

Applying interlinked practices to enhance the effectiveness of net zero policymaking in Scotland

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1 Executive summary

1.1 Aims

The concept of interlinked practices (Black and Eiseman 2019) views lifestyles as a network of interrelated practices consisting of competencies (knowledge, skills), materials (objects, infrastructure) and meaning (expectations, shared meaning). The authors suggested that these practices could provide the targets of interventions aiming to change unsustainable behaviours or parts of them.

The aim of this research was to explore how the Scottish Government can apply the concept of interlinked practices to improve net zero policy development and enact societal change. The ultimate aim of interlinked practices is to identify some critical shared elements that can be changed to catalyse greater societal change across a range of behaviours.

1.2 Findings

During the early stages of this study, we found that the interlinked practices concept (Black and Eisemann, 2019) is untested and theoretical in terms of policy development and implementation. Therefore, this project focused on research with Scottish Government staff and external stakeholders, including a literature and evidence review, interviews, exploratory and testing workshops, and a mapping exercise.

- We have identified policy interdependencies and interlinked practices in the following sectors: Transport, Agriculture and Land Use Change and Forestry (LULUCF), Waste and Circular Economy, and Buildings. These are key pillars of the Climate Change Plan (CCP) and have significant powers devolved to the Scottish Government. These sectors have practice-based elements, and are crucial in making progress towards net zero targets in key areas.
- Interlinked practices can help to reframe a behaviour problem and help policymakers and practitioners work towards positive societal shift. However, the end point of using social practice related tools is to identify the factors influencing behaviours or practices rather than to prescribe a policy or intervention.

- Of the three social practice elements, material and competencies were often considered in policy development, but meaning was not.
- An interlinked practices approach could be beneficial, but policymakers would need support with developing and implementing it.

1.3 Recommendations for implementation

1. **Using existing tools:** A low-cost gateway for Scottish Government policy teams to consider how practices are interlinked across sectors and other organisations could be using tools such as the individual, social and material (ISM) tool, Place Standard with a climate lens, or 20-minute neighbourhoods concept.
2. **Early adopters:** CCP sectors that could be early adopters of an interlinked practices approach to net zero policy development are Transport and Waste and Circular Economy. These have significant powers devolved to the Scottish Government, have practice-based elements that need to make progress towards net zero targets in key areas (Scottish Government, 2022; Climate Change Committee, 2022) and already have interlinked practices.
Other sectors, such as Agriculture and LULUCF and Buildings, have all of these elements, but we did not find interlinked practices. These other sectors could consider interlinked practices after the mapping work in recommendation 4.
3. **Local level:** Apply a place-based lens to consider how practices interlink at a local level. This could be done as part of place-based engagement and testing, as interlinked practices are likely to vary depending on place (eg trip chaining in an urban setting is likely to differ from that in a rural setting).
4. **Mapping from the start:** Research with expert practitioners, citizens, communities, regulators, policymakers and businesses can help identify and map how practices interlink at the start of a policymaking process in each of the CCP sectors, and which of these should be prioritised in terms of delivering significant emission reductions.
5. **Time and resources:** Using, monitoring, evaluating and promoting the tools mentioned here requires time and resources from the team responsible for supporting sector teams, eg the Behaviours team, and from the sector staff.
6. **Case studies:** Case studies to share learning across the Scottish Government could be developed of policies/strategies that have used social practice theory and considered interlinked practices, such as the 'Routemap to achieve a 20 per cent reduction in car kilometres by 2030' (Transport Scotland, 2022) and Home Energy Efficiency Programmes for Scotland (Scottish Government, 2019) or provided a framework for consideration of these, such as 20-minute neighbourhoods and the Place Principle (Scottish Government, 2019).
7. **Guide:** A facilitator could use the flowchart in figure 5 as part of a suite of support measures for policymakers, to help understand how and when to use interlinked practices.
8. **Plain English:** Social practice theory can be challenging to comprehend. Plain English needs to be used when discussing these.

This report was co-produced with the Scottish Government and ClimateXChange client steering group.

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2 Introduction

Previous research for ClimateXChange has introduced the concept of interlinked practices (Black and Eiseman 2019). This views lifestyles as a network of interrelated practices consisting of competencies (knowledge, skills), materials (objects, infrastructure) and meaning (expectations, shared meaning). The authors suggested that these practices could provide the targets of interventions aiming to change unsustainable practices (or parts of them).

An interlinked practices lens could therefore be more effective at guiding the interventions required to achieve Scotland's net zero target than an individual behaviour change approach.

The aim of this research by CAG Consultants is to answer the question: 'How can the Scottish Government apply the concept of interlinked practices to improve net zero policy development and enact societal change?'

There were three main objectives of the research:

1. To identify the interlinked practices of most relevance for the Scottish Government's next Climate Change Plan, including any policy interdependencies with the greatest positive influence on the societal shift to net zero.
2. To assess the feasibility of translating the concept of interlinked practices into a practical approach able to inform the development of the Climate Change Plan.
3. Evaluate the benefits and limitations of applying the interlinked practices lens to the next Climate Change Plan.

According to the Climate Change Committee (2020) over 60% of the emissions reductions needed to meet net zero require societal change. These emissions cannot be achieved solely through supply-side policy such as decarbonising the electricity grid or improving energy efficiency standards of items we purchase and use.

Individuals, households, communities and organisations will have to replace or substitute the high emission ways they perform practices in their lives with low/zero emission practices. This is a significant and transformative shift that society needs to make at pace and as affordably and inclusively as possible. It requires a new way of making policy and of engaging with people. The research examines if interlinked practices could play a role in this in a Scottish policy context.

2.1 Theories informing the research

2.1.1 Social practice theory

It is acknowledged that if we focus purely on individual behaviour, the wider societal change required to achieve net zero will not happen. To get transformative change, the focus needs to be on social practice change and technological change (Environment and Climate Change Committee, 2022).

Social practice theory is a well-developed research field. The theory moves beyond traditional framings of behaviour change as primarily a product of individual choice or

rational decision-making, by suggesting that our daily lives are better understood as the performance of a series of social practices. Social practices are performed and reinforced in society through the combination of three elements, shown in figure 1:

- **Material:** the materials needed are accessible (eg having a bike and safe cycle routes)
- **Competence:** the person is able to engage in the behaviour (eg they know how to ride a bike safely)
- **Meaning:** it fits within social norms and within the person’s schedule (eg riding is an acceptable way to commute to work and I can get there on time).

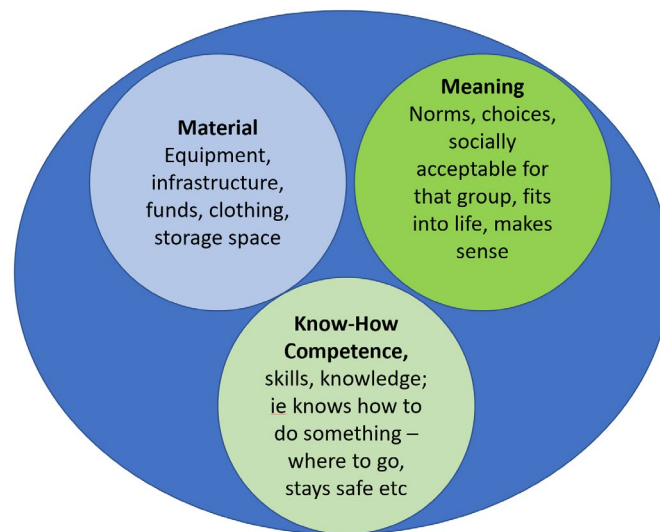


Figure 1: The three elements that compose social practices

Social practice theory also recognises people’s agency; that the collective performance of practices alters social structures, social norms and effects change through infrastructure improvements or demand for services. Similarly, social and physical structures can reinforce practices. This is how to achieve societal change (Shove et al. 2012) and is illustrated in figure 2.

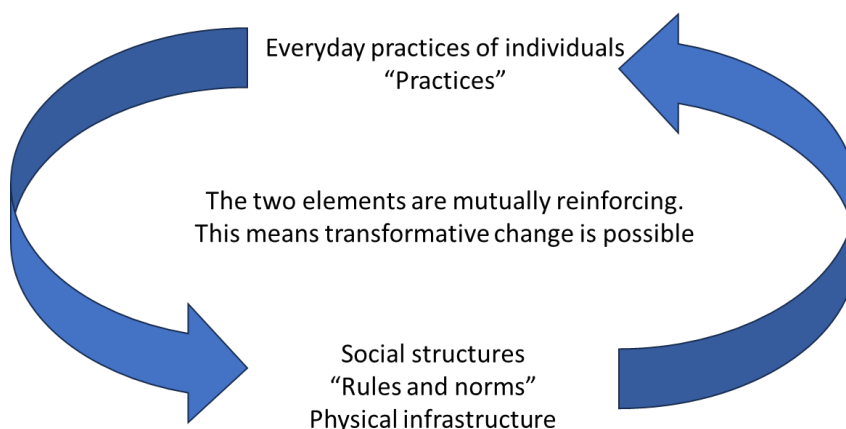


Figure 2: Social practice (image based on Conquer Imagination, 2020)

While social practice theory has been written about extensively in academic papers, it should be noted that there are few real-world examples of social practice being used in policy development.

2.1.2 Interlinked practices

Interlinked practices is a concept developed by Black and Eiseman (2019) in a report for ClimateXChange. This concept was informed by social practice theory, including Shove et al (2012) who explore how practices link to and shape each other, and Spurling et al (2013) who explore interlocking practices and the role that infrastructure plays in this.

An interlinked practices approach recognises the complexity of our lifestyles and requires greater consideration of multiple practices. Black and Eiseman (2019) argue that, because many practices are carried out in sequence in people's lives, when trying to change how one activity is performed, other linked practices need to be considered. For instance, when trying to transition from commuting by car to commuting by bicycle or bus, a person considers how that affects picking up children after school, or doing the shopping on the way home. They ask if: it is safe to cycle with the children; there is time; the bus goes near the school and workplace; the bus service is reliable; it is possible to carry all the shopping.

An interlinked practices approach is intended to move away from a behaviour change approach with the onus on the individual to change their behaviour almost regardless of how easy or difficult this is to do.

The approach aims to map out how complex sets of interrelated actions can be addressed holistically by identifying the common elements that link practices. For this, it uses categories of material, meaning and competence, to then identify changes that need to be made to these elements (eg in structures, institutions, regulations, services) to enable people to live lower emissions lives. The ultimate aim of interlinked practices is to identify some critical shared elements that can be changed to catalyse greater societal change across a range of behaviours.

A nine-step guide was developed by Black and Eiseman (2019), outlining how interlinked practice concepts might be implemented in a checklist/workshop approach. However, it is untested to date, and there is just one incomplete example provided in their report.

2.1.3 Reframing behaviour change

Reflecting on how practices are interlinked enables identification of opportunities or constraints that can impact uptake of net zero practices. There is evidence of limitations with interventions targeted solely at motivating the individual to act, as there are many barriers that block *intention* to act from being converted into action (Black and Eiseman, 2019). These barriers include social norms (eg not cycling to work because you do not think it is acceptable to turn up to work sweaty) as well as lack of available infrastructure (eg lack of safe routes for cycling and secure bike parking). Furthermore, the interlinkages with other daily practices may also pose some challenges (eg taking children to nursery on the way to work) (ibid).

By adopting a traditional behaviour change approach, climate change policy has often focussed on individuals and their choices, and often involves using campaigns to raise

awareness and change attitudes (United Nations, 2022; Shove, 2011), so that people might make more sustainable choices. Social practice theory moves beyond focusing on influencing individual decision-making by suggesting that the right combination of elements (shown in Figure 1 above) must be in place for a person to engage in certain practices.

With daily social practices, people rarely choose to consume resources such as water or energy, nor do they often consider the consequences of this everyday action. Rather, the resources are used within these practices, such as cleaning, showering or cooking to achieve certain ends, for example feeding the family or getting ready for work (Hoolohan et al., 2018).

Many unsustainable routines remain unaffected by interventions that seek to change them, perhaps as a result of lock-in. The more people participate in unsustainable practices and the more regularly they do so, the stronger the lock-in (ibid.). An example of this lock-in is car reliance, whereby our norms of car use mean we may live far from places of work or education for example, meaning it is normal to expect people to drive to work and school. Or we may undertake many interlinked practices in our day, such as picking up the shopping on the way back from work, and so our car use becomes locked-in.

According to Black and Eiseman (2019), the rationale for an interlinked practices approach is that lifestyles are complex and achieving the more ambitious changes needed to reach net zero will require greater consideration of both behaviours and practices. This needs to include greater consideration of social and material influences on behaviour, not just a focus on the aspects of an individual's behaviour.

3 Methodology

3.1 Approach

The research used a mixed methodology approach, summarised in table 1. The process has been an iterative one, co-produced with the project steering group. Findings from each stage of the research informed the subsequent stages. The detailed methodology is in Appendix 1.

Stage	Aim	Method
Scoping	To understand what literature and evidence there was on Interlinked Practices and explore what the opportunities and obstacles might be for applying an Interlinked Practices approach to the development of the next Climate Change Plan.	<p>Background research conducted:</p> <ul style="list-style-type: none"> to provide an understanding of the latest research on the practical application of a practice-based approach to behaviour change policy and identify key elements that feature in interlinked policy/practices that will inform the practical application of using the concept in policymaking. to assess key areas/sectors the Scottish Government is seeking and has power to influence in relation to the application of interlinked practices for a net zero transition in Scotland. <p>Tasks</p> <p>Literature and evidence review, including: review of social practice and interlinked practices literature , and review of relevant Scottish Government Policy . (The full literature and evidence review can be found in Appendix 2)</p> <ul style="list-style-type: none"> Interviews with social practice theory specialists and policy practitioners
	To investigate whether an Interlinked Practice approach could help develop more effective policies to deliver the societal change/social	<p>Exploratory workshops with Scottish Government sector/cross cutting team representatives and external stakeholders to explore:</p> <ul style="list-style-type: none"> existing understanding and use of social practice theory and interlinked practices in policymaking. opportunities and barriers for the Scottish Government to influence interlinked practices through policies and proposals for the next CCP.

