European Commission

UNLOCKING THE FULL POTENTIAL OF BEHAVIOURAL INSIGHTS FOR POLICY

From influencing the individual to shaping the system

EU **Policy Lab**

BEHAVIOURAL INSIGHTS

SYSTEMS ANALYSIS

PUBLIC POLICY

Joint Research Centre

How to cite this report: European Commission: Joint Research Centre, Dupoux, M., Gaudeul, A., Baggio, M., Bruns, H., Ciriolo, E., Krawczyk, M., Kuehnhanss, C. and Nohlen, H., Unlocking the full potential of behavioural insights for policy: From influencing the individual to shaping the system, Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/7367599, JRC138028.

UNLOCKING THE FULL POTENTIAL OF BEHAVIOURAL INSIGHTS FOR POLICY:

From influencing the individual to shaping the system

Authors:

Marion Dupoux

Alexia Gaudeul

Marianna Baggio

Hendrik Bruns

Emanuele Ciriolo

Michal Krawczyk

Colin Kuehnhanss

Hannah Nohlen

EU **Policy Lab**

The EU Policy Lab is a space for cross-disciplinary exploration and innovation in policymaking. We apply collaborative, systemic and forward-looking approaches to help bringing the scientific knowledge of the Joint Research Centre into EU policy making.

We experiment with the new, the unprecedented and the unknown. We seek to augment our understanding of the present, and to challenge and reinvent the way we think about the future.

The EU Policy Lab is also a mindset and a way of working together that combines stories and data, anticipation and analysis, imagination and action. We bring new practical and radical perspectives to tackle complex problems in a collaborative way. Together, we explore, connect and ideate to create better policies.

policy-lab.ec.europa.eu

Contents

Abstract

This report examines the transformative role of behavioural insights (BI) in EU policymaking, advocating for integrating BI early in the policy cycle to enhance policy effectiveness. It challenges the misconception that BI is limited to designing behavioural interventions with marginal impacts and demonstrates its potential to guide the development of both traditional policy instruments and behavioural interventions. The report underscores the importance of BI in identifying synergies and conflicts between policies across different areas, thereby improving policy coherence. It advocates for the use of BI in combination with systems analysis to achieve systemic changes. The policy relevance of this work lies in its timely contribution to evidence-based approaches, particularly in areas where the human dimension is key to policy success.

Foreword

Over the past decade, behavioural insights have increasingly informed policymaking, offering new ways to address complex societal challenges. Recognising this potential, the European Commission was among the first institutional players to seek to integrate behavioural insights into its work. Within the European Commission, the Joint Research Centre (JRC) is well-placed at the intersection of science and policy to respond to this opportunity. As such, we soon started to build capacity in behavioural insights, and have since established a dedicated team supporting a range of Commission departments, covering several policy areas, to collect and make sense of behavioural evidence for policy.

From the beginning, the approach in JRC has been to view behavioural insights as a complement to other forms of scientific evidence — as a means to better understand decision-making contexts and design more effective policies and policy interventions. That is why our efforts are focused on bringing in behavioural insights across the whole policymaking cycle. Placing our Competence Centre on Behavioural Insights within our EU Policy Lab – alongside Foresight and Design for Policy expertise – reflects our belief in the importance of systemic approaches to policymaking.

This paper presents lessons learned along the way and recommendations for the way ahead. I'm proud of how our team has contributed to bringing this field further within the Commission as well as in scientific fora. I am pleased to see JRC colleagues engaging with important debates about the role of behavioural sciences in policy, such as those sparked by Chater and Lowenstein's recent paper, "The i-Frame and the s-Frame: How Focusing on Individual-Level Solutions Has Led Behavioral Public Policy Astray". Our reflections are shaped by an awareness of the complexities of today's challenges, a commitment to using behavioural insights responsibly, and years of practical experience in their application.

The challenges we face today are undeniably complex, and they require systemic, thoughtful solutions. In laying scientific foundations for policies, we must already anticipate this complexity, build on what we know, and bring together new ideas, expertise and experience. Taking stock and analysing what we learned from current and past practices, as this paper does, is a part of this response. We remain committed to learning, adapting, and striving for better, just as we remain dedicated to our role in supporting evidence-based policymaking across the European Commission.

Bernard Magenhann

Acting Director-General of the Joint Research Centre

Acknowledgements

Executive summary

Policy context

Current and future challenges in many policy areas necessitate changes both in individual behaviour and in our social, economic and policy systems. Behavioural insights (BI) can have a strong role in enhancing EU policymaking to respond to those challenges. This report should be informative to policymakers in all areas where success depends on human behaviour, such as environmental conservation and sustainability, public health, finance, education, labour and employment, justice, taxes, consumer protection, and many more.

Key conclusions

BI can inform a wide range of policies, as well as their interconnections within and across policy areas. The table below illustrates what BI can support, how it does so, and why it matters.

Table ES1. Behavioural insights in action: from behavioural interventions to systemic change

	Behavioural intervention	Single policy	Policy mix	Policy interconnection	System
W H A T	BI can target individual actions	BI can support the development of individual policy tools, whether traditional or behavioural	BI can align policy tools to work together towards a shared objective	BI can examine the interactions between policies from a behavioural standpoint	BI can pinpoint leverage points where behavioural analysis helps to develop targeted policy tools
H O W	By using behavioural interventions like nudges and boosts	By understanding and analysing behavioural factors relevant to the policy context	By relying on relevant behavioural factors for the overall design of the policy mix	By bringing a human perspective into the policy landscape and identifying behavioural issues leading to policy fragmentation	By mapping stakeholders and their behaviours, influential factors and key relationships (behavioural systems mapping)
W H Y	*To influence individual behaviour and improve communication of existing policies.*	*To ground policy choice and guide policy design.*	*To leverage synergies between traditional and behavioural policy tools within a policy area.*	*To enhance policy coherence across different policy areas.*	*To unlock key behavioural barriers and achieve a more cohesive, well-functioning system.*

Source: Created by the authors.

BI should be integrated into all phases of the policy process, with particular emphasis on the earliest stages, to ground policy design in human behaviour, enhance policy coherence, and ensure a better functioning system. The figure below illustrates BI's contributions to each stage of the policy cycle (coloured text in shaded quarters) and its meta-level contributions to improving the overall functioning of the policy process (grey outer circle).

Figure ES1. Behavioural insights across the policy cycle

Source: Created by the authors.

Main findings

BI can influence policymaking beyond individual behavioural change. The impact of BI is not inherently marginal. Rather, it has the potential to drive systemic changes. Below is a summary of how BI can inform the various types of policies, their interconnection, and the system as a whole.

— **Behavioural interventions.** BI can trigger systemic changes through cascade effects, whereby small individual behavioural changes can lead to broader societal shifts. However, what those effects will be is uncertain.

— **Single policy.** Early inclusion of BI can guide the choice and development of both behavioural interventions and traditional policy instruments, ensuring that they are grounded in a thorough understanding of human behaviour.

- **Policy mix.** BI can enhance a policy mix by improving the cohesiveness of different policy tools that work towards a common objective. BI should ideally be involved in the design of all the tools forming the policy mix – whether traditional or behavioural – to ensure they complement each other and address the psychological and social barriers in the most effective way.

- **Policy interconnection.** BI can help to identify synergies and conflicts between policies across different areas by looking at their effect on the behaviour of individual stakeholders. Taking the individual's perspective can help to improve the coherence of the overall policy landscape.

- **System.** BI can map stakeholders, their behaviours, factors that influence them and their relationships to create a behavioural systems map. This map allows for identifying leverage points where barriers exist. Once identified, behavioural factors at these points are analysed, and policy tools to mitigate or remove these barriers are designed and tested for effectiveness.

Systemic change is fundamentally rooted in human behaviour: while structural, political, economic, or technological factors may set the stage, it is the decisions and actions of individuals that ultimately drive change. Identifying and leveraging the right behavioural pathways can shift the trajectory of systemic challenges, paving the way for transformative outcomes. To achieve this, integrating BI with systems analysis (e.g. design for policy, strategic foresight) holds significant potential. This combination of disciplines enables the design of policy tools – whether traditional or behavioural – that align with systemic drivers and human nature, thereby supporting the system's proper functioning.

Related and future Joint Research Centre work

The JRC continues to explore the integration of BI into various policy areas, with upcoming projects focusing on energy efficiency, biodiversity conservation, crisis preparedness, migration and artificial intelligence and fairness. This report is part of an initiative within the EU Policy Lab to gather practical experiences and create effective methods for using behavioural science to tackle complex, system-wide problems. These efforts contribute to refining the process of creating effective policies.

Quick guide

This report delves into the concept of BI, which applies knowledge from psychology and other social sciences to policymaking. It examines how BI can inform policy design, from behavioural interventions such as nudges to more systemic changes and stresses the importance of integrating BI early in the policymaking cycle. The report exploits a mix of qualitative and quantitative findings to assess the impact of BI on policy effectiveness. Key concepts include the 'policy mix' (combining various policy tools for a given goal) and 'system' (an entity that is made of parts that interact, including people and policies). The report argues that policies are more effective when informed by extensive knowledge of human behaviour and that early BI integration can improve policy outcomes.

1. Introduction

Research in the **behavioural sciences** (^{1}) has made great progress over the last two decades. Its contributions to the understanding of human behaviour and decision-making were rewarded with several Nobel memorial prizes in economics (^{2}). The resulting concept of **behavioural insights** (BI) – evidence-based conclusions about human behaviour – then made its way into policymaking, often through the use of **behavioural interventions**. BI uses behavioural sciences primarily to **understand** the cognitive, social and environmental drivers and barriers that affect human behaviour within specific contexts. This understanding often informs the design of behavioural interventions, such as 'nudges' (^{3}). Nudges **influence** individual behaviour in a specific way by 'actively changing the cognitive, social, and informational decision context' (Rogers and Frey, 2015). Policymakers now explicitly incorporate behavioural evidence into the policymaking process (Baggio et al., 2021), with dedicated BI teams (^{4}) established to guide them (Sousa Lourenço et al., 2016).

The way in which BI is being used in policymaking has however come under criticism. First, behavioural interventions seem to encourage a view of individual behaviours as a driver of societal policy problems, thereby possibly distracting from systemic reforms (Chater and Loewenstein, 2022). Second, there is the belief that BI can only result in the design of (soft) behavioural interventions with marginal and short-lived impact. Third, BI is too often integrated as a mere 'plug-in' policy tool to complement existing policies, rather than early in the design of policies. We address these criticisms by exploring some of the misconceptions surrounding the use of BI in policymaking (Section 2). We define key concepts (policy mix, system) to frame the full potential of BI for policy (Section 3). We show that the scope of BI extends beyond what some policymakers and scientists might assume and discuss how BI can contribute to systemic change (Section 4). We also chart the way towards fully realising the potential of BI to improve policymaking (Section 5) (^{5}).

This report mainly builds on the experience and lessons learned from the work we conduct at the **Competence Centre on Behavioural Insights** (CCBI) (^{6}) and the **Joint Research Centre** (JRC) more generally. The CCBI Team supports policymaking within the European Commission by identifying behavioural elements of policies and testing behavioural levers to increase policy effectiveness. The CCBI is part of the **EU Policy Lab** (^{7}), a space where scientists from different fields engage in cross-disciplinary exploration to catalyse the development of innovative policies in the European Union (EU). The lab was established to address the need for more effective and citizen-centred policymaking in the EU. Fully integrated in the European Commission, more specifically the JRC, the EU Policy Lab benefits from constant interaction with EU policymakers, making it an ideal place to connect science and policy (Miller et al., 2024).

(^{1})   Behavioural sciences draw from psychology, economics, sociology and other fields, and investigate human behaviour, such as how we process information and make choices. This includes understanding the affective and cognitive processes, beliefs, perceptions, knowledge and intentions underlying behaviour and information processing.

(^{2})   Kahneman and Smith in 2002, Ostrom in 2009, Thaler in 2017, and Banerjee, Duflo and Kremer in 2019.

(^{3})   Nudges are 'any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives' (Thaler and Sunstein, 2008). The essence of a nudge lies in its automatic nature, requiring minimal conscious deliberation from the individual.

(^{4})   For an overview of BI units in the world, please refer to https://oecd-opsi.org/blog/mapping-behavioural-insights/.

(^{5})   Readers less familiar with BI may wish to proceed directly to Section 3 for a foundational understanding.

(^{6})   For an overview of the work carried out by the CCBI, please refer to https://knowledge4policy.ec.europa.eu/behavioural-insights_en.

(^{7})   For an overview of the work carried out by the EU Policy Lab, please refer to https://policy-lab.ec.europa.eu/index_en.

2. Debunking misconceptions about behavioural insights

There are three main criticisms regarding the role of BI in policymaking. First, BI is often seen as focusing too much on adapting individuals to the system, rather than addressing systemic issues themselves [8]. Second, BI is criticised for relying only on 'soft' interventions that have a limited and short-lived impact. Third, perhaps as a result of these perceived limitations, BI is often introduced to 'fix' existing policies instead of being used to guide the selection and design of policy options from the outset. We address each of these interconnected criticisms in the three following subsections.

2.1.   The system versus the individual

The first strand of criticism deals with the use of behavioural interventions as a tool for policymakers to achieve their objectives (Schmitt et al., 2020; Chater and Loewenstein, 2022). Chater and Loewenstein (2022) argue that behavioural interventions result in an excessive focus on individual-level solutions to policy issues [9], and that most issues that behavioural interventions aim to solve would be better addressed by system-level changes. They also say that this is both unfair, because individuals may not be responsible for the issues in the first place, and misguided, because solutions should address underlying issues rather than just their manifestation. Policymakers should therefore not use policies to change individual behaviour but rather change the system to better serve individuals (Rutter et al., 2017). **Box 1** illustrates Chater and Loewenstein's argument that focusing solely on behavioural interventions may address only the symptoms rather than the root causes of the problem.

Box 1. Nutrition and vegetable consumption

> The UK National Health Service's '5 a day' campaign to encourage the consumption of fruits and vegetables [10] exemplifies a well-meaning but misdirected campaign that assumes the problem lies in individual behaviour rather than in the context in which people make decisions. Specifically, it assumes that individuals lack education and knowledge on healthy eating. This fails to take into account wider systemic issues, including constraints people may face in terms of resources, such as income to afford healthy food products and/or time to prepare home-cooked meals. Marginalised groups may also face limited access to healthy products if they live in areas that can be seen as 'food deserts', with inadequate supply within a reasonable distance, further aggravating other resource issues (Drewnowski and Specter, 2004) [11]. Proper policies to encourage better nutrition among disadvantaged groups would address those systemic issues by making high-quality food more affordable, increasing incomes, improving access to shops, limiting or taxing sugar content in processed foods, etc., instead of placing the burden on individuals [12].

---

[8]   Critics are often unclear on what they mean by 'the system'. We introduce our working definition in Section 3.

[9]   Chater and Loewenstein (2022) also suggest that behavioural policies are sometimes made to accommodate lobbies that want to avoid implementing more effective, yet potentially more coercive, policies that would challenge deeply ingrained societal factors across different policy areas. For example, the company BP may have promoted the concept of individual carbon footprints to shift the focus from emissions by companies to emissions associated with consumers' use of their products. This may have helped to deflect responsibility for climate change. We give counterexamples, whereby BI has been used to counter the interests of corporations (e.g. by enhancing consumer protection and fighting 'dark nudges') (**Box 7**).

[10]   https://www.nhs.uk/live-well/eat-well/5-a-day/why-5-a-day.

[11]   The term 'food desert' has come under criticism for misrepresenting the issue. The term 'food apartheid' may more accurately represent the systemic causes of poor food access (Brones, 2018). Furthermore, the causal links between food deserts and health have not been firmly established, as the relationship is multifaceted (Zhen, 2021).

[12]   For a more detailed outline of this argument (and its pitfalls) in the context of climate change, see Mann (2021).

To some extent, we agree that BI has been used extensively to change individual behaviour up to now. However, we argue that those applications are not representative of the full potential of BI for policymaking ([13]). While behavioural interventions aim to influence behaviour, the very first objective of BI is to **understand** behaviour to inform a wide array of policies, whether they are behavioural or traditional (Hallsworth, 2023), or a combination of both, either within a single policy area ([14]) or across different ones. The growing focus on behavioural systems ([15]) in the literature also shows the potential of BI to influence the system (Del Valle et al., 2024). In Section 4, we show how BI can be used to guide changes beyond individual behaviour.

2.2. Soft interventions with marginal and transitory impact

Another issue that has limited the perceived impact of BI is the belief that it relies on only 'soft' interventions. Soft interventions aim to preserve individual autonomy by encouraging rather than mandating or incentivising specific actions. This approach respects individuals' freedom to choose while still guiding them towards better decisions, using strategies such as moral suasion, educational campaigns, and nudges. Such strategies aim to influence behaviour without imposing strict legislation or financial incentives. An example of a nudge is encouraging higher retirement savings by increasing the default contribution rate, as most people automatically accept the default (Benartzi and Thaler, 2007). The non-coercive nature of nudges has been used to market them to both liberal and conservative audiences, using the term 'libertarian paternalism' (Camerer et al., 2003; Thaler and Sunstein, 2003) ([16]).

The literature evaluating the impact of behavioural interventions on behaviour has been growing, predominantly finding that these interventions have a relatively marginal effect (Maier et al., 2022; Mertens et al., 2022; Vlasceanu et al., 2024), especially when implemented at scale (DellaVigna and Linos, 2022) ([17]), although several studies showed a high impact in some contexts (e.g. Hallsworth et al., 2017; Holz et al., 2023).

Recent literature has also investigated the effectiveness of behavioural interventions, especially nudges, over the longer term (Beshears and Kosowsky, 2020), and results are mixed. In some cases, the effect is persistent (Ferraro et al., 2011; Allcott and Rogers, 2014), while in other cases the impact tends to wane over time (John et al., 2012) unless the intervention is applied repeatedly (Robitaille, 2021). Even then, the effectiveness may diminish as people become accustomed to the interventions

---

([13]) As Thaler (2020) puts it, "I hope the future involves embracing choice architecture in the fullest sense of the word, moving from the questions of interior design to the tougher, upstream questions of plumbing, carpentry, masonry, electricity, zoning…to really see what responsible choice architecture can do for the world.". Schmidt (2022) provides an interesting model for choice infrastructure that looks beyond choice architecture.

([14]) A policy area is a specific domain of public policy, such as healthcare, education or environmental protection, within which related issues, regulations and governance activities are addressed and managed by governmental or authoritative entities.

([15]) Behavioural systems are 'systems with multiple levels of interacting actors in which people make the best choices they can given their limitations' (Del Valle et al., 2024).

([16]) There is a wide range of literature that criticises the paternalistic aspect of behavioural interventions (e.g. Grüne-Yanoff, 2012; Wilkinson, 2013) and literature that addresses such criticism (Sunstein, 2018; De Ridder et al., 2024). While this debate is significant and warrants thorough examination, this report does not focus on it. Our primary objective is to illustrate the potential of BI in enhancing policymaking processes and outcomes. Therefore, we aim to explore the broader applications and benefits of BI beyond the scope of the paternalism debate.

([17]) There is however little discussion in this literature of the combined impact of multicomponent interventions, unlike in medical literature (Jimenez et al., 2021). Interventions are usually evaluated one by one, rather than as part of a programme of interventions.

(Thompson, 2010). Rogers and Frey (2015) provide an in-depth review [18]. Such behavioural interventions might also fail to instigate enduring change because they merely address the issues without probing the underlying causes. For example, a behavioural intervention such as displaying calorie counts on menus may prompt healthier choices in the short term, but it addresses only the surface issue of poor food choices without tackling the complex underlying causes of, for example, obesity (Chater and Loewenstein, 2022). Similarly, nudging people to save more money neither addresses broader structural issues with the retirement system itself nor increases the long-term motivation, opportunity or ability to save more [19].

While some research highlights the marginal or short-lived impacts of BI across various domains, we suggest that the research often focuses narrowly on nudges (Thaler and Sunstein, 2021; Belardinelli, 2024). This does not mean that nudges are ineffective, but rather that their effectiveness depends on the context in which they are applied (Sunstein, 2018; Mažar and Soman, 2022), the type of population they target (Bryan et al., 2021; Mažar and Soman, 2022) and the type of nudge employed (Beshears and Kosowsky, 2020). In some situations, behavioural interventions may not be enough (Linos, 2022). In other situations, behavioural interventions can lead to system-level change (Centola, 2010; Johnson and Mrkva, 2023). Nevertheless, system-level effects remain difficult to predict (Stevenson, 2023). This report reiterates that BI is not restricted to behavioural interventions (Ewert, 2020) [20]. We advocate for an approach that focuses on identifying and understanding the underlying causes of behaviour, with the goal of guiding the choice and the design of any type of policy tool, including more coercive ones (regulation, ban, etc.).

2.3. A plug-in tool

A possible consequence of the two previous issues is that BI is often used as an afterthought, applied only to solve side issues after primary policy mechanisms have been established (OECD, 2017, Figure 2.6, p. 37). BI is said to be primarily employed to 'fix' