets! The use of information communication technologies to promote more sustainable means of mobility and travel', Social Sciences Research Centre Workshop on Sustainable Consumption, National University of Ireland, Galway, 26–27 March 2010.
- Rau, H. (2010) 'Towards the sustainable consumption of distance? Mobility and transport policy in the Republic of Ireland', Sociological Association of Ireland Annual Conference, Queens University Belfast, 7–9 May 2010.
- Rau, H. (2010) 'Researching the "consumption of distance": Some methodological considerations', 2nd International Seminar Methodologies for Mobilities Research: Challenges and Innovations, University of Limerick, 24–25 May 2010.
- Heisserer, B. and Hynes, M. (2010) 'Changing travel behaviour?', Social Marketing Conference, National University of Ireland, Galway, 4 June 2010.
- Rau, H. (2010) '(Im)mobility and the consumption of distance: arguments for a "Mobility Turn"' in consumption research', International Sociological Association World Congress and RC24 Symposium, Gothenburg, Sweden, 11–17 July 2010.

2011

- Heisserer, B. (2011) 'Mobility practices in Ireland', Sociological Association of Ireland Postgraduate Conference, National University of Ireland, Galway, 5 February 2011.
- Hynes, M. (2011) 'Teleworking: location independent working', Sociological Association of Ireland Postgraduate Conference, National University of Ireland, Galway, 5 February 2011.
- Heisserer, B. (2011) 'Practicing mobility', Sociological Association of Ireland Annual Conference, University College Cork, 6–8 May 2011.
- Hynes, M. (2011) 'The practices of technology: putting society and technology in their place', Sociological Association of Ireland Annual Conference, University College Cork, 6–8 May 2011.
- Rau, H. (2011) 'It's about time: arguments for the "temporalisation"' of sustainability theory and practice', Sociological Association of Ireland Annual Conference, University College Cork, 6–8 May 2011.
- Heisserer, B. (2011) 'Physical mobility and the consumption of distance', Consumer 2011: Consumer behaviour for a sustainable future, 5th International Consumer Sciences Research Conference, University of Bonn, Germany, 18–20 July 2011.
- Heisserer, B. (2011) 'Commute in practice – is a practice approach fruitful for analysing commuting?', Sustainable Consumption – Towards Action and Impact, Hamburg, 6–8 November 2011.
- Heisserer, B. (2011) 'Practising mobility: an analysis of Irish commuting practices', Sociological Association of Ireland Postgraduate Conference, IT Sligo, 1–2 December 2011.

2012

- Rau, H. (2012) 'Decision-making in turbulent times: transport policy and governance in Ireland during and after the "Celtic Tiger"', Earth System Governance Conference, Lund, Sweden, 18–20 April 2012.
- Rau, H. (2012) 'Transport policy and governance in Ireland during and after the 'Celtic Tiger'', Ryan Institute 'Talks and Treats' series, National University of Ireland, Galway, 29 June 2012.
- Rau, H. (2012) 'Building the future we want? Participatory decision-making for sustainable transport infrastructure', keynote presentation, Infrastructure and Energy Panel, Green Shift, Blue Growth, Bright Future?, Ryan Institute Launch and Symposium, National University of Ireland, Galway, 10 July 2012.

2013

- Rau, H. (2013) 'Reconsidering the consumption of distance: promising policies and practices', Conference of Irish Geographers, National University of Ireland, Galway, 16–18 May 2013.
- Rau, H. (2013) 'Curbing the consumption of distance? From practice theory to the empirical investigation of everyday travel', Bridging across Communities and Cultures Towards Sustainable Consumption, SCORAI Europe workshop, Istanbul, Turkey, June 2013.
- Rau, H. (2013) 'Sustainable Transport: How a Galway company made the "Smart Move", 3rd National Smart Cities Summit, Croke Park, Dublin, 20 November 2013.

Poster Presentations

- Hynes, M. (2011) 'Teleworking: what are the key issues and concerns for people working from home?', SAP car-free day, Dublin, 26 August 2011.
- Hynes, M. (2012) 'The Practice of telework in Ireland and its sustainability credentials', Consensus International Conference, National University of Ireland, Galway, 18–20 May 2012.
- Heisserer, B., Hynes, M. and Rau, H. (2012) 'Smart moves – temporary shift or lasting change in how people travel to work?' Symposium 'Green Shift, Blue Growth, Bright Future?', Ryan Institute, NUIG, Galway, 6 July 2012.

Press Releases

- Press release highlighting WP3 work, *Galway Independent*, 29 September 2010
- Press release regarding the Smarter Movements Initiative of the CONSENSUS Project, National and Local (Galway) Media Outlets, National Bike Week, June 2011.
- Press release on teleworking, featured in *The Galway Advertiser* and led to subsequent radio interviews in September 2011 (including iRadio, Galway Bay FM, Flirt FM, Raidió na Gaeltachta, Mid-West Radio, Clare FM)

Civic Engagement

- Information stall at National Bike Week opening, Eyre Square, Galway, 18 June 2011.
- Participation in NUIG Cycle to Campus Day as part of National Bike Week, National University of Ireland, Galway, 20 June 2012 [including information stall, poster display and participation in NUIG-led think-tank on mobility management on campus and across Galway city]
- Henrike Rau joined Galway2040 group in 2012 (as a member of the Infrastructure and Environment pillar) and chaired various sessions at Infrastructure and Environment Symposium on 27 September 2013 in NUI, Galway (see: http://galway2040.ie/symposium/infrastructure-environment/)

Other/Impact

- A report on carpooling was produced and presented to staff in Digital Enterprise Research Institute:
  - Hynes, M. (2010) 'Carpooling in Ireland: Obstacles to Increasing Ridesharing', Digital Enterprise Research Institute (DERI), National University of Ireland, Galway,15 January 2010.
- Regular exchange and communication with Galway Transportation Unit (GTU), securing endorsement by Galway City and County Councils for project and supporting Galway's *Smarter Travel* bid (Phase 2).
- A website was developed for the 'Smart Moves Project', an initiative developed by Michael Hynes and Barbara Heisserer (www.smartermovement.org).
- Rau, H. (2012) Written submission to Galway Transport Forum via GTF website, January 2012.
- Henrike Rau and Frances Fahy – academic advisors for Galway University Sustainable Transport Options (GUSTO) project, funded under NUIG EXPLORE Initiative (http://www.su.nuigalway.ie/explore_projects/project/9/galway-university-sustainable-transport-options-gusto/)

Work Packages 4 and 5 – Sustainable Consumption: Heating and Washing

Prof Anna Davies, Dr Ruth Doyle

Publications

- Davies, A.R., Doyle, R. and Pape, J. (2011) 'Future visioning for sustainable household practices: spaces for sustainability learning?', *Area*, 44 (1), p54–60.
- Doyle, R. and Davies, A.R. (2013) 'Towards sustainable household consumption: exploring a practice oriented, participatory backcasting approach for sustainable home heating practices in Ireland', *Journal of Cleaner Production*, p260–71.
- Davies, A.R. and Doyle, R. (2015) 'Waterwise: extending civic engagements for co-creating washing futures', *ACME: An International E-Journal for Critical Geographies* (forthcoming).
- Davies, A.R. and Doyle, R. (2015) 'Shiftshaping: practice-oriented socio-ecological transformation in household consumption', *Annals of the Association of American Geographers, Special issue: 'Futures: Imagining socio-ecological transformations'* (forthcoming)
- Doyle, R. (2014) 'Future heating: thermal awareness and targeted heating practices' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.
- Doyle, R. (2014) 'Sustainable washing: adaptive practices and connecting with nature' in Davies, A.R., Fahy, F. and Rau, H (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.

PhD Thesis

- Doyle, R. (2013) 'Towards a future of sustainable consumption: A practice oriented, participatory backcasting approach for sustainable home heating and personal washing in Irish households', unpublished thesis, Trinity College Dublin, Ireland.

Presentations

2010

- Doyle, R. (2010) 'Shifting pathways of household consumption: Washing, heating and lighting practices in Irish households', Social Sciences Research Centre Workshop on Sustainable Consumption, National University of Ireland, Galway, 26–27 March 2010.
- Doyle, R. (2010) 'Sustainable consumption: shifting pathways of washing and heating practices in Irish households', Geography Postgraduate Research Symposium, Trinity College Dublin, April 2010.
- Doyle, R. (2010) 'The potential of backcasting for sustainable home water and energy use', Glencree Postgraduate Training Event, Wicklow, 5–7 February 2010.
- Doyle, R. (2010) 'Future visions for heating and washing practices in Irish households: A discussion of the methodological framework employed by the Consensus Research Project', Knowledge Collaboration and Learning for Sustainable Innovation conference, TU Delft, October 2010.

2011

- Doyle, R. (2011) 'Towards a future of sustainable energy and water consumption practices in Irish households: Designing system innovations using a participatory backcasting approach', Geography Postgraduate Research Symposium, Trinity College Dublin, 19 April 2011.
- Doyle, R. (2011) 'Sustainable water futures: the potential of visioning techniques for the design and exploration of system innovations for sustainable consumption practices in Irish households', Conference of Irish Geographers, Mary Immaculate College, Limerick, 5–7 May 2011.
- Davies, A., Doyle, R. and Pape, J. (2011) 'Future geographies: The place of visioning in developing strategies for more sustainable lifestyles, practices and places', Special Session [sponsored by the Planning and Environment Research Group], Royal Geographical Society Conference, London, 2 September 2011.

- Doyle. R. (2011) 'Future visions for sustainable personal washing practices in Irish households: Reviewing processes and results of vision generation, elaboration and assessment', Royal Geographical Society Conference, London, 2 September 2011.
- Doyle, R. (2011) 'WaterWise', International Surface Tension Symposium with GradCam, Science Gallery, 19 November 2011 [invited speaker].

2012

- Doyle, R. (2012) 'CONSENSUS: scenarios of future household water consumption', Technical Discussion Meeting of the International Association of Hydrogeologists, Geological Survey Ireland, Dublin, 6 March 2012 [invited presentation].
- Doyle, R. (2012) 'Navigating pathways towards a future of sustainable consumption: reflections on a participatory backcasting procedure for sustainable heating and washing practices in Irish households', Conference of Irish Geographers, Trinity College Dublin, 28 May 2012.
- Davies, A. (2012) 'EPA State of the Environment Launch', Environmental Protection Agency, Dublin, June 2012.
- Davies, A. (2012) 'Response to NESC Climate Change Policy Review', International Institute of European Affairs, Dublin, October 2012.
- Davies, A. (2012) 'Sustainable home heating practices', Greenhouse Gas Emissions Seminar, EPA, Science Gallery, Dublin, October 2012.

2013

- Davies, A.R. (2013) 'Waterwise: extending civic engagements for co-creating washing futures', Conference of Irish Geographers, National University of Ireland, Galway, May 2013.
- Doyle, R. (2013) 'Future Wash: Exploring new norms, procedures and technologies for sustainable washing practices through a backcasting approach', SCORAI International Conference, The Future of Consumerism and Well-Being in a World of Ecological Constraints, Clark University, Worcester, Massachusetts, USA, June 2013.
- Doyle, R. (2013) 'Intervening in everyday consumption practices: translating future washing visions in a Living Labs experiment', Seminar series: Department of Environmental Science, Policy and Management, University of California, Berkeley, November 2013.
- Davies, A.R. (2013) 'WaterWise: the importance of water in our world, ECOUNESCO Youth EcoForum: Young Citizens for Water', Dublin, 28–29 November 2013.

Poster Presentations

- Doyle, R. (2010) 'CONSENSUS: backcasting for sustainable home energy and water use', Environmental Protections Agency 8th Annual Fellowships and Scholarships Seminar, Dublin, 10 November 2010 [Winner of best poster award]
- Davies, A. (2012) '"Waterwise" – washing futures in civic geographies: securing geography in civic life', Exhibition and Panel Session, Royal Geographical Society Conference, Edinburgh, July 2012.

Transition Documents

- Doyle, R. and Davies, A. (2012) 'Transition Framework: Towards Future Practices of Sustainable Home Heating', Trinity College Dublin, Ireland.
- Doyle, R. and Davies, A. (2012) 'Transition Framework: Towards Future Practices of Sustainable Personal Washing', Trinity College Dublin, Ireland.

Backcasting Guidelines

- Davies, A. and Doyle, R. (2013) 'Consensus Backcasting Guidelines' [online]. Available at http://www.consensus.ie/wp/wp-content/uploads/2013/10/Consensus-backcasting-guidelines_F01.pdf

Civic Engagement

- Doyle, R. and Davies, A. (2011) 'Waterwise' Exhibit, Future of Water Exhibition, Science Gallery, Dublin [October 2011 – January 2012]
- Mentioned in the journal 'Nature', this exhibit also travelled to the New York Eyebeam Art + Technology Center as part of the World

Science Festival (30 May–11 August 2012) and 'The Museum' in Kitchner, Ontario later in 2013 (http://www.themuseum.ca/)

- Doyle, R. (2011) 'Surface Tension – Waterwise: Washing Futures', *YouTube* video [online]. Available at http://www.youtube.com/watch?V=5vkbh_bxthm
- Davies, A. and Doyle, R. (2012) 'Sustainable futures and household water usage' [online blog]. Available at http://blog.geographydirections.com/2012/01/09/sustainable-futures-and-household-water-usage/
- Doyle, R. (212) 'Water Use Ireland' [online blog] http://wateruseireland.posterous.com/ (1190 hits) active 2009-2013
- Doyle, R. (2013) 'Why understanding the forces behind social practices could change behaviour', *The Guardian*, 'Sustainable Business' section, 11 December 2013 [online]. Available at http://www.theguardian.com/sustainable-business/behavioural-insights/understanding-social-practices-change-behaviour
- Doyle, R. (2013) 'From behavior change to transforming everyday practices: The latest in behavioral science', Sustainable Brands, 4 December 2013 [online]. Available at: http://www.sustainablebrands.com/news_and_views/behavior_change/ruth-doyle/behavior-change-transforming-everyday-practices-latest-beh

Other/Impact

- Ruth Doyle was selected as one of 15 Climate Advocates for Ireland/Northern Ireland on the British Council's Challenge Europe programme. Working in collaboration with another Advocate, Ruth designed the 'Hot or Not' research and awareness campaign (engaging 1700 survey participants) which was strongly informed by the findings and theory used in CONSENSUS research.
- Ruth Doyle reached the 2nd stage of the Globe Forum Early Career Researchers competition and was selected as one of the top 15 candidates in the competition in Ireland.
- Ruth Doyle was one of three researchers awarded by the TCD Innovation Alliance for achievement in the Globe Forum Early Career Competition, March 2011.
- Ruth Doyle and Anna Davies made submissions on behalf of CONSENSUS in response to national consultation calls on the following:
  - 'Consultation on the Establishment of a Public Water Utility and the Future Funding of Water Services in Ireland', February 2012.
  - 'A Framework for Sustainable Development in Ireland', March 2012.
- Ruth Doyle – invited expert at SPREAD Sustainable Lifestyles 2050 workshop (21– 23 September 2011) in Milan, Italy. Following attendance at the SPREAD launch conference (24–25 May 2011) Ruth Doyle was one of 30 invited experts to this follow-up 'Visioning' workshop in Milan.
- Ruth Doyle participated at the RESPONDER 'Knowledge Brokerage' event on Green ICT and Sustainable Consumption in Vienna, January 2013.
- Ruth Doyle and Anna Davies – *EcoEye* Filming for RTE – including sustainable washing and heating futures segment drawing on WPs 4 and 5 of the CONSENSUS project, September 2013.

Work Package 6 – Sustainable Consumption: Food

Prof. Anna Davies, Dr Jessica Pape, Dr Laura Devaney

Publications

- Davies, A.R. (2013) 'Food futures: Co-designing sustainable eating practices for 2050', *Eurochoices*, *Agricultural and Food Economics,* 12 (2), p4–11.
- Davies, A., Devaney, L. and Pape, J. (2014) 'Sustainable eating: visions, practices and the role of technology' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.
- Davies, A. (2014) 'Part III; Dwelling introduction and summary' in Davies, A.R., Fahy, F. and Rau, H. (eds) *Challenging Consumption: pathways to a more sustainable future,* London, Routledge.
- Davies, A.R. (2014) 'Co-creating sustainable eating futures: technology, ICT and citizen-consumer ambivalence', *Futures: The journal of policy, planning and futures studies* 62 (B), p181–93.

Presentations

2011

- Fahy, F. and Rau, H. (2011) 'Introducing sustainable food production and consumption', 7th Social Sciences Research Centre workshop, National University of Ireland, Galway, 25–26 March 2011.
- Pape, J. (2011) 'Sustainable food consumption in Ireland: applying "visioning" methods to develop creative solutions for 2050', 7th Social Sciences Research Centre Workshop, Society, Culture and the Environment, National University of Ireland, Galway, 25–26 March 2011.
- Pape, J. (2011) 'Sustainable food consumption in Ireland: Challenges and opportunities', Workshop on Sustainable Lifestyles and Life-courses, The University of Northampton, UK, 20 April 2011.
- Pape, J. (2011) 'Sustainable food consumption in Ireland: Challenges and opportunities', Sustainable Consumption Conference – Towards Action and Impact, Hamburg, Germany, 6–8 November 2011.
- Davies, A. (2011) 'Kitchen stories: imagining eating practices in 2050', Association of Agricultural Economics Society of Ireland Annual Conference, Teagasc Conference Centre, Dublin, 24 November 2011 [Keynote presentation]
- Davies, A. (2011) 'Kitchen stories: ICT and imagined eating practices in 2050', ICT and Urban Food Futures Conference, Oxford Internet Institute, University of Oxford, December 2011.

2012

- Davies, A. (2012) 'Urban food futures', Conference of Irish Geographers, Trinity College Dublin, 28 May 2012.

2013

- Davies, A.R. (2013) 'Guiding good food: potentials and pitfalls in the pursuit of the good life and sustainable eating practices', Structural Prerequisites for Sustainable Societies and the Good Life, University of Muenster, Germany, March 2013.
- Devaney, L. (2013) 'Food politics: What are we putting on our plates and why?', Invited panellist, TCD Green Week Debate, Paccar Theatre, Science Gallery, Trinity College Dublin, 21 February 2013.
- Devaney, L. (2013) 'Food risk governance in Ireland: consumer connectivity, perceptions and awareness in everyday contexts', Conference of Irish Geographers, National University of Ireland, Galway, 17 May 2013.
- Devaney, L. (2013) 'Geographies of food risk governance in Ireland: performance, power and constraints', 12th ASEFUAN Conference, Feeding Asia and Europe in the 21st Century: Cooperation and Challenges in Food Safety, Security and Sustainability, Long Room Hub, Trinity College Dublin, 7 August 2013 [invited speaker and panellist].
- Devaney, L. (2013) 'Food risk governance in Ireland', Food Safety Professionals Association Annual Conference 2013, Royal Hospital Kilmainham, Dublin, 15 November 2013.
  - For related news coverage see: http://www.fspa.ie/gallery-details.php?ID=18 and http://www.cameo.ie/news-dtl.php?item=222
- Davies, A.R. (2013) 'Challenges in food consumption practices in 2050: Transitions towards sustainable eating', OECD Workshop on long-term scenarios for food and agriculture, OECD, Paris, 3–4 December 2013.

Poster Presentations

- Pape, J. (2012) 'Sustainable Food Consumption', Consensus International Conference, National University of Ireland, Galway, 18–20 May 2012.

Transition Document

- Pape, J. and Davies, A. (2012) 'Transition Framework: Towards Future Practices of Sustainable Food', Trinity College Dublin, Ireland.

Other/Impact

- Jessica Pape reached the second stage of the Globe Forum Early Career Researchers competition and was selected as one of the top 15 candidates.
- Laura Devaney participated at RESPONDER 'Knowledge Brokerage' event on Sustainable Food Consumption in Lisbon, April 2013.
- Laura Devaney – *EcoEye* Filming for RTE – including sustainable food futures segment drawing on WP6 of the CONSENSUS project, September 2013 (aired January 2014).

Work Package 7 – Project Management and Coordination

Prof. Anna Davies, Dr Frances Fahy, Dr Henrike Rau, Dr Jessica Pape

Online Outputs, Newsletter and Social Media

- Seven keynote lectures and panel discussions were recorded and are available for viewing on the EPA *YouTube* channel: http://www.youtube.com/watch?v=jyHQLxiuksM&list=PLFesobj_WT1Fh1R--638HySY0dgU-xf54J. To date, these videos have been viewed over 860 times.
- CONSENSUS website www.consensus.ie
  - Established in 2009, the website is used as a platform for further networking and research dissemination (see http://www.consensus.ie/scrn.html).
  - CONSENSUS presentations from various national and international conferences can also be downloaded on the project website (see http://www.consensus.ie/events.html)
  - The website was re-designed and re-launched in November 2013 as part of an ongoing research communication strategy, and contains CONSENSUS's latest research documents, publications and a regularly updated blog.
- SAFER database was set up on the EPA homepage, allowing for regular uploading of project information.
- Sustainable Consumption Research Network (SCRN): established in 2009 on www.linkedin.com to communicate CONSENSUS related events and news.
- CONSENSUS Newsletter: A newsletter on the CONSENSUS Project (news and events) and related research has been distributed on a regular basis since May 2010 to all SCRN members.
- The CONSENSUS project also has a presence on Twitter: http://twitter.com/#!/ConsensusIre (currently 1849 followers) and its own, regularly updated, blogroll: http://www.consensus.ie/blog/

Extended Communications and Results Dissemination

- To accompany the website re-launch, a set of innovative, two-minute video animations were produced on the research (available at: http://www.youtube.com/watch?v=QJC2GtM56rc&feature=share&list=PLZjaikyuqeXyvRZIYuuDCIdrqF4bp9Rqs).
  - The first animation provides an overview of CONSENSUS's research on sustainable food, transport, energy and water consumption.
  - A second animation describes CONSENSUS's collaborative visioning process that re-imagined how we might carry out our daily eating, washing and heating practices in the future.
  - Thirdly, an animated infographic completes the video set, depicting key results from CONSENSUS's all-Ireland survey of 1,500 households on sustainable consumption.
  - Visit http://www.consensus.ie/

EPA Technical Progress Reports

- Nine technical and eight financial reports were submitted to the EPA.

Press Releases

- Submission of project information for *GeoNews* (October 2009).
- A Press Release on the CONSENSUS project was prepared and published in the *Galway City Tribune* on 23 October 23, 2009 and on the front page of NUI *Galway Research News*.
- CONSENSUS project featured in the TCD Research Newsletter 2010 (9th edn).
- Feature on the CONSENSUS project was included in a SCORAI Newsletter 2010.
- *Galway Advertiser* (2012) Local newspaper articles dedicated to CONSENSUS.
- Articles in national environmental and policy magazines: *Enviro-solutions*, February 2012 and May 2012.
- Interviews and news coverage on local radio: Hourly news and Keith Finnegan Show, Galway Bay FM, 15 May 2012.

Civic Engagement

- Fahy, F. (2011) 'Sustainable consumption research', Green Drinks Evening, Kelly's Bar, Galway City, May 2011 [invited speaker].
- Frances Fahy, Mary Jo Lavelle and Henrike Rau research tent on Eyre Square on Saturday 18 June 2011.
- Frances Fahy – Teaching and coordination of a third-level course entitled 'Geographies of Sustainable Consumption (TI343); a third-year undergraduate course in Geography, NUI Galway. In the 2010–11 academic year approx. 110 students undertook this course, in 2011–2012 95 students were enrolled and in 2012–2013, 87 students took this course.
- Henrike Rau and Anna Davies – incorporation of CONSENSUS findings into teaching modules also, including within third- and fourth-year environmental governance courses in TCD and Masters classes in Environmental Policy.

Event Organisation

- Geography Department Seminar Series, National University of Ireland, Galway, 25 March 2010 (Frances Fahy)
  - Guest speaker Michael Goodman (King's College London)
- Social Sciences Research Centre annual lecture, National University of Ireland, Galway, 18 June 2010 (Henrike Rau)
  - Guest speaker Juliet Schor (Boston College, USA).
- Rau, H. (2011) ''We Are What We (Do Not) Eat': Linking Food Production and Consumption', Social Sciences Research Centre workshop, Society, Culture and the Environment, 25–26 March 2011 [organised workshop].
- Fahy, F. (2012) 'Planning and Sustainability Research Cluster Day', NUI, Galway, 16 November 2012 [organised event].

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CONSENSUS: Consumption, Environment and Sustainability

epa Research
Climate - Water - Sustainability
Identifying pressures • Informing policy • Developing solutions

CONSENSUS: A cross-border household analysis of CONSumption, ENvironment and SUStainability in Ireland

This research examines four key areas of household consumption that currently impact negatively on the environment and inhibit our ability, both in Northern Ireland and the Republic, to achieve sustainable development: transport, energy, water and food.

Identifying pressures:

Unsustainable consumption underpins many of the most significant global challenges facing contemporary society, from humanly induced climate change to global biodiversity loss. Population growth and an expanding global middle-class which is demanding more material goods exacerbate these challenges. Increasing awareness of impending resource scarcity, the negative by-products of consumption and the diminishing returns, in terms of improving quality of life, from excessive consumption are driving greater attention to innovations for more sustainable consumption.

Informing policy:

Greater understanding of why many people consume unsustainably is an essential prerequisite for building appropriately formed and co-ordinated policy to enable more sustainable consumption. Such understanding needs to be developed across different spaces of consumption and spheres of governance, recognising that consumption is influenced by many factors including but also beyond individual attitudes and values. This project has made a valuable contribution to that process.

Developing solutions:

This report outlines the insights gained from foundational and exploratory research in relation to household consumption detailing international good practice and tools for governing that may enable consumption to become more sustainable. Novel methods and approaches are outlined which support more collaborative and co-produced transdisciplinary action for attacking the complex dimensions of transforming consumption.

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