Stage	Aim	Method
	cultural change needed to achieve net zero	<ul style="list-style-type: none"> • how theories, principles and models can be used in developing the next Climate Change Plan • the pros and cons of using practice-based approaches Tasks <ul style="list-style-type: none"> • Online workshops
Mapping	To identify, where possible, which policy interdependencies and interlinked practices, if any, could be of most relevance to the next Climate Change Plan.	<p>Categorising and mapping, informed by the scoping work, this mapping included the different sectors used in the Climate Change Plan, considering the UK Climate Change Committee’s four progress monitoring elements:</p> <ul style="list-style-type: none"> (i) outcomes (ii) enablers (iii) policy (iv) contextual factors as well as progress data from the Scottish Government’s Climate Change Plan monitoring report. <p>Task</p> Desk-based, online mapping
Testing	To explore and test processes for identifying/developing an interlinked practices approach for the Climate Change Plan.	<p>Testing workshops with Scottish Government sector and cross cutting team representatives and external stakeholders.</p> Using either a newly-developed flowchart or the existing Change Points approach, workshops tested applying a social practice theory, ILP concept and policy dependencies journey to real-life sector specific or spatial policy-making challenges. The challenges included home heating infrastructure retrofit, reducing car use by 20%, 20-minute neighbourhoods and reducing emissions from livestock production <p>Task</p> Online workshops
Examining	To review and analyse research data/evidence to answer the research questions	<p>Analysis of research data collected through the literature and data review (Appendix 2), exploratory workshops, mapping summary (Appendix 3) and testing workshops.</p> Analysis addressed the three research aims:

Stage	Aim	Method
		<ol style="list-style-type: none"> 1. Identify the interlinked practices of most relevance for the Scottish Government's next Climate Change Plan; including any policy interdependencies with the greatest positive influence on the societal shift to net zero. 2. Assess the feasibility of translating the concept of 'interlinked practices' into a practical approach able to inform the development of the Climate Change Plan in a way which will positively influence interlinked practices, and link policy development and implementation to enhance uptake, spill overs and increase emissions reductions. 3. Evaluate the benefits and limitations of applying the interlinked practices lens to the next Climate Change Plan

Table 1: Summary of research methodology

3.2 Limitations

There was a lack of evidence and case studies on the effectiveness of a social practice theory and interlinked practice approach being used in policy-making. Research findings are therefore heavily based on primary research through workshops with sector policy staff.

Not all Climate Change Plan sector leads were available for interview or involvement in the workshops. It was therefore not possible to gather contributions on developing an interlinked practices approach for the Climate Change Plan from all sector teams.

The number of participants contributing to the research through interviews and workshops is relatively small, so contributions provided may not reflect all views across the Scottish Government or stakeholder organisations.

4 Mapping policy interdependencies and interlinked practices

The mapping work identified some policy interdependencies, as described in section 4.1, but analysis top-down, starting with national policies, was not able to identify interlinked practices. Reasons for this are described below.

However, mapping policies, initiatives, outcomes, enablers, policy and contextual factors, as well as progress data from within and across the sectors did enable identification of potential cross-sectoral approaches and considerations.

We highlighted in the mapping where the three social practice elements (materials, competencies and meanings) appeared to be present in current policies and initiatives for the Climate Change Plan sectors. This indicated which sectors and potential policy areas might have the underpinning elements in place necessary for low-carbon practices.

4.1 Policy interdependencies and interlinked practices of particular relevance to the Climate Change Plan

Our analysis assessed policy areas or sectors where the Scottish Government has power in relation to the application of interlinked practices for a net zero transition. Policy interdependencies were identified in sectors with significant powers devolved to the Scottish Government, which have more practice-based elements and which need to make more progress towards net zero targets in key areas (Scottish Government, 2022; Climate Change Committee, 2022). These sectors are Transport, Waste and Circular Economy, Agriculture and Land Use Land Use Change and Forestry (LULUCF), and Buildings.

It has not been possible to identify a comprehensive list of interlinked practices across the Climate Change Plan sectors to inform net zero policy development through the mapping work. Further detailed work, informed by sector experts and a wide range of practitioner stakeholders (i.e. people doing the practices), would be required to understand how daily practices interlink, as it is likely to differ depending on many factors, such as people's age and where they live.

The interlinked practices of relevance to the Climate Change Plan were identified through the scoping stage and testing workshops and were based on work already undertaken (see below). These are in the Transport, and Waste and Circular Economy Climate Change Plan sectors, and are set out below.

4.1.1 Transport

Policy interdependencies

There are a number of policy interdependencies aiming to reduce the need to travel by car and addressing car trip linkages. These include:

- **Location:** Planning policy – both local plans and the National Planning Framework 4 (NPF4) – on the location of facilities/services, such as employment, education, leisure and retail centres, and how these can be accessed through active travel and public transport infrastructure. This can be informed by consideration of trip-chaining (linked trips for different purposes, or, in other words, interlinked practices) to understand individual travel patterns and the reasons for these.
- **Broadband coverage:** The provision of 100% superfast broadband coverage to facilitate good digital connectivity will help reduce car use by enabling increased digital access to services, such as employment, health and education. This also links to the Industry sector, which will have a key role in delivering 100% broadband coverage.
- **Sustainable transport:** Modal transport shifts will be required and these link to other policy areas. For example, increased uptake of active travel links to health improvements through increased exercise, and reductions in air pollution and road traffic accidents. The modal shift to electric vehicles has links to policies in the electricity sector, such as location, type and scale of low carbon electricity generation/distribution and infrastructure, including local energy systems and community energy.
- **Aviation pricing and flexibility:** Flying is often much cheaper than train travel and when combined with school holiday dates and employment limits on annual leave, flying is often preferred. This is an example of where material conditions need to be considered, as well as meaning and social norms.

Interlinked practices

We have identified the following interlinked practices related to transport:

- **Reducing car use:** The Transport Scotland Routemap to achieve a 20 per cent reduction in car kilometres by 2030 (Transport Scotland, 2022) identified some system-level interventions needed to enable this reduction. Interlinked practices that were identified and link to this include commuting to work and undertaking work functions, accessing goods and services (such as shopping and medical facilities), accessing leisure facilities/pursuits (such as sports centres), and accessing schools and education facilities.
- **High-carbon practices, including flying:** There are some social shifts in attitudes to flying, including frequent flying, which may help support reductions in flights (Gössling et al, 2020). There are also moves by progressive employers to provide extra holiday days to enable staff to travel without flying¹, providing a material contribution to the matter, whilst still getting the norm or meaning of a full week in the destination. So, notwithstanding that half of people in the UK do not fly, the way we are employed is an example of interlocking practices, where the institutions that employ us, plus the social norm that travelling to go on holiday is not part of the holiday fun itself, lock us into high-carbon practices.

¹ <https://www.naturesave.co.uk/why-we-offer-our-staff-extra-paid-holiday-if-they-dont-fly/>

Waste and Circular Economy

Policy interdependencies

The policy interdependencies for waste, particularly food waste, are complex and multiple.

- **Legislation:** spans waste legislation and food labelling, new initiatives like the Deposit Return Scheme² and Extended Producer Responsibility³, investment in waste and recycling collections and disposal, as well as linking into standards and industry and manufacturing practices, which further link out to global markets.
- **Retail and food management:** links through supermarket and retailer-related policies such as pricing, portion sizes, packaging material choices, as well as linking further down national and global food supply chains. Indeed, food waste links to education and training policies covering competencies around personal, household and food management, as well as cooking skills.
- **Planning:** Circular Economy policy interdependencies regarding buildings raised concerns in one of the workshops about whether a drive towards low-carbon heating would result in boiler scrappage. This highlighted the point that considering interlinkages may highlight where progress towards net zero in one sector (in this case reducing building emissions) may have a negative impact on another (waste and circular economy) and so may avoid any unintended consequences.

Interlinked practices

We have identified interlinked practices for the Waste and Circular Economy sector related to food waste.

- **Food waste at home:** According to WRAP⁴, 70% of the food that is wasted in the UK is wasted by citizens in their own homes. That's 4.5 million tonnes of food that could have been eaten being thrown away every year. Households and consumers are responsible for 61% of food waste in Scotland⁵. While not linked in a sequential manner, evidence suggests that there are links between food practices such as managing and buying food (eg planning meals, checking the fridge, making a list, buying food eg vegetable and fruit boxes, ready-made food kits), preparing food (eg cooking meals, portion sizes, batch cooking, freezing and defrosting, using up leftovers), and practices such as disposing of food waste (eg disposing of food that has passed its 'best before date', leftovers, take away meals)⁶.

These practices vary according to the age profile of households, with younger people and people with children wasting higher quantities of food. They also depend on the wider context including time pressure, which in turn links to work, commuting, leisure, caring duties and cooking skills.

² <https://www.gov.scot/policies/managing-waste/deposit-return-scheme/>

³ <https://www.gov.uk/guidance/packaging-waste-prepare-for-extended-producer-responsibility>

⁴ <https://wrap.org.uk/taking-action/citizen-behaviour-change/love-food-hate-waste>

⁵ <https://www.gov.scot/publications/food-waste-reduction-action-plan/pages/10/>

⁶ <https://wrap.org.uk/resources/report/food-waste-trends-survey-2021> (accessed 23/02/23)

4.1.2 Agriculture and LULUCF

Policy interdependencies

A number of policy interdependencies were identified for Agriculture and LULUCF, but for the reasons given above, it was not possible within the research to identify interlinked practices. Policy interdependencies include:

- **Biomass:** An interdependency between agriculture and Net Zero Emissions Technologies (NETS) for agriculture and LULUCF policies to ensure the availability of home-grown sustainable biomass to supply large-scale power bioenergy with carbon capture and storage.
- **Business models:** This in turn links to practices in agriculture and land use sectors, with farmers and landowners integrating biomass crops into their business models, having the competence and know-how as well as equipment and financial incentives to grow such crops and, critically, for the meaning of such a crop to align with the meaning of what it is to farm, or be a landowner.
- **Timber production:** An interdependency between LULUCF and the buildings sector target to increase Scottish-grown timber to support the construction industry in using more sustainably-sourced wood fibre to increase its use of wood products. As above, this would link back into understanding the practices of farmers and landowners in producing more timber.

4.1.3 Buildings

Policy interdependencies

As with agriculture and LULUCF, a number of policy interdependencies, but not interlinked practices, were identified relating to retrofitting buildings. These include:

- **Construction:** An increase in the use of sustainably-sourced wood fibre to reduce emissions by encouraging the construction industry to increase its use of wood products where appropriate (as mentioned above).
- **Bioenergy:** The availability of home-grown sustainable biomass to supply large-scale power bioenergy with carbon capture and storage.

This highlights the need for multiple stakeholders to tackle the challenge of retrofit and decarbonising heating, which may require a different type of systems thinking that brings in all actors. There are a number of organisations already addressing this, including Carbon Co-op⁷, Dark Matter Labs⁸ and 3Ci⁹.

Use of buildings, for example increased homeworking, may increase energy use due to increased electricity use to power IT equipment and lighting, increased requirement for

⁷ <https://carbon.coop/portfolio/people-powered-retrofit/>

⁸ <https://provocations.darkmatterlabs.org/the-system-challenges-to-retrofit-3913efd718a3>

⁹ <https://www.3ci.org.uk/>

heating to warm the home while working and more cooking in the home¹⁰. This has a policy interdependency with low carbon generation and supply by the electricity sector.

5 Applying an interlinked practices approach to net zero

5.1 Tools

In the course of the research we identified a number of tools that could facilitate consideration of interlinked practices.

5.1.1 ISM tool

The first of these is the ISM tool¹¹, which was developed in 2013 for the Scottish Government (Darnton and Horne, 2013) and was identified through our scoping work as a potentially important basis for policymakers and practitioners in the development of thinking on interlinked practices.

The ISM tool was developed to design policy interventions in the context of sustainability. Taking insights from social psychology, behavioural economics as well as sociology theories of practice, ISM is based on moving beyond the individual to consider all the contexts that shape people's behaviours – the Individual, the Social and the Material (ISM). In 2013, the ISM tool was adopted by the Scottish Government and a subsequent user guide was written (Scottish Government, 2013).

The tool enables stakeholders to consider a shared behavioural challenge and work together to map the factors influencing that behaviour onto the ISM model. Through the process, stakeholders develop a shared understanding of the behaviour and identify their respective roles in bringing about change.

Given that the factors on the model span multiple levels of influence and that multiple stakeholders convene around the model to co-design solutions, it offers an approach to behaviour change that begins to address the system (or 'causal web') within which the behaviour sits.

As such, ISM offers a way to bring about behaviour change that is durable and far reaching, being grounded in system change. This means it can address complex policy challenges.

The ten steps of the ISM tool are shown in figure 3 below and include:

1. Target behaviour: specify in advance which behaviour you are targeting
2. Good mix of people: invite a diverse group, with depth and breadth of understanding
3. Introduce or recap ISM tool

¹⁰ <https://blogs.lse.ac.uk/covid19/2021/09/21/does-working-from-home-cut-carbon-emissions-not-necessarily-in-fact-it-can-have-the-opposite-effect/>

¹¹ <https://www.gov.scot/publications/influencing-behaviours-moving-beyond-individual-user-guide-ism-tool/>

4. Existing content: briefly outline the existing policy and practice context
5. ISM behaviour mapping: start mapping the target behaviour using the ISM tool
6. Cover all ISM factors
7. Immediate observations: note priority factors, key insights and initial ideas
8. Policy mapping: chart existing policies and interventions against ISM
9. Identify gaps and ideas: generate ideas where ISM factors are not addressed by existing work
10. Take action: develop a coherent package of interventions spanning I, S and M

HOW TO USE THE ISM TOOL: A STEP-BY-STEP APPROACH

This next section of the guide shows how to use ISM as a practical tool for influencing behaviours. In theory, the ISM approach could be used as a planning tool by one person sitting at their desk. However, experience in developing effective strategies shows that you are more likely to be successful if you can bring together a group of people to use ISM as a practical tool in a workshop setting.

The following steps are suggested as the basis of a workshop which seeks to provide insights for the development of policy and practice. A summary diagram and a more detailed explanation are provided.

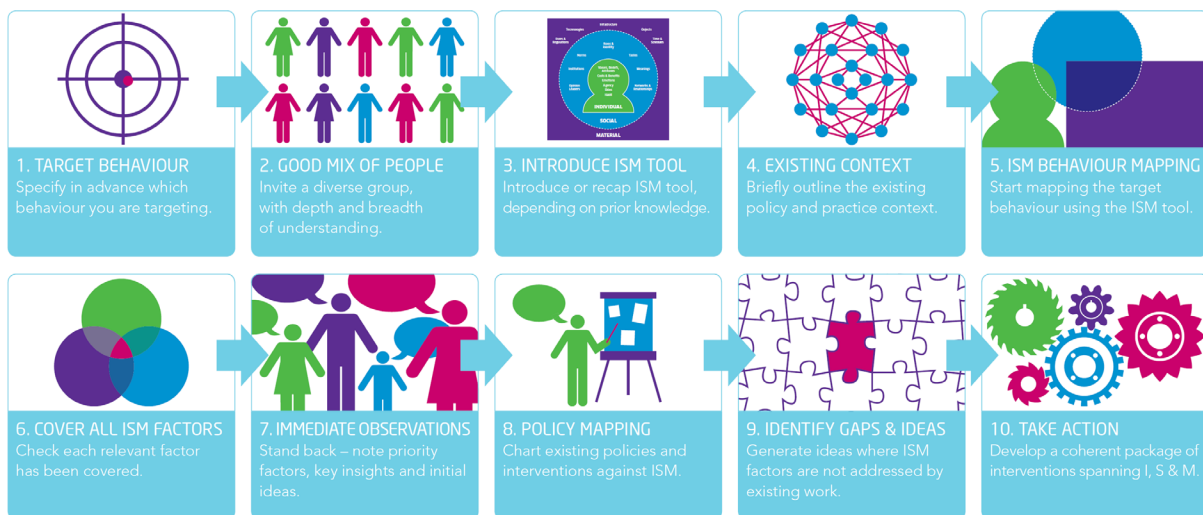


Figure 3: Step-by-step approach to using the ISM tool (Darnton and Horne 2013, p. 12)

5.1.2 Place Standard tool with a climate lens

The Place Standard tool with a climate lens¹² (Our Place Scotland, 2022) is a tool that was developed to help people understand how climate change might play out in a local area and support them to design their future place with climate in mind.

It builds on the core Place Standard (Our Place Scotland, 2022a) and takes a cross-sectoral approach to considering issues across 14 place-based themes.

It includes a suite of tools for facilitators to help develop productive conversations focused on the important relationship between climate and place, and it can enable consideration of interlinked practices at the local level.

Workshop participants suggested that the Place Standard can be a useful tool to get cross-sectoral conversations going about climate change, and can also be used at the city, town,

¹² <https://www.ourplace.scot/Place-Standard-Climate>

village or street level. Given that some interlinked practices are likely to vary depending on place, this tool will help to identify interlinked practices of relevance to the residents of a particular place.

5.1.3 Change Points

Change Points¹³ is a toolkit developed by a team led by Claire Hoolohan from the Tyndall Centre and the University of Manchester, and Alison Browne from the University of Manchester (Hoolohan et al. 2018). It was developed with Defra and other industry and policy stakeholders, particularly on the issues of water and food, and was informed by the ISM tool.

The toolkit is a six-step consensus-based workshop for multi-stakeholders to facilitate consideration of day-to-day practices and how these relate to a key problem. The aim is to design interventions that unlock unsustainable practices. For instance, with regard to food waste, the tool looks at different types of people who are carrying out high waste or high emissions actions and works through potential forms of intervention that consider social and material dimensions in their lives. This includes systems mapping.

Change Points is described by one of the Change Points team members in interview as “a workshop process designed to get beyond individual action to achieve social change. Insights from the workshop allow diversity to inform design, so that interventions work for different people. It also allows the connections between what people do in their homes and all the other things they do in the course of their everyday life. In these ways, Change Points helps re-think responsibility and agency for unsustainable consumption, catch stereotypes, resist passing on the burden of action to future generations and get beyond messaging.”

It can also be used to explore how to increase the uptake and impact of technological interventions (e.g. increase the uptake of water or energy efficient devices and encourage the switch to smart meters) and to consider the wider influences on technological uptake and the routines in which technologies are embroiled.

This workshop takes a whole day to implement or can be carried out in modules. The toolkit is designed to be easy to use by a facilitator and has pre-designed worksheets.

It is currently in use by a wide circle of academics, but the results of its application are yet to be seen.

5.1.4 COM-B model

The COM-B model¹⁴ identifies three components to any behaviour (B): Capability (C), Opportunity (O) and Motivation (M). It sets out that for an individual to undertake a particular behaviour, they must have: the psychological and physical capability to do so (C),

¹³ <https://socialdesign.de/wp-content/uploads/2020/02/change-points1-3.pdf>

¹⁴ COM-B model of behaviour change https://social-change.co.uk/files/02.09.19_COM-B_and_changing_behaviour_.pdf

the social and physical opportunity for the behaviour (O), and be motivated to carry out a particular behaviour more than other competing behaviours (M).

The model proposes that in order to deliver and maintain effective behaviour change, interventions must target one or more of these interacting components. It can help policy makers and anyone interested in facilitating behaviour change understand drivers of behaviours and how decisions are made.

5.2 Policy examples that build on, or make use of, interlinked and/or social practices theory

A number of examples were found of Scottish policy and/or strategy that demonstrated some elements of an interlinked practices approach.

5.2.1 Routemap to achieve a 20 per cent reduction in car kilometres by 2030

Transport Scotland and the Convention of Scottish Local Authorities (COSLA) used a number of tools to inform the development of their 'Routemap to achieve a 20 per cent reduction in car kilometres by 2030' (Transport Scotland, 2022), including the COM-B model and the Scottish Government's ISM Tool (Darnton and Horne, 2013).

In developing the policy on car use reduction, a cause-and-effect fish-bone diagram similar to Figure 4 was developed, which illustrates the process of theorising the root causes of a car-dependent transport system. The diagram categorises the causes by individual, socioeconomic, cultural, community and environmental themes. This is similar to describing the individual, social and material contexts in which people are behaving when using their cars, following the ISM model depicted in the bottom left of the figure 4. This includes the following factors:

- Individual: values, beliefs, attitudes, costs and benefits, emotions, agency skills and habit
- Social: opinion leaders, institutions, norms, roles and identity, tastes, meanings, networks and relationships
- Material: rules and regulations, technologies, infrastructure, objects, time and schedules

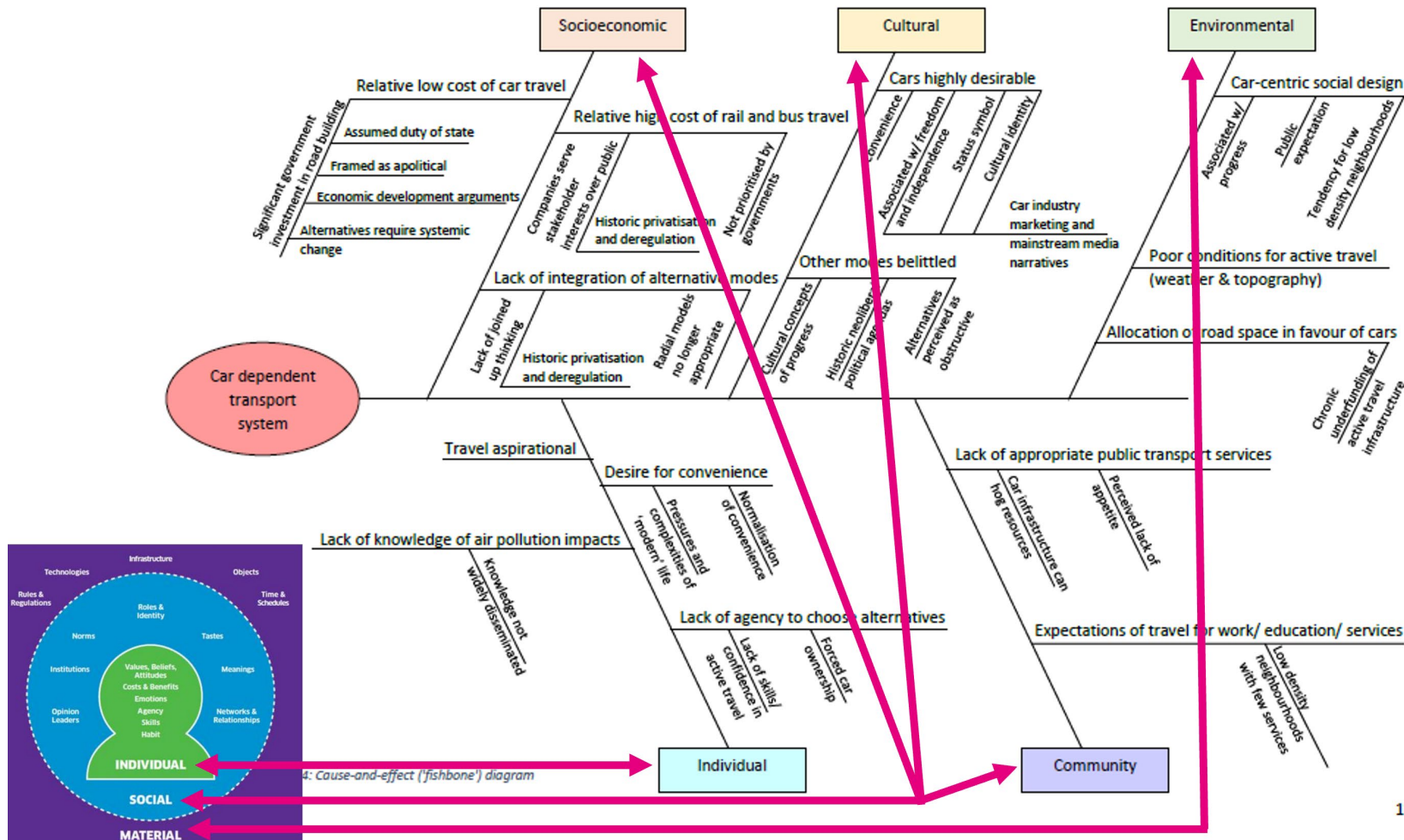


Figure 4: Example of a fishbone cause-and-effect diagram using the ISM tool in the development of the 'Routemap to achieve a 20 per cent reduction in car kilometres by 2030' (Transport Scotland, 2022). Diagram extracted from the University of Edinburgh Master of Public Health's dissertation and reproduced with the authorisation of Abigail Johnston.

5.2.2 20-minute neighbourhood

Another policy example relevant to interlinked practices is the 20-minute neighbourhood concept, which aims for residents to meet their day-to-day needs within a 20-minute walk of their home. Research for ClimateXChange on 20-minute neighbourhoods in a Scottish context (O’Gorman and Dillon-Robinson, 2021) identifies 14 categories needed for a thriving 20-minute neighbourhood. This requires consideration of how practices are interlinked and cross-sectoral working at a local and potentially wider level to achieve the aim of a 20-minute neighbourhood. Some local authorities in Scotland have already started work on developing 20-minute neighbourhoods.¹⁵

Both the ‘Place Standard tool with a Climate Lens’ (Our Place Scotland, 2022) and the 20-minute neighbourhoods concept align with the Scottish Government’s Place Principle (Scottish Government, 2019). Applying the Place Principle and delivering 20-minute-neighbourhoods are both included in the National Planning Framework 4 (NPF4) as having important roles to play in improving local living. The Place Principle requires that ‘all those responsible for providing services and looking after assets in a place need to work and plan together and with local communities, to improve the lives of people, support inclusive and sustainable economic growth and create more successful places’. It promotes a collaborative, place-based approach to deliver better outcomes for people and, as with the Place Standard tool and 20-minute-neighborhood concept, it can facilitate consideration of how practices can interlink to deliver benefits for the local population.

5.2.3 Home Energy Efficiency Programme Scotland

The Home Energy Efficiency Programme Scotland (HEEPS) is an end-to-end support programme to enable householders to make their homes more energy efficient and to install renewable or low carbon energy and heat (Scottish Government, 2019a).

It has a service design that tackles the social practice theory materials, meaning and competences elements to support the system to enable actions by homeowners, landlords and contractors (Atkinson et al., 2019). The HEEPS programme development was supported by a Community Analysis Team.

5.3 Benefits and challenges of applying an interlinked practices approach

5.3.1 Potential benefits

There was recognition in workshops and interviews of the need for the Scottish Government to try different approaches to policymaking in order to increase the pace and scale of emission reductions. The potential for an interlinked practices approach to be applied to

¹⁵ 20-minute neighbourhoods City of Edinburgh Council <https://www.edinburgh.gov.uk/future-council/need-20-minute-neighbourhoods>

the development of the Climate Change Plan was discussed in workshops with Scottish Government staff and external stakeholders.

Part of the interlinked practices approach is that materials, meaning and competencies all need to be considered for practices to become more sustainable.

Potential benefits identified include:

- **Increasing engagement by highlighting positive meaning:** They identified that consideration of meaning was often missing in policymaking and it could perhaps transform the way policymakers think; rather than focussing on how to reduce an unwanted behaviour (eg reduce driving), they could perhaps work towards positive societal shift (eg more active travel, cleaner air, healthier population). In other words, it can help to reframe the problem. A workshop participant commented that, for many people, driving means freedom, and that perhaps consideration of meaning may allow us to reframe the problem as thinking about how we can shift perceptions towards an idea that active travel is freedom.
- **Understanding social and material context:** The 'Routemap to achieve a 20 per cent reduction in car kilometres by 2030' (Transport Scotland, 2022) example showed that using tools that incorporate elements of social practice theory can help identify the social and material factors that influence individual behaviours. The resulting routemap sets out the interventions that will enable people to adopt better ways of living by creating a social and material context where reduced car use is a normal, easy, attractive and routine behaviour to adopt.
- **Capitalising on societal shifts:** These approaches can enable governments to capitalise on societal shifts. An example of this was the increase in cycling in cities during the Covid-19 pandemic.
- The recent Climate Change Committee report to the Scottish Parliament (Climate Change Committee, 2022) identified that the emission reduction targets achieved in Scotland in 2020 were due in a large part to changes in practice as a result of the pandemic.
- Research into why there was a significant increase in cycling in cities during the Covid-19 pandemic showed that material elements that facilitated this increase were the rapid introduction of cycle lanes in 2020 (material), for example London expanded the length of bike lanes/paths by 100km in 2020. A meaning element that facilitated people taking up cycling was that they could achieve the purpose of their desire to travel (eg travel for leisure or work) and by cycling this enabled them to maintain social distancing to reduce the risk of Covid-19 contagion (Beuhler and Pucher, 2021), and also follow advice to avoid using public transport where possible.
- This demonstrates that there can sometimes be opportunities to rapidly capitalise on societal shifts, using an interlinked practices approach to contribute to net zero targets, although individuals can revert to 'old way', despite an expressed desire to continue a new practice, such as cycling (Mulholland et al., 2022).
- **Cross-sectoral/departmental approach:** Workshop participants identified that there is currently a lack of cross-sectoral/departmental working and this is a potential

obstacle to achieving the Scottish Government's emission targets. Adopting an interlinked practices approach could help identification of opportunities for policymakers if a cross-sectoral/departmental approach was introduced in the early stages of policymaking.

5.3.2 Potential challenges

One of the biggest challenges is that the interlinked practices concept is untested and therefore not proven to be effective. Therefore there is a risk that applying this untested theory to the development of the Climate Change Plan may not necessarily result in lower carbon behaviours.

Time and resources would be required to support staff in implementing an interlinked practices approach in policymaking. Lessons should be learned from the ISM tool, which saw a reduction in use over time as the resource available to support staff with using ISM reduced.

It was also identified in our workshops that the Scottish Government approach of providing individual sectors with an emissions envelope^{16,17} poses a challenge to implementing an interlinked practices approach, which requires a cross-sector approach.

Feedback from participants in the scoping workshops was that social practice and interlinked practices theories are complex and challenging to understand. Many of the workshop participants did not have previous knowledge of social practice theory or interlinked practices, however, many had 'lightbulb' moments in terms of their understanding of what interlinked practices is when this was explained in the workshops.

5.3.3 Overcoming challenges

In response to this, and recognising that support would be needed to aid understanding of interlinked practices, a flowchart was created by the project team (see figure 5), which shows what needs to be considered and when, acting as a prompt for consideration of interlinked practices in Climate Change Plan policy development. This includes identifying current high emissions practices, the alternative net zero practices, how these practices link to other things people do to identify opportunities for shared outcomes; and identify linked policies impacting the practices.

Use of the flowchart to aid understanding of interlinked practices and social practice theory was explored in the testing workshops. Feedback from the workshops was that the flowchart aided participants' understanding of how interlinked practices could be considered in a policy context. A facilitator could use the flowchart in workshops, as part of a suite of support measures for policymakers in developing an interlinked practices approach to net zero policymaking.

¹⁶ The Scottish TIMES model provides each policy area with their share of total decarbonisation effort and the changes to existing technologies and processes, which might enable them to meet their share of effort in the most cost-effective way.

¹⁷ TIMES teach in presentation to research team September 2022



Societal change for better impact towards Net Zero

Use the flowchart at regular stages in policy thinking/stakeholder engagement

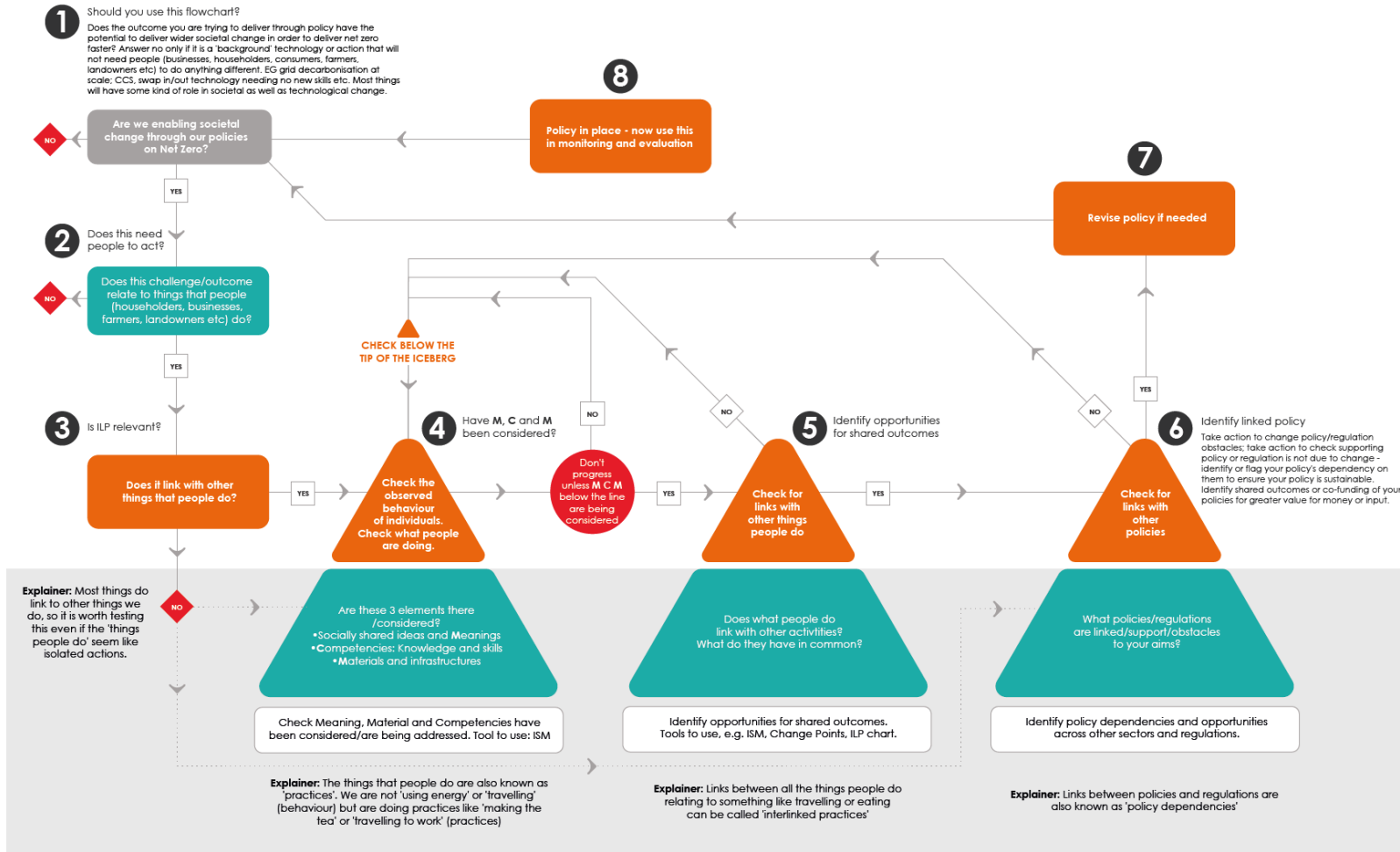


Figure 5: Flowchart to guide implementation of an interlinked practices approach for policymaking

6 Conclusions and recommendations

6.1 Conclusions

Our research found that the Black and Eisemann (2019) interlinked practices concept and guide is an untested, theoretical concept in terms of policy development and implementation. However, when we explained the concept to Scottish Government policy staff in workshops, the group agreed that it made sense as a concept and identified potential benefits and challenges of applying this approach.

The research also found that there is no silver bullet that is guaranteed to increase the pace and scale of emission reductions through applying an interlinked practices approach to the Climate Change Plan.

6.1.1 Interdependencies and interlinked practices of relevance for the Climate Change Plan

We have identified policy interdependencies and interlinked practices in the following sectors: Transport, Agriculture and Land Use Land Use Change and Forestry (LULUCF), Waste and Circular Economy, and Buildings. These are key pillars of the Climate Change Plan and have significant powers devolved to the Scottish Government. These sectors have more practice-based elements, and are crucial in making progress towards net zero targets in key areas (Climate Scottish Government, 2022; Climate Change Committee, 2022).

It was not possible, within the scope of this research, to identify all interlinked practices and potential policy interdependencies that may be relevant to the Climate Change Plan. Further work is needed to do this and would require the input of expert practitioners and policymakers. For example, farmers could help identify and map the detailed practices that are interlinked and which of these should be prioritised in terms of delivering significant carbon emission reductions related to food and agriculture.

Whilst interlinked practices and policy interdependencies were not explored in detail for the Electricity, Industry and Negative Emissions Technologies sectors, they do form a key aspect of the supply side actions to help deliver the material shared elements underpinning our practices. For example, initiatives taken by Industry can support wider societal change through product labelling; design and manufacture of reusable, repairable and recyclable products and technologies; innovations for products and services that affect the material elements of home energy efficiency and, to an extent, transport innovations. Supply side actions in the food and drink industry are relevant to our daily practices around eating, food waste and disposal of food packaging. Therefore, consideration could be given to how sectors and cross-cutting teams could contribute to underpinning material, meaning and competencies elements.

Interlinked practices are also likely to depend on where people live and work. A local, place-based approach may be a more effective way to start an interlinked practices approach, rather than at the national level. The first stage of such approach would be to engage with people and understand how their practices interlink.

6.1.2 Benefits and challenges of an interlinked practices approach for policymakers

Benefits of applying an interlinked practice approach include the following:

- Where policymakers are struggling to change unsustainable behaviours, it can help to reframe the behaviour problem and help policymakers and practitioners work towards positive societal shift.
- It can help identify the social and material environments in which people live that influence individual behaviour change.
- It can enable governments to capitalise on societal shifts to introduce measures that lead to sustained lower carbon practices (eg extending bike paths during the Covid-19 pandemic, when people were encouraged to not drive or use public transportation, led to an increase in the number of people cycling¹⁸).

The following challenges would need to be considered:

- The need to build monitoring and evaluation systems in from the start, to gather data to provide evidence of impact of an interlinked practices approach.
- Use of tools and models, such as the ISM tool, will not identify a particular lever to deliver an outcome; they can help identify factors that influence a behaviour or practice, which can inform development of policies and interventions.
- Scottish Government policymaking may not have direct control over many factors/levers that are identified through use of the ISM or other tools, such as social contexts.
- Using tools such as the ISM tool does not prescribe what the next steps are, i.e. what policy or intervention should be implemented. The end point of using these tools is to identify the factors influencing behaviours or practices.
- A more integrated, cross-sector interlinked practice approach to distribution of emissions envelopes from the TIMES model¹⁹ should be considered at the start of policy development, as the process of assigning emissions envelopes to individual sectors appears to conflict with cross-sector working.
- Applying interlinked practices to policymaking requires a long-term approach.

The research identified some high-carbon practices and issues emerging from these that were not identified as interlinked practices, but had some elements of social practice theory that are relevant in terms of net zero policy development and societal shifts to lower carbon practices. Consideration of these, such as the flying example provided in section 4.1.1, may help inform work on interlinked practices.

6.1.3 Feasibility of translating the concept of interlinked practices into a practical approach

The research found no studies that have explored the impact of adopting an interlinked practices approach on increasing the pace and scale of emission reductions. However, when reviewing contributions from policymakers and stakeholders, and examples of policies and

¹⁸ <https://www.bbc.co.uk/news/uk-england-london-62811206>

¹⁹ The Climate Change Act (Scotland) mandates the sector split in the Climate Change Plan. The Scottish TIMES model is used to provide each policy area with their emissions envelopes. Information on TIMES provided in presentation to research team September 2022

tools, it is clear that some policymakers think that an interlinked practices approach could be useful in developing a more holistic approach to policymaking. This more holistic approach may assist the Scottish Government in moving towards its net zero target and enact social change. This will require acknowledgement of the limitations and support needed identified in this report.

Support would be needed for implementing an interlinked practices approach, as described below:

- Social practice theory and interlinked practices can be challenging concepts to understand. In order to grasp the interlinked practices concept, an understanding of the underpinning social practice theory is required.
- Research participants recognised that, of the three social practice elements, material and competencies were often considered in policy development. However, they also recognised that consideration of meaning was often missing in policymaking and, if that were considered too, it could perhaps transform the way policymakers think.
- Research participants thought an interlinked practices approach could be beneficial, but they would need support with developing and implementing it. This support could be a facilitator or workshop instruction, as is done with the ISM tool, assistance from the Climate Change Behaviours team and/or worked-up examples of how it could be used in practice with the Climate Change Plan.
- For example, they mentioned they would require meetings with sector and the Climate Change Behaviours teams to discuss issues / interlinked practices and identify which other sector and cross-cutting teams within the Scottish Government they should talk to. The Climate Change Behaviours network, which involves all sector teams, could play an important role in facilitating this more cross-sectoral approach to linking practices.
- The flowchart created for this project (figure 5) was found to be useful for helping Scottish Government policymakers and external stakeholders understand how and when in a policymaking cycle to consider interlinked practices. It could also be applied in part to do the same when using the ISM tool.

6.2 Recommendations

6.2.1 Implementing an interlinked practices approach

1. **Using existing tools:** A low-cost gateway for Scottish Government policy teams to consider how practices are interlinked across sectors and other organisations, could be using existing tools, such as the ISM tool, Place Standard with a climate lens, or 20-minute neighbourhoods concept to inform their net zero policy development.
2. **Early adopters:** Climate Change Plan sectors that could be early adopters of an interlinked practices approach to net zero policy development are Transport and Waste and Circular Economy. These are both sectors with significant powers devolved to the Scottish Government, have practice-based elements, need to make progress towards net zero targets in key areas (Scottish Government, 2022; Change Committee, 2022) and where some interlinked practices have been identified in this research.

There are some other sectors, such as Agriculture and LULUCF and Buildings, that have all of these elements, but where we did not find interlinked practices. They could also consider adopting an interlinked practices approach to net zero policy development once mapping work in recommendation 4 has been undertaken.

3. **Local level:** We recommend applying a place-based lens for considering how practices interlink at a local level. An interlinked practices approach could be implemented at a local level as part of place-based engagement and testing, as interlinked practices are likely to vary depending on place (eg trip chaining in an urban setting is likely to differ from that in a rural setting).
4. **Mapping from the start:** Research with expert practitioners, citizens, communities, regulators, policymakers and businesses should be undertaken to help identify and map how practices interlink at the start of a policymaking process in each of the Climate Change sectors, and which of these should be prioritised in terms of delivering significant carbon emission reductions. This could also be done on a cross-sectoral place basis.

6.2.2 Support for implementing an interlinked practices approach

5. **Time and resources:** Using, monitoring, evaluating and promoting the ISM tool, Place Standard with a climate lens, or 20-minute neighbourhoods concept in the Climate Change Plan and net zero policy development context requires time and resources. This would be both from the team responsible for supporting sector teams, eg the Behaviours team, and from the sector staff to use the tools.
6. **Case studies:** Case studies could be developed of Scottish Government policies/strategies that have used social practice theory and considered interlinked practices, such as the 'Routemap to achieve a 20 per cent reduction in car kilometres by 2030' (Transport Scotland, 2022) and HEEPS (Scottish Government, 2019) or provided a framework for consideration of these, such as 20-minute-neighbourhoods and the Place Principle (Scottish Government, 2019). This could help promote and share learning across the Scottish Government of how interlinked practices can be considered in net zero policy development.
7. **Guide:** The flowchart in figure 5 could be used by a facilitator as part of a suite of support measures for policymakers to aid understanding of how and when to use interlinked practices in net zero policymaking.
8. **Plain English:** Social practice theory, which underpins the ISM tool and the interlinked practices concept, can be challenging to comprehend, particularly in the initial stages of exposure to the approach. Plain English terminology needs to be used when discussing these.

6.2.3 Further research

If an interlinked practices approach is to be developed further, more research would be needed on:

- developing a monitoring and evaluation approach for interlinked practices that can be embedded in the early stages of its application in net zero policymaking
- a taxonomy of behaviours and practices.

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8 Appendix 1: Literature and evidence review

8.1 Introduction

This appendix includes all elements from the full literature and evidence review that aren't contained in the main report. The literature and evidence review formed the first stage of research being undertaken by CAG Consultants for ClimateXChange to address the question: *'How can the Scottish Government apply the concept of interlinked practices to improve net zero policy development and enact social change?'*, recognising that a focus on nudging the population to make behaviour changes has not delivered the pace or scale of emissions savings required to achieve the 2045 net zero (NZ) target for Scotland.

It includes a review of social practice theory, case studies and tools and Scottish Government policy documents and has been supplemented by interviews with social practice theory specialists.

Whilst the review finds limited evidence of social practice theory use in policy development, it suggests that it may be possible to develop an interlinked practice approach to NZ policy making in Scotland to deliver the NZ goals and highlights some areas to explore in more detail through the subsequent stages of the research.

This literature and evidence review has been undertaken by CAG Consultants as part of a research project for ClimateXChange. Previous research for ClimateXChange has suggested that an interrelated practice lens would be more effective at guiding the interventions required to achieve the net zero target, as opposed to the current individual behaviour change approach (Black and Eiseman 2019).

The aim of this research by CAG Consultants is to answer the question: *'How can the Scottish Government apply the concept of interlinked practices to improve net zero policy development and enact social change?'*, recognising that nudging the population to make behaviour changes has not delivered the pace or scale of emissions savings required to achieve the 2045 net zero (NZ) target for Scotland.

The research findings will inform the Scottish Government's approach to developing the next Climate Change Plan to most effectively enable the transformative, socio-cultural change to achieve a just transition to NZ, and ensure policies and interventions help to facilitate the lifestyle transitions required.

This literature review has been undertaken at the start of the research project, and will be updated as the project progresses to include contributions from stakeholders through interviews, which are still in progress at the time of writing.

In the first section of this literature review, social practice theory, case studies and tools are reviewed. Interviews were also conducted with individuals who have been involved in attempting to put the theory into practice.

In the second section, Scottish Government policy documents are reviewed, and our team has identified:

- where behaviour and societal change was described and made up a significant part of policy; where a combination of technology and societal change was identified; and the kind of policies or engagement that were planned to drive down emissions in these two categories
- where social practice and interlinked practices approaches could be applied
- key areas/sectors the Scottish Government is seeking and has power to influence in relation to the application of interlinked practices for a net zero transition in Scotland.

The findings of this literature review will be used to inform the workshops, focus groups and mapping of interlinked processes.

8.1.1 Interlinked practices

An interview was conducted with Iain Black, one of the authors of the segmentation study. He said that the idea behind the 'interlinked practices' concept is to move away from an agency-based behaviour change approach, and towards a more interventionist approach by government based on a more human and community-based understanding of how we all perform (and are supported to perform) the many practices that make up daily lives (Iain Black, Interview 2022).

Black (Interview 2022) went on to explain that "The key part is what replaces the idea that consumers can be expected to make better pro-environmental decisions and that the focus should be on infrastructure and institutional change with the consumer citizens brought along with and influencing these changes."

Iain Black confirmed that there has been no further research or trialling of the concept since the segmentation study was published, due to his research partner moving Institutions and

8.2 Social practice theory

8.2.1 How does social practice theory work?

Table 2, adapted from Keller et al. (2016), summarises the differences between different theories: individual behaviour change, behavioural economics (nudge), social practice change, and technological approach.

If the focus is just on individual behaviour, the wider societal change required to achieve net zero will not happen. To get transformative change the focus needs to be on the social practice change and technological change.

	Individual behaviour change	Behavioural economics ('nudge')	Social practice change	Technological approach
Basic unit of social change	Individual	Individual	Social practice as a collective pattern	Organisation, institution, technology
Ways and means of effecting change	Texts and symbols that raise awareness and shape attitudes that induce behaviour	'choice architecture' and 'choice editing' (default settings, design of material and virtual environment)	Shaping of all practice elements (meanings, things, skills and interaction), re-designing their relations as well as relations between practices within systems of practices; acknowledgement that even a very complex intervention may not guarantee desired results	Regulation, technological innovation
Nature of human action	Rational, calculated and reflective	Bounded rationality that often prevails over rationality	Often non-rational, ambivalent, habitual, embodied	Not explicit, consumers often reduced to passive recipients of innovation
Relation between the components of action	Linear (knowledge and attitudes drive behaviour)	Linear: 'edited choices' bring about the desired behaviour	No linear relation, 'value-action gap'; relations are complex and often unpredictable; often behaviours precede values and attitudes (not vice versa)	Linear (with institutional drivers), technological / structural innovation to ensure changed behaviours
Actor	Most often individual	Individual	Collective actors (individuals viewed as carriers of practices); emphasis on relational networks btw. people	Organisation, institution, technology
Impetus of action	Individual decision, choice	Stimulus from outside environment (that the actor may be unaware of)	A nexus of various practice-related factors (social relations, material objects etc...) that re-shape the configuration of practice elements and relations between practices)	For individuals (end-consumer), new technology, innovation or regulation; for institution, regulation, external or internal directive or collective decision, power

	Individual behaviour change	Behavioural economics ('nudge')	Social practice change	Technological approach
The role of environment (infrastructure and other aspects)	Environment as an external barrier or driver towards desired behaviour	Environment as an external barrier or driver towards desired behaviour	Environment as a network within which a practice is embedded, part of practice; constant interaction between socio-technical systems and everyday life of consumers	(renewed) infrastructure and technological environment as the guarantor and driver of change
Driver of social change	Individual calculated choice that changes behaviour	Individual choices that have been 'edited' by external experts	Change of social practices (changed links between practice elements and across different practices)	Institutions, organisations that implement new structures and technologies
Position of interventions	An external force targeted at factors shaping behaviours	External force that provides a 'choice architecture'	Embedded in practices and their change, practices are implicated in policy and governance and vice versa	Creator of new structures, technologies
Transfer of experience and lessons	Clear universal problems and solutions; power of experts	Clear universal questions and solutions; power of experts	All cases are socio-culturally and historically specific, the potential of transference is very limited	Technological determinism as a universal mechanism
Mechanism for adoption of change and the role of (public) communication	Individuals are persuaded to make a 'better' choice (usually one-way communication between the intervention designers and their target audiences)	Choices are 'edited and consumers make them by default; one-way or non-existent communication between the intervention designers and their audiences)	Change is appropriated (if it is: there is no guarantee) through collective learning, embodied experience and re-skilling over time; communication as one element in a more complex package of tools and governance responses	A changed structure brings about (forces?) changed behaviour; communication itself is outside this stream of thinking, or if touched upon leads back into the behaviour change model (raising awareness)

Need to move from behavioural focus towards societal and technological transformation

Table 2. The differences between theories, adapted from Keller et al. (2016)

8.2.2 How can social practice and interlinked practice theories be used?

The challenge for the policymaker is to try to influence the elements of the practice so that they become more sustainable, whilst also thinking about how many daily practices are interlinked (Shove 2011).

Social practice theory involves looking at Meanings (expectations, shared meaning), Materials (objects, infrastructure) and Competencies (knowledge, skills), with each one being considered as a key thread that connects the practices.

It is suggested that social practice theory and interrelated practices can provide a fresh way of framing problems such as sustainable consumption (Keller et al. 2016) and working from home (Hampton and Adams 2018), in order to acknowledge the complexities and connections between systems of practice.

A social practice theory lens can be used in evaluation to identify key elements to changed and sustained practices. The tip of the iceberg image (adapted from Spurling et al. 2013 by O’Brien, 2019) is helpful in showing the underpinning elements of Materials, Competencies and Meanings for use by evaluators or policy-makers to see below the practice as observable behaviours.

This figure was adapted for further exploration in the workshops stage of the research project as shown in figure 6:

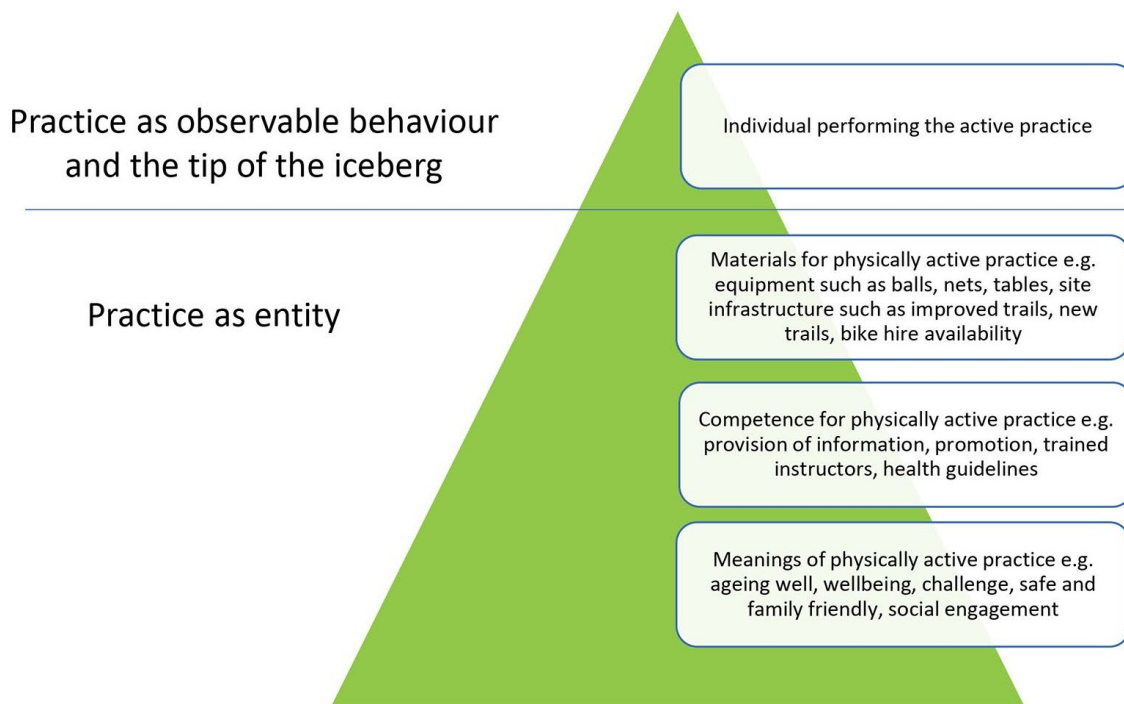
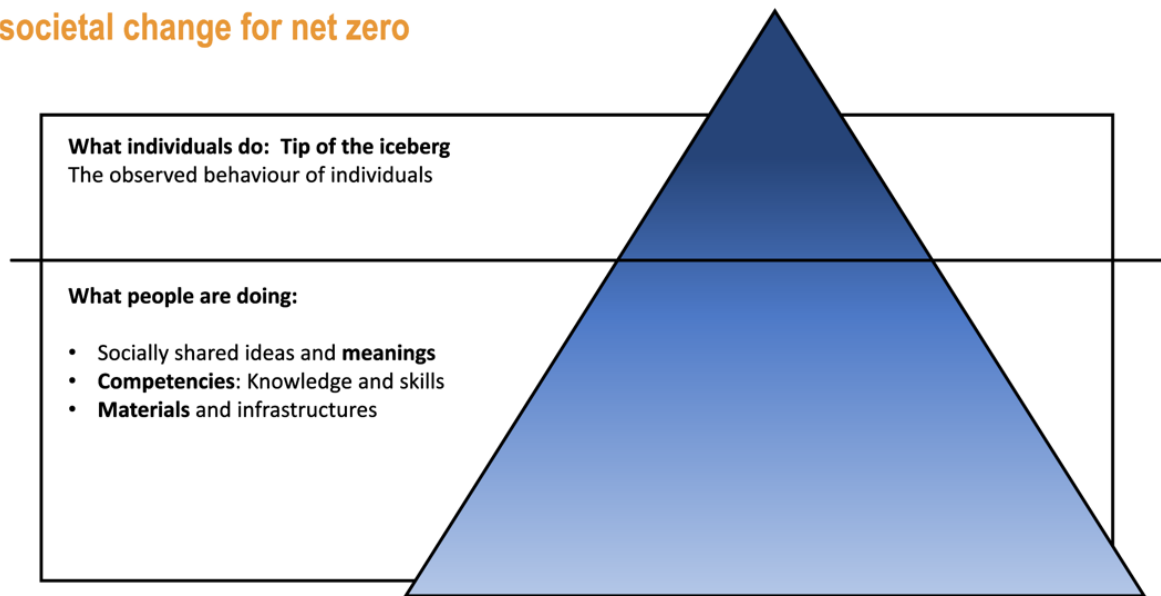


Figure 6. O’Brien 2019. Highlighting that physical activity behaviours are the tip of the iceberg.

If we only focus on behaviours, we will not achieve societal change for net zero



Spurling et al (2013, p8) and O'Brien (2019)

Figure 7. Spurling and O'Brien adapted for workshops to demonstrate the conditions for behaviours / practices must be in place in order to achieve wider uptake.

However, our literature review and interviews have found that social practice theory is very rarely used by policy makers.

In fact, one academic who has written extensively on the subject suggested that they do not believe that social practice theories should be translated into a 'policy-amenable form', stating that: "to do so is to 'miss the point, and to misunderstand what makes practice theories distinctive, and distinctively valuable'" (Shove 2015, p.45). There are differences between those conceptualising energy demand or water and food consumption – some (as the Times tool used by the Scottish Government) depict energy demand as an outcome of drivers which can be adjusted using policy levers; while others say that "energy-demanding practices are continually on the move and that intervention is more like... navigating through an also changing environment." (Cass and Shove, 2017) In fact, policy-makers have to do both these things.

Social practice theory also offers some models for policy intervention:

- Recrafting practices
- Substituting practices
- Changing how practices interlock (Spurling et al. 2013)

First we discuss some of the tools have been created to help put these theories into practice and then we outline the opportunities and challenges with using the theory in practice.

8.3 Tools and concepts

The review of tools and guides included a literature review, interviews and desk-based scenario testing of checklists, to assess how applicable they are to key challenges.

Table 2 below provides an overview of the tools that were reviewed. Each tool is then discussed in more detail after the table.

	ISM	Change points	Interlinked practices step by step guide
Who developed	Andrew Darnton and Jackie Horne	Claire Hoolohan (Tyndall Centre and Manchester University), Alison Browne (Manchester University) and David Evans (Bristol University)	Professor Iain Black, University of Stirling, and Dr. Danielle Eiseman, The Cornell Institute for Climate Smart Solutions
When	2013	2018	2019
Who for	Scottish Government	Defra and other industry and policy stakeholders	Scottish Government and ClimateXChange
Key features	User guide (tool and workshop outline) and technical guide Support provided to staff in early years through facilitation and training but no longer available.	Toolkit which is a 6-step consensus-based workshop process, designed to get beyond 'individual action' to achieve social change – includes system mapping Designed to be used by a facilitator with pre-designed worksheets.	9-step guide, provided in a one-page written list. Builds on Scottish Government's 4 emission themes and 10KBAs (approach which has now changed) to focus on high carbon behaviour area. User identifies the ILPs associated with the theme and key behavioural areas, and works through the elements (meanings, materials and competencies of social practice theory). Considers the connections that need to be addressed to alter the lifestyle.
Who used + when	Intended to be helpful when facing policy problems where significant levels of social change are needed – consider all contexts that shape people's behaviours.	Defra, water industry, academics. Used on water and food.	Not been tried and tested.
What it can work well for	Useful for engaging with policy makers and identifying barriers	Thinking about the connections between what people do in their	Would need to be tested to identify where it may work well.

		homes and all the other things they do it the course of their everyday life.	
Challenges	Perceived as being a behaviour change tool rather than a systems tool. Not been effective in helping to develop actions or policy options,	Does not fit with contemporary evaluation frameworks. Requires a facilitator and staff time to participate in workshops.	Seems to focus on 'campaigns' as its output
Conclusions about tool	Only been used for fairly simple problems to date, rather than for large-scale 'wicked problems'. May be potential for ISM to pick up interlinked practices (perhaps with facilitation support) – test in workshops.	There is potential for Scottish Government policy-makers and stakeholders working on food waste within the CCP development to explore this tool to see how useful they find it.	Could be tested in a workshop.

Table 3: Overview of the tools reviewed

8.3.1 The ISM tool

The ISM tool sets out that by understanding the different contexts and the multiple factors within them that influence the way people act every day, more effective policies and interventions are expected to be developed. The factors that influence behaviour are illustrated in figure 5 below.

FACTORS THAT INFLUENCE BEHAVIOUR IN THE INDIVIDUAL, SOCIAL AND MATERIAL CONTEXTS ('THE ISM MODEL')

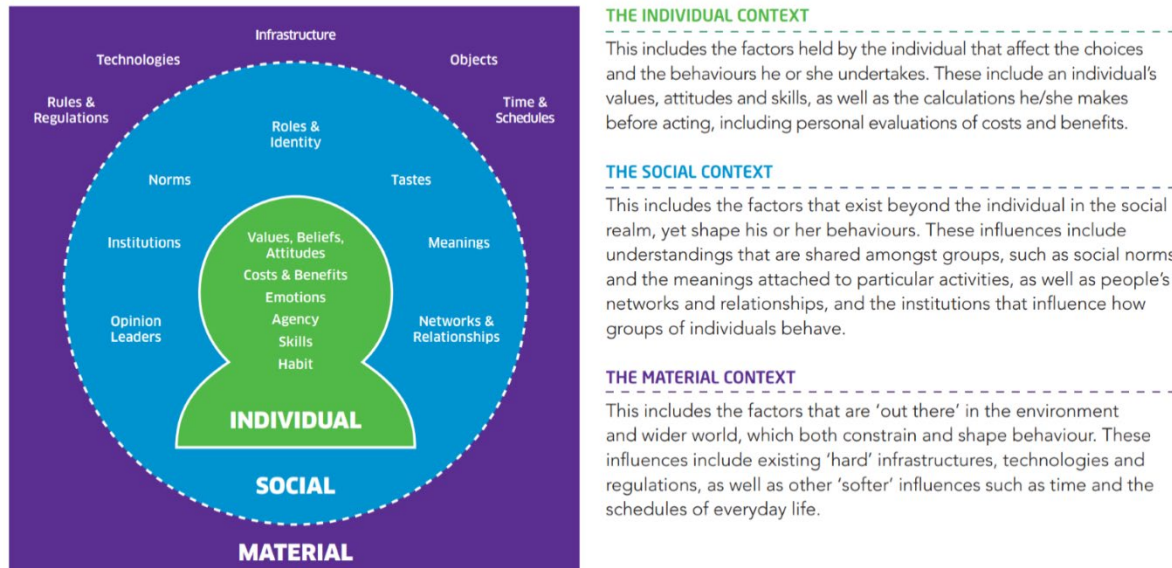


Figure 8: Factors that influence behaviour in the individual, social and material contexts (Darnton and Horne 2013, p.4)

“The ability to frame and explore difficult and complex issues dispassionately and systemically can help introduce aspects of a problem that would not normally be considered or even acknowledged. ISM can really help evolve a systemic view of complex issues but it needs to be built in early in the process as it can throw up issues which may be seen as disruptive. This will not be well-received if a plan has already been formulated and there is an urgency to deliver on time.” Clive Mitchell, Programme Office Manager, Strategic Development, Scottish Natural Heritage (SSN, 2016)

Despite early support for the tool, and its use by various public sector organisations across Scotland, its use has waned. This is because resource was provided to support it in the early years, through workshop facilitation and training. This hands-on support is no longer available. June Graham, SSN, was tasked with enabling adoption of ISM by public sector organisations but reported that being perceived as a behaviour change tool rather than a systems change tool hindered its effective application.

The Scottish Government has learned that while ISM is useful for engaging with policy makers and identifying barriers, **it has been less effective in helping to develop actions or policy options**, and needs to be embedded into the policy making process. The Scottish Net Zero Engagement Strategy states that the Government is committed to embedding the ISM tool into the policy making process.

As for Change Points (see below) the tool works best when decision makers or those with the ability to unblock barriers are participating. If more junior staff are those in the workshop, they can identify barriers, but must go away and address this later. Therefore, as with so many attempts at system change, feedback loops, a culture of trust and willingness to act are key. The tool does not provide the answers, and efforts to tackle the barriers must still be made.

According to June Graham, the ISM tool been used only for fairly simple problems, rather than for the large scale ‘wicked’ systems problems, so has not perhaps demonstrated what it can achieve in terms of transformation. However, June recalled that people who “got it” almost immediately could see the benefits of using it for complex issues.

ISM can not only be used to encourage creative and divergent thinking and to identify the points of blockage, it can also be used to carry out a pre-mortem on policy – to identify and tackle unintended consequences. ISM can also be used as a desk-based tool or mind-set approach by an individual.

There may be potential for ISM to pick up interlinked practices in section 5 of the workshop steps (see Figure 5 above, Behaviour Mapping) and to explore re-branding and re-positioning the tool as a systems change tool in the CCP process, perhaps with facilitation support.

8.3.2 The Change Points Toolkit

Change Points was developed with Defra and multiple other industry and policy stakeholders, particularly on water and food. It is currently in use by a wider circle of academics but the results are yet to be seen.

Change Points faces the same problem as other social practice tools in that it does not fit with contemporary evaluation frameworks – when we think in different ways we need different evaluation (not just attitude surveys).

The Change Points Toolkit is a six-step consensus-based workshop for multi-stakeholders. It takes what we are doing day-to-day and looks at a key problem, e.g. food waste. We are not all busy wasting food; but rather we are working, travelling, going to the gym and carrying out a string of routines.

The tool looks at different types of people who are carrying out high waste or high emissions actions, and works through what they are doing. This includes systems mapping.

The questions the tool was designed to address included:

- How can we reduce domestic demand for energy and water?
- How can we reduce food waste whilst ensuring food safety?
- How can we encourage people to take shorter / fewer showers?
- How can we reduce the volume of fats, oils and grease disposed of down the drain?
- How can we make hair care less water (and energy) intensive?
- How can we tackle invisible waste streams (e.g. plastics from the bathroom)?

This workshop takes a whole day to implement, or can be carried out in modules. The toolkit is designed to be easy to use by a facilitator and has pre-designed worksheets (see Figure 7 below). (Hoolohan et al. 2018)

01 PROBLEM SCOPING

1a) What is the challenge you'll focus on today?

1b) Why is this important? What does it mean to you personally?

2) What will success look like?

3) How do people's practices contribute to this challenge?

4) What is the critical change that must occur in order to resolve your identified challenge?

Figure 9: Problem Scoping (Hoolohan et al. 2018)

In an interview for this project, Claire Hoolohan reported that David Evans (Bristol University) was a co-author of Change Points and was a lead academic on projects that fed into it, including ISM. *As such, he may be a useful person to invite to share his insights in a workshop or focus group session.*

Insights from the workshop process include how to handle blame, catching stereotypes, challenging ‘resist, pause, transfer’ - when the problem is handed on to future generations and lastly, if participants begin to talk about messaging as the sole solution, then they are steered back towards other interventions.

There is potential for Scottish Government policy-makers and stakeholders working on food waste within the CCP development to explore this tool to see how useful they find it.

8.3.3 Interlinked Practices: Step by Step Guide

The concept of interlinked practices was developed further into a ‘Step by Step Guide) by Black and Eiseman (2019). This is a nine-step guide, provided in a written list on a single page. It builds on the Scottish Government’s four emission themes and the ten Key Behavioural Areas (reportedly this has since changed) to focus on a high carbon behaviour approach. The user identifies the interlinked practices associated with the theme and key behavioural areas and works through the elements (Meanings, Materials and Competencies of social practice theory) and then identifies the shared elements of these practices. It

works on where, when, how and why high carbon behaviours are performed and then considers the connections that need to be broken or pulled to alter the lifestyle.

By working through the changes to Materials, Meaning and Competences it begins to generate a bigger picture.

This seems to be a theoretical checklist with no worked examples or additional facilitation guidance or information on participants required. As such it appears to be untested. This was confirmed by Iain Black in his interview with CAG Consultants.

A desk-based trial to apply it was difficult and frustrating and for it to be effectively used it would need a lot of investment and testing to make it into an effective toolkit.

There could be an opportunity to test the guide, or to develop it into a more usable workshop model, however, it seems to focus on 'campaigns' as its output perhaps rather than addressing deeper infrastructure or societal issues.

8.3.4 Deep Demonstrations Design Process

A logical progression of social practice theory is systems mapping, which leads into complexity theory. Climate KIC's Deep Demonstrations Design Process is a workshop series that maps systems, points of 'convergence' i.e. points to unblock just as seen in the tools above. See: [Deep Demonstrations - Climate-KIC](#)

The Deep Demonstrations Design Process was used to bring the Climate Ready Clyde partners and stakeholders together to produce Glasgow City Region's first Adaptation Strategy and Action Plan (Climate Ready Clyde, 2021). The tool includes investment - which is important, as often money and finance is not referenced in these approaches and it is vital for policy-making to consider funding and investment.

8.3.5 Initial thoughts on toolkits

It has to be remembered that a toolkit is just that – a set of tools to be used by people with the time, capacity, permission and willingness to use the tools. There can be an expectation amongst busy policy makers that a tool might produce answers for them, when it is simply another way of framing a problem, or checking that all issues are covered. As such, introducing new concepts or tools need clearly explained and offered as a useful activity within the wider process. The same expectation should be applied to the research question about interlinked practices and the extent to which it can help deliver policy making for societal change towards NZ.

The job is not done at the end of the workshop process – it will produce challenging outputs and may need revisiting at different times in the policy cycle.

The ISM and Change Points tools appear to be very useful at the start of the policy making process, providing creative space for divergent thinking and potentially transformational and unexpected ideas. The tools can also, but tend not to, be used to develop more specific policy and programmes. There is not a clear reason for this, and the tools are under-used, wasting their potential.

If societal change, and transformation for NZ is to be delivered, flexing the muscle of these tools is worth a try.

Ideally the toolkits should be used in a workshop setting with a range of people in the room, from different sectors, and these should include people with agency to make changes. They should also include people with cross-cutting and policy-enabling roles such as finance, legal and Just Transition.

ISM does not appear to be used extensively at present; but could be if rebranded/repositioned as a system change tool; and it could absorb the concept of interlinked practices in the mapping stage.

Change Points is easily accessible and could be run in any group with someone skilled in facilitation.

The Deep Demonstration workshop looks like a much bigger undertaking, but it has certainly been successful in a city-region wide partnership and in developing policy and investment plans. A serious, funded commitment that was staffed and supported was in place to deliver this initiative. The Climate Ready Clyde partners who participated in this may be well-placed to replicate the process to address another challenge. Could this be a method to unlock systems change around transport and buildings decarbonisation in a city-region familiar with systems thinking? *This could be further investigated with Ben Twist and Kit England.*

The *Interlinked Practices Step by Step Guide* is the least developed of the tools examined (there is only one research paper that proposes it). This could be investigated further through the research, possibly in a focus group, however, it is not workshop-ready without further investment and testing.

Given that time is short and the challenge urgent, re-booting and using existing tools under a Systems Change brand, going beyond behaviour change to systems change would be a sensible idea.

8.3.6 Examples of interlinked and social practice approaches

Even with these tools and their promotion by high profile organisations, there has been minimal practical action. There are several examples of campaigns or initiatives that can be used to illustrate how the practice-based or interlinked approaches *could* be used. However, it should be noted that, in most of these case studies, practice theory and interlinked practices approaches were not actually used to develop these projects.

Table 3 below provides an overview of the case studies that were reviewed. Each case study is then discussed in more detail after the table.

	GM Moving	HEEPS	London on Tap	Cool Biz	Inglorious fruit
Aim:	Create a whole-systems approach to changing the way people move around.	Enable householders to make their homes more energy efficient and to install renewable or low carbon energy and heat	Promote the consumption of tap water as opposed to bottled water in a fine dining situation; ordering tap water was seen by many as being socially unacceptable in this situation	To reduce energy consumption in government buildings by raising the level of acceptable indoor temperature up to 28oC, below which the air-conditioning would not operate.	To raise awareness about Europe's 100 million metric tonnes of wasted food every year, much of which is discarded due to them not being aesthetically perfect.
Who	Greater Manchester	Scottish Government	Mayor of London and Thames Water	Japanese Government	Created by an advertising agency in response to a request from a supermarket in France
When	2017	2013	2008	2005	2014
Approach	Used Sport England's Social Ecological approach – individual, social and physical (rather than material) and policy elements.	End-to-end approach providing advice, funding support, access to suppliers to enable householders to reduce energy consumption. May have used ISM tool, but not verified.	A multi-dimensional campaign addressing the materials (water, glass packaging), meanings (conventions around proper behaviour in restaurants), and competences.	Widely promoted as multi-elemental policy.	Demonstrates what a campaign with an interlinked practice could look like.

Table 4: Summary of case studies

8.3.7 Greater Manchester – Manchester Moving and Made to Move

GM Moving: The Plan for Physical Activity and Sport (Greater Manchester, 2017) sets its person-centred, behaviour change approaches firmly within a Whole Systems Approach drawing on Sport England’s social ecological approach (see Figure 8).

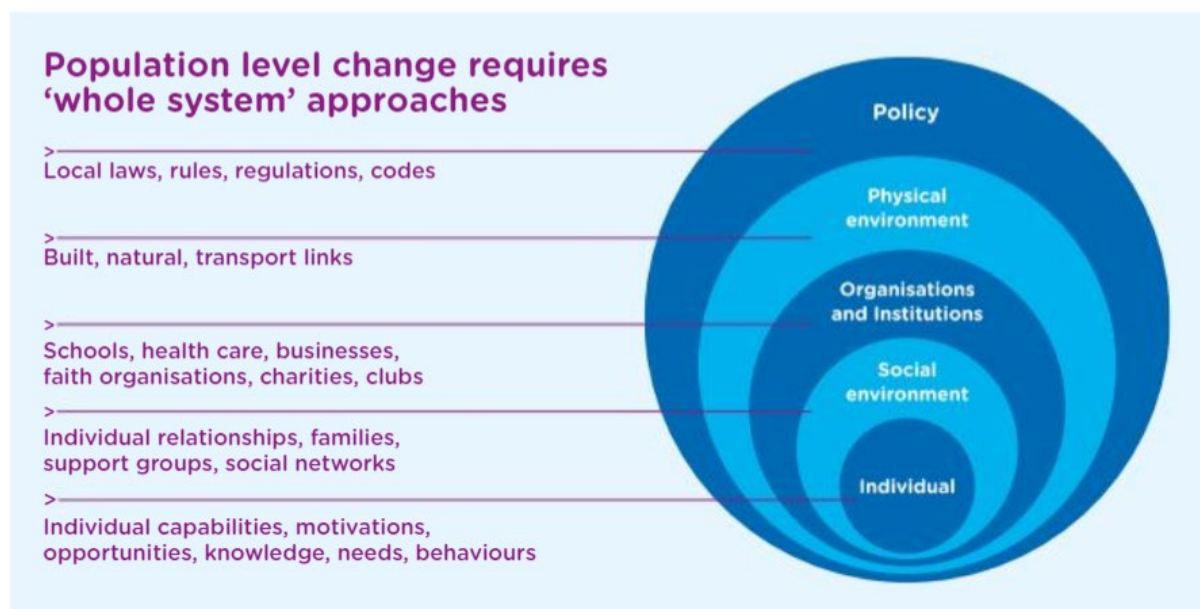


Figure 10 Population Level Change Diagram (Greater Manchester 2017, p.60)

This went on to inform the newly appointed GM Mayor’s Cycling and Walking Commissioner, Chris Boardman, in his report *Made to Move: 15 steps to transform Greater Manchester by changing the way we get around* (Boardman, 2017) – see figure 9. His plan took an interlinked approach to developing a whole active travel system that was suitable for a 12-year-old to use. It reads as if it is based on practice theory but on investigation, it was found that the authors had not consciously applied the material, competence and meanings of practice theory. It is possible that the GM Moving approach, based on the Sport England Social Ecological approach which covers the main elements of practice theory laid the foundations for the newer plan. The plan is comprehensive and they appear to have ‘thought of everything’. The Bee Network, Greater Manchester’s cycling and walking network is now under development through Transport for Greater Manchester.

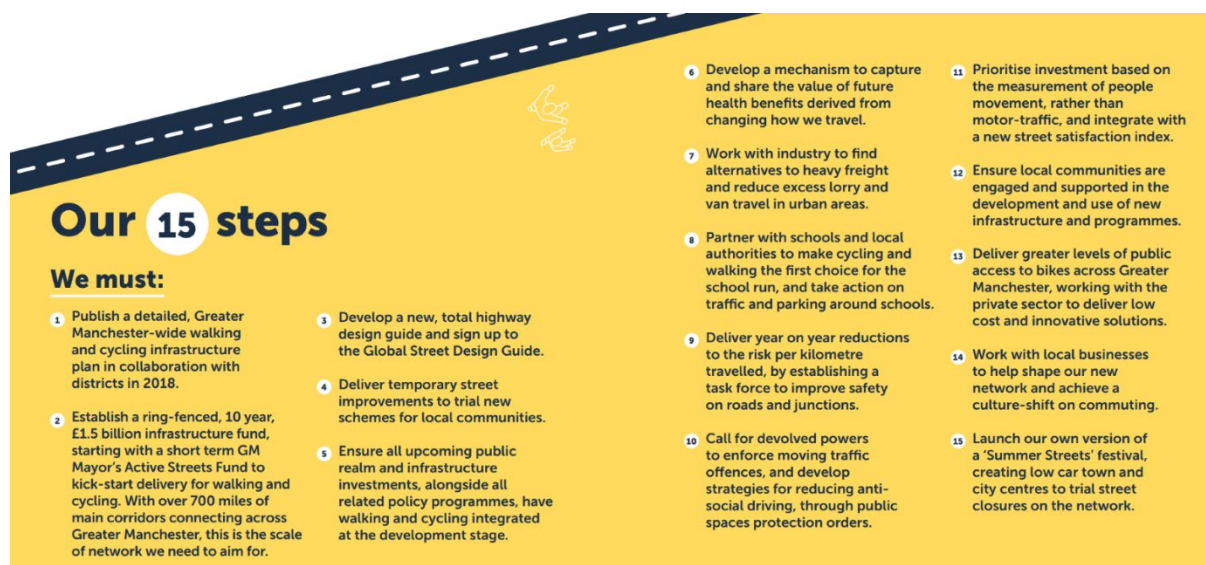


Figure 11: Our 15 steps to transform Greater Manchester by changing the way we get around (Boardman 2017, p.2-3)

8.3.8 HEEPS (Home Energy Efficiency Programme Scotland)

The HEEPS programme is an end-to-end support programme to enable householders to make their homes more energy efficient and to install renewable or low carbon energy and heat. It has a service design that is thorough and tackles the Materials, Meaning and Competences to support the system to enable actions by homeowners, landlords and contractors (Atkinson, J. et al. 2019). The HEEPS programme development was supported by a Community Analysis Team, and it has been reported that the ISM tool may have also been used, however this is not clear. *This will be investigated further if we can make contact with the original team leader, as it has not been found in our searches for evaluations of the ISM tool's impact.*

8.3.9 London on Tap

This initiative was launched by the Mayor of London and Thames Water, to promote the consumption of tap water as opposed to bottled water in a fine dining situation; ordering tap water was seen by many as being socially unacceptable in this situation (Sahakian and Wilhite 2014).

Rather than targeting individuals with an awareness-raising campaign and providing them with information that would change their behaviour, this initiative sought to change the practice of consuming bottled water alongside an expensive meal by addressing multiple elements simultaneously, by normalising the ordering of tap water in a re-usable carafe. A multi-dimensional campaign was devised to address the materials (water, glass packaging), meanings (conventions around proper behaviour in restaurants), and competences (the performance of fine dining) (Hampton and Adams 2018). A design competition resulted in new material object, 'the carafe', which was launched to replace the bottled water.

Bottled water consumption reduced by 8% in the summer of 2008 (Sahakian and Wilhite 2014), however as no evaluation of the project has been published, it is not clear if this reduction was purely the result of the London on Tap project and whether this 8% reduction

was sustained long term. However this can be seen as an example of how practice-informed policy could be used to influence more sustainable forms of consumption.

8.3.10 Cool Biz, Japan

In an initiative designed to reduce energy consumption in government buildings in 2005, a policy decision was made to raise the level of acceptable indoor temperature up to 28°C, below which the air-conditioning would not operate (Hampton and Adams 2018).

Through the Cool Biz campaign, the summer thermostats in government offices were set to 28°C in workplaces and a 'cool biz summer dress code' was issued, suggesting wearing looser clothes, short sleeves and breathable fabrics (Sahakian and Wilhite 2014), thus making the warmer office temperatures more bearable. The initiative was supported by clothing store, Uniqlo, which stocked a new range of professional clothing. The initiative was not devised using theories of practice, however it has been widely promoted as an example of multi-elemental policy (Hampton and Adams 2018).



Figure 12: Super CoolBiz poster (Deaver 2016)

8.4 Policy literature review

8.4.1 Introduction

As mentioned above, key Scottish Government policies and strategies were reviewed with two things in mind, to identify:

1. Where behaviour and societal change was described and made up a significant part of policy; where a combination of technology and societal change was identified; and the kind of policies or engagement that were planned to drive down emissions in these two categories.
2. Where social practice and interlinked practices lens could be applied.

3. Key areas/sectors the Scottish Government is seeking and has power to influence in relation to the application of interlinked practices for a NZ transition in Scotland.

8.4.2 Climate Change Plan Update

The Scottish Government's **Climate Change Plan Update** (Scottish Government 2018) recognises that delivering NZ by 2045 will be an iterative process and will require learning while doing. It acknowledges uncertainty and that “many of the solutions rely on further technological innovation, market development and wider take-up and adoption as well as action by others.” The plan update sets out policy measures to embed behaviour change in each of the sectors. It also recognises the support individuals and businesses will need to adapt their choices and behaviours. Greater emphasis is placed on behaviour change than wider societal change; mentioning **behaviour change** 53 times while only referring to **societal change** seven times (most often in reference to Climate Change Committee recommendations).

The plan update refers to “Positive Behaviour Change”, and that “behaviours are interlinked and context-dependent, and takes account of all the factors that shape people’s lifestyles: the social, material and individual.” It then talks about acceptance and adoption of low carbon technologies and support for policies. There is a frequent change in the framing of behaviour change, referring at times to facilitating it through policy, or influencing it to implement policy.

The actions used in relation to behaviour change are expressed as increasing awareness and understanding” of climate change, of “messages and support”, “promoting use”, “helping to change behaviours through parking regulations or education campaigns” and “encouraging people to shift towards reusable products [through charges]”. The plan’s buildings and transport sector sections address the context for behaviour change for example, referring to material support through Home Energy Scotland and robust quality assurance, and material infrastructure investments, for example improved bus services and priority bus lanes, and material enablers such as discounted bus travel for young people.

Although the plan recognises that what happens in one sector can have a knock-on effect in another, and puts forward a coordinated approach, picked up in a commitment to ‘Place Based Investment’ and ‘20-minute neighbourhoods’, behaviours referred to are still very much about individuals and sectoral emissions, and the information and incentives to change specific behaviours, rather than the people’s routines and lives. However, the section on shared mobility does refer to a plan to further “understanding of how and why people travel” which could be an opportunity to use an interlinked practices lens. The section on 20-minute neighbourhoods refers to better quality of life and health as well as net zero. *[Further reading (Thornton, 2022; Scotland RTPI 2021) on 20-minute neighbourhoods does not refer to interlinked practices and rather focuses on a set of services that should be accessible through walking within 20-minutes or 800m. This is problematic because if interlinked practices or multi-task stops are required to move shopping, children or goods, 800m is a long way. This is an opportunity to explore in the workshops.]*

Food waste is an area in which ‘everyday behaviours’ are mentioned and reference to helping “make the **right** choices easier for householders”.

There are also references to corporate behaviour in business and behavioural change in the agricultural industry.

There is a varied tone used to refer to behaviour change throughout the plan which does not reflect the principles outlined in the Net Zero Engagement Strategy (see below) or the ISM tool. Sometimes it seems supportive of helping people to make the 'right' choice when they keep making the 'wrong' choice; sometimes it is about helping people become aware of climate change and be supported in tackling home energy, transport, waste and food waste emissions. Interlinked practices and daily routines and the things people do regardless of climate change, and the co-benefits that can be realised for them in living a positive net zero life do not come to the fore.

This is something that can be considered in the workshops and perhaps be addressed more coherently in the new plan through a different practice-based approach.

8.4.3 Net Zero Engagement Strategy

The Scottish Government's **Net Zero Engagement Strategy** is now moving away from encouraging incremental changes in attitudes and behaviours, and is instead supporting a society-wide transformation (Scottish Government 2020). The strategy acknowledges the Scottish Government will need to create the necessary conditions for action to be taken, which includes 'material' changes including legislation and infrastructure, as well as requiring the shifting of social norms and increased 'climate literacy' across the population (Scottish Government 2021).

The actions by which this will be achieved are categorised into three objectives:

- Understand – communicating climate change.
- Participate – enabling participation in policy design including through design and delivery at a community level, particularly for those affected by the transition and co-design as well as traditional consultation and deliberative approaches.
- Act – encouraging action which includes championing and funding community-led action and through Arts, Creative and Heritage [sectors?] to inspire and empower.

There is an emphasis on 'meaningful' and 'genuine' in the language used here.

Although the strategy acknowledges that public engagement "must be supported by policies and programmes that facilitate the required reconfiguration of societies, institutions and infrastructure to create an enabling environment for net zero lifestyles" there is no 'feedback' loop mechanism clearly identified here to say how barriers and blocks to action will be identified and how the Scottish Government will address these. Stating this more explicitly in the document to support the intention to change legislation and infrastructure could be key to avoiding slippage back into putting the onus on people to change their behaviour. This could come up in the engagement but it would be interesting to see who holds the power or levers to assist the required change (see below: Change Points and Deep Demonstrations Design Process).

There is an acknowledgement of the importance of **community action** 'as a major driver in bringing about positive change with wide-ranging co benefits'; and a **place-based approach**

including the 20-minute neighbourhood concept where interlinked practices could be used to add value.

And positively there is a change to the evidence being collected for evaluation to include community-led methods and data collection as well as attitudes surveys (see below for why this is important in terms of using a practice-based approach to delivering societal change).

‘Engagement’ is a loose term often used as shorthand by policy-makers for ‘communication’ or ‘consultation’ and it is important to outline the types of engagement that policy-makers can carry out. The Strategy states that it organises its activities and initiatives according to the five categories of participation in the Public Participation Spectrum – Inform; Consult; Involve; Collaborate; Empower. However, it actually does not then do this. It also states that it will use principles for engagement based on the Scottish Government’s Participation Framework (Demsoc 2018; Scottish Government 2021) the implementation of this Framework across government is in progress but it could represent an opportunity to combine using practice-based concepts in engagement on Net Zero. This could be explored in the workshops.

Finally, the Theory of Change for the Strategy offers some opportunities in which practice-based or interlinked practice approaches might be used. For example, where strong stakeholder partnerships are built, action is encouraged through Place Based Approaches and engagement through culture and heritage.

8.4.4 Heat in Buildings Strategy

Buildings account for around a fifth of Scotland’s total greenhouse gas emissions. The Heat in Buildings Strategy (Scottish Government, 2021) recognises that “transforming our homes and workplaces will be immensely challenging, requiring action from all of us, right across society and the economy” and that a fundamental shift for most people and businesses is required.

The strategy maintains a focus on a just transition and on tackling fuel poverty and addressing both capital and running costs of heating our homes. It takes a two-pronged approach to reduce energy demand through improved building energy efficiency and to decarbonise heat through converting fossil fuel heating to zero carbon heat technologies.

The scale of the task is immense: currently 45% of Scottish homes achieve EPC ‘C’ or better and the remaining 55% must achieve this by 2030. By 2030 over 1 million homes and 550,000 buildings must be converted to net zero heat.

The strategy includes a commitment to increase public engagement, building on existing advice services and taking steps to raise awareness and understanding of these new technologies. It plans to establish a National Public Energy Agency to provide leadership and harness the potential of scaled-up programmes to decarbonise heat – with a virtual agency established within the coming year and a dedicated physical agency by September 2025.

Interestingly, for a strategy that relies on people taking decisions about their homes and properties, including considerable expense, disruption and unfamiliar technologies, it only mentions ‘behaviour’ five times. This shows an understanding that the ‘nudge’ or behaviour

approach is not a tool to deliver these big decisions; nudge perhaps being used for behaviours where people have agency, such as turning a thermostat down by a degree.

Analysis of the Strategy through a social practice lens shows that the conditions to support people to do something different are being put in place. Material elements such as funding and supply chains are included; Competence elements are present in the form of awareness, education, advice services, and developing skills in supply chains; ‘Meaning’ or social norms is harder to locate – however, developing Local Heat and Energy Efficiency Strategies developed with communities may be an element of this. The strategy does not suggest reverting to historic norms of the past, when colder homes were socially accepted, which is positive, as these had impacts on health for example.

The social and physical infrastructure is also being changed, with strengthened regulation and standards including an end to installing gas boilers from 2025 and a planned 2024 Zero Emissions Heat Standard for new buildings and the future reform of domestic EPCs; preparing the energy infrastructure for decarbonised heat and putting in place a market framework for decarbonised heat.

There are implications for practices in this transition, including how we budget, our perceptions of heat and cosiness at home and how we cook if moving off gas. The use of practice theory or interlinked practices in assessing the transition from an energy demand-side could help identify barriers and solutions, ensure diverse views are understood and aid engagement and communications plans. This is something to consider in the mapping and workshop stages.

8.4.5 National Transport Strategy

The National Transport Strategy (Scottish Government, 2020) takes a systems approach and clearly picks up practices and interlinked practices, although it refers to behaviours and routines. In its first pages it states that it is a strategy for “the whole transport system (people and freight) and it considers **why we travel** and how those trips are made, by including walking, wheeling, cycling, and travelling by bus, train, ferry, car, lorry and aeroplane. It is a Strategy for all users: those travelling to, from and within Scotland.”

It has a focus on ‘travel choices’ referring people taking part in the decision-making process and to empowering people and businesses to play a vital part in delivering the strategy. It also places a responsibility on people to deliver the strategy: “We all also need to take responsibility for our actions, ensuring that our travel choices make a positive contribution to delivering the Strategy over the next 20 years.”

Critically the Strategy recognises gender inequality and the need to understand women’s complex travel behaviour which reflects the gendered division of labour meaning women make more multi-stop, multi-purpose trips.

Practices, interlinked practices and travel or transport demand is a strong candidate for exploring how an interlinked practices lens might improve net zero policy and enact social change.

8.4.6 Scotland’s Climate Assembly

In line with its Climate Change Act 2019, Scotland held its citizens assembly in 2020/21 bringing 100 citizens together to hear expert evidence, discuss and deliberate on the question: How should Scotland change to tackle the climate emergency in an effective and fair way? The assembly developed an ambition, 16 goals and 81 recommendations. (Scotland's Climate Assembly. 2021)

The ambition recognises that 'urgent cultural change is needed across society - from governments, businesses, communities and individuals' and that action is needed at all levels of society. It recognises that entire society will have to change and adapt.

It calls for strong leadership to drive 'fundamental behaviour change across society' and points to the pandemic as demonstrating that this rapid transformation is possible.

The recommendations cover a range of interventions from the regulatory, material – putting in infrastructure and services – to the personal and collective, with individuals taking responsibility for their emissions, for example, by changing diets. "we all need to take responsibility for reducing the carbon footprint caused by consumption (e.g. eating less meat and dairy, buying fewer new goods, reuse and repair) and become a critical mass of people transforming these changed behaviours into the new normal."

These ambitions reference the individual and collective actions that can create social shifts towards a lower carbon society. Areas for such change relate to consumption, travel and localised lifestyles.

The recommendations cover a range of issues that reflect elements outlined in social practice theory, without referencing it, such as Carbon Labelling which increases competence and know-how to enable decision-making and Education on Sustainable Transport and a range of education programmes for children and adults on sustainable food, climate change and supporting nature; they explicitly name 'business practices', 'working practices' and 'sustainable practices' and 'sustainable land management practices' taking a more systems based approach than focusing on individual behaviour changes. The recommendations also include 20 minute neighbourhoods which put in place the material conditions for localised living.

Overall, Scotland's Climate Assembly calls for a range of interventions that indicate that it expects the government to act in a wide-ranging, holistic and comprehensive way across the material, competence and meaning elements required to drive social change.

8.4.7 Just Transition Commission

Scotland has an independent Just Transition Commission, established to support the ambition that the transition to a net zero and climate resilient economy takes place in a way that delivers fairness and tackles inequality and injustice.

The Scottish Government has committed to lead the production of key just transition plans, in a way that is co-designed and co-delivered by communities, businesses, unions and workers, and all society. The Just Transition Commission will support the production and monitoring of the plans, providing expert advice on their development.

The Scottish Government has developed a National Just Transition Planning Framework which will go beyond high-emitting industrial sectors to consider all sectors of the economy.

8.4.8 TIMES

The Scottish Government uses an emissions model which provides emissions data to policy-makers. The TIMES (The Integrated MARKAL-EFOM System) model generator is an open-source tool used across the world for policy formulation, and was developed as part of the IEA-ETSAP's methodology for energy scenarios to conduct in-depth energy and environmental analyses (Loulou et al., 2004). TIMES is used by the Scottish Government as a tool for policy formulation.

According to the Scottish Government team using the tool, it is good at interlinking scenarios, and providing insight to help achieve good policy. The downsides are that it is only as robust as the assumptions put in, and it is not very effective for behaviour change.

8.5 Summary of findings

The research suggests that current approaches to behaviour change will not achieve the level of change required to achieve net zero targets, and that more transformative societal change is required. It has been suggested that approaches such as social practice and interlinked practices could enable greater societal change.

8.5.1 Key findings regarding the challenges of using social practice / interlinked practices

- The concept of 'interlinked practices' has never been trialled, and social practice theory (from which it is derived) has rarely been used in practice to date, despite the growing interest in this topic.
- There is therefore no evidence that can suggest interlinked practices and social practice theory work in practice. Furthermore, the lack of real-world evidence is seen as a barrier to it being taken up and used by policy makers.
- This situation is perhaps not unique to practice theory; turning desired practices, which make sense in theory, into reality, is acknowledged in the research as a challenge.
- Several tools have been developed with the aim of enabling people to put it into practice, but the literature review has found that the tools have not been fully used or adopted. This is despite Scottish Government support for the ISM tool.
- A social practice approach is demanding for policy professionals and institutions which face resource constraints and where policy-makers have busy workloads and deadlines to meet. It needs to be carried out in a workshop environment and must include the people with power to make the changes needed.

The ISM tool has been used to engage with policy makers and identify barriers, but has been less effective in developing policy options, although it may have been used in the development of HEEPs. It has been suggested that certain case studies exemplify how the social practice approach could be used in future, however those case studies did not actually use the social practice approach in the design of the initiatives.

“We have to do something different, what else have we got?” Ben Twist, Director, Creative Carbon Scotland (2022).

8.6 Key findings regarding the opportunities

- Social practice theory and interlinked practices could provide a better approach to achieving societal change through the CCP, as they shift the focus from how an individual’s behaviour can be changed, to how social practices can be altered to become more sustainable.
- An interlinked practice approach provides a greater level of understanding about the interrelated nature of our actions, as opposed to just looking at individual actions.
- It has been suggested that social practice theory, and interlinked practices, can be a useful way of reframing a problem, removing the ‘blame’ and transfer of responsibility onto individual ‘consumers’ who do not do the ‘right’ behaviour.
- In one of the few examples in the literature review of the tools being used, Claire Hoolohan explained that using Change Points led to Defra introducing qualitative research and it helped a water company to have a completely new conversation enabling them to consider actions that were not even thought of before using the tool.
- It has been suggested that, even if social practice theories are not able to be translated into the day-to-day processes of policy-making, they can inform and inspire.

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9 Appendix 2: Methodology

A mixed methodology approach was used for the data gathering elements of the research, across three stages, described below

9.1 Scoping stage

9.1.1 Background research

A literature review was undertaken at the start of the research project, and each stage of the project built on the findings of the previous stage s the project progressed to include contributions from stakeholders through interviews.

Firstly, research was undertaken into the practical application of a practice-based approach to behaviour change policy. Theory, case studies and tools were researched using internet searches and academic journal databases. Relevant papers and reports were reviewed.

Alongside the literature review we undertook semi-structured interviews with the following four social practice theory experts:

- Ben Twist, Director, Creative Carbon Scotland
- Claire Hoolohan, Presidential Research Fellow, Tyndall Centre for Climate Research, University of Manchester
- Iain Black, Professor of Practice at University of Strathclyde
- June Graham, Sustainable Scotland Network, Edinburgh Climate Change Institute

We incorporated their insights into the detailed literature review provided to ClimateXChange and used them to design the workshops.

9.1.2 Search terms

Search terms included terms below plus combinations of the terms:

- Social Practice Theory
- Behaviour and Practice Theory
- Interlinked practices
- Social Theory
- Behaviour Change
- Policy-making

Further searches were made, building on authors and subsequent links:

- Elizabeth Shove
- Matt Watson
- Fiona Spotwood
- Iain Black
- Claire Hoolohan

Some search terms were not particularly successful; combinations were more effective and further searches were made based on references made in academic publications.

9.1.3 Scottish Policy document review

Secondly, Scottish Government policy papers to be reviewed were suggested by ClimateXChange and Scottish Government staff, and further searches were undertaken by the research team. Scottish Government policy documents were reviewed in order to identify:

- Where behaviour and societal change was described and made up a significant part of policy; where a combination of technology and societal change was identified; and the kind of policies or engagement that were planned to drive down emissions in these two categories.
- Where social practice and ILP approaches could be applied.
- Key areas/sectors the Scottish Government is seeking and has power to influence in relation to the application of ILP for a NZ transition in Scotland.

9.1.4 Inclusion criteria

- Does it relate to climate change emissions? E.g. transport, buildings, waste, energy, economic development etc
- Is it too detailed? Focus on strategies, what about policy (we don't want to get right down into policy analysis unless indicated by practice theory analysis)?
- Does Scottish Government/CXC want us to review it? If yes, we review it for interlinks
- Does it relate to 'behind the line of visibility'? If yes, it's not relevant to our project because it does not require any behaviours/practices to change
- Does it relate to a combination of tech/behaviour? If yes - that is what we need to test out a practice theory/interlinked practices lens on so include it
- Does it relate just to behaviour change? If yes - it might be more complicated than we think - so we test out the practice theory/interlinked practices lens on it.
- Does it relate to emissions out of Scottish Government control? If yes, note and 'park'

In order to get an understanding of how the Scottish Government develops its Climate Change Plan, we held meetings with relevant cross-cutting teams at the Scottish Government, including:

- The Climate Change Plan team who explained the steps they follow over the timeframe of its development.
- The TIMES model team who develop the emissions envelopes for each sector.
- *The behaviour change and engagement team* who lead on the Scottish Government's NZ public engagement strategy; and
- The Place Outcomes Lead, Planning and Architecture Division, who work on the Place Standard tool with the climate lens.

All sectors were asked to nominate one staff member for an interview with the research team. These interviews gave the research team an insight into how policy is developed within their sector team, including tools and approaches used (e.g. Theory of Change), what expertise was used (e.g. social research expertise), and the role of ministers in setting policy.

The interviews also enabled a discussion about where social policy could fit into their strategy.

Issues emerging from the literature review and interviews relating to an interlinked practice approach in the context of the Climate Change Plan development, were explored in more detail through the workshop with Scottish Governments sector staff and external stakeholders. These included: what practices participants would change to deliver the Scottish Government net zero target, which Climate Change Plan sectors and challenges could be improved using an interlinked practices approach and obstacles and opportunities to doing this.

9.1.5 First set of workshops

We held two online workshops in November 2022 entitled: How can new behaviour change concepts shape the next Climate Change Plan?

- Tuesday 1st November with seven Scottish Government sector staff; and
- Friday 4th November with five stakeholders and Scottish Government sector staff.

The workshops aimed to:

- Investigate whether an ILP approach could help design more effective behaviour change interventions, and where it could help to enable the step change required to meet NZ targets.
- Share findings from the literature and policy review into practice-based approaches.
- Facilitate a group discussion about how theories, principles and models can be used in developing the next Scottish Climate Change Plan.
- Unpick the pros and cons of using practice-based approaches.

9.1.6 Mapping Stage

In order to identify which sectors could potentially benefit from an interlinked approach, a mapping exercise was undertaken using an online whiteboard tool. This was a desk-based exercise and looked at each sector in the updated CCP, and categorised and mapped a large range of factors, including:

- Sector policy outcomes from the CCP update and related policies;
- CCC's Monitoring Framework consisting of outcomes, enablers, policy and contextual factors;
- Progress against policy outcome indicators; and
- Cross cutting themes.

For each emissions sector we identified outcomes and policies that relied on people doing something and then labelled policies as 'material', 'competence' and 'meaning' to assess whether the full conditions for change were being addressed. We also made links within and between sectors where things people do overlap across sectors, for example, within a place.

9.1.7 Testing Stage

Flowchart

We developed a process flowchart or checklist that aimed to test if and how Interlinked Practice could be used in making the new Climate Change Plan. The flowchart was reviewed by the steering group, and then tested out at the second set of workshops.

Workshops

We held four more workshops with government and stakeholder participants, to test whether the interlinked practices concept and the flowchart were useful. Each workshop focused on a different theme as follows:

- The route map to achieve a 20 per cent reduction in car kilometres by 2030
- 20-minute neighbourhoods
- Use of the Change points tool and reducing emissions from livestock production
- Retrofit

10 Appendix 3 Mapping summary



Cross cutting support from behaviour change, circular economy and green finance teams
 Available tools to support policy development for ILP: Flowchart, ISM, Change Points, but potential as monitoring and evaluation and feedback tool to adjust and intervene in policy between updates/formal evaluations.
 Need to deliver a Just Transition

Mapping Summary: Text version

Agriculture

Opportunities /links for ILP:

Peer learning (see Farm Net Zero below) **Competencies**

20 minute neighbourhoods **Meaning, Materials**

NETs: Availability of home grown sustainable biomass to supply large scale power bioenergy with carbon capture and storage **Materials**

Sources of support/Case studies: **Competencies, Meaning**

Farm Net Zero: <https://farmcarbontoolkit.org.uk/farm-net-zero/>

LULUCF

Opportunities/links for ILP:

Increasing Scottish Grown timber

Buildings & heat: policy outcome 2 - Construction industry sourcing more sustainably sourced wood fibre to increase its use of wood products where appropriate (Link to industry as well) **Materials**

NETs: Availability of home grown sustainable biomass to supply large scale power bioenergy with carbon capture and storage **Materials**

Sources of support/Case studies: **Competencies, Meaning**

Farm Net Zero: <https://farmcarbontoolkit.org.uk/farm-net-zero/>

Transport

Opportunities/links for ILP:

20 minute neighbourhood

Links to Electricity: Local communities

Local energy model - one that supports local solutions to meet local need, and links to local generation and use.

Community- led renewables.

Sources of support/case studies: **Competencies, Meaning**

Transport Scotland/COSLA Routemap:

<https://www.transport.gov.scot/publication/a-route-map-to-achieve-a-20-per-cent-reduction-in-car-kilometres-by-2030/>

Manchester Moving and Made to Move: <https://beeactive.tfgm.com/made-to-move/>

Waste

Opportunities/links for ILP:

Household Food waste - largest emissions of sector. Link to changing purchase/consumption/storage of food. Potential links to Agriculture and 20 minute neighbourhoods

Sources of support/Case studies: **Competencies, Meaning**

https://www.c40knowledgehub.org/s/article/Tackling-food-waste-in-cities-A-policy-and-program-toolkit?language=en_US

Buildings and Heat

Opportunities/Links for ILP:

Link to LULUCF Policy Outcome 2: Increase the use of sustainably sourced wood fibre to reduce emissions by encouraging the construction industry to increase its use of wood products where appropriate. **Materials**

Decarbonisation of heat linked to LULUCF and NETS

Availability of home grown sustainable biomass to supply large scale power bioenergy with carbon capture and storage. **Materials**

Community energy - district heating, 20 minute

Neighbourhoods. **Materials, Meaning**

Industry

Opportunities/links for ILP:

Industry emissions linked to hydrogen production which has links to other sectors e.g. heat, transport and electricity.

Link to NETs - CCS

Manufacturing innovation will support delivery of low carbon energy, transport and buildings to society **Materials**, as well as transition to circular economy.

How industry can change our practices (top down). **Materials**

But also how our practices (e.g. consumption and demand for green products and services) can influence industry. Consumer demand for low carbon productions and services: investigate opportunities for green labelling to inform purchasing decisions. **Competencies, Meaning**

Electricity

Opportunities/links for ILP:

Links to buildings and transport decarbonisation.

Potential for NETs to deliver negative emissions from electricity, e.g. through use of bioenergy for electricity generation combined with CCS. **Materials**

NETs

Opportunities/links for ILP:

Less of a priority for ILP, as is a response to carbon emissions that cannot be completely eliminated, but links to:

Industry: manufacturing innovation. **Materials**

LULUCF/Agriculture: availability of home grown sustainable biomass for BECCS. **Materials**



Electricity: use of bioenergy for electricity generation combined with CCS

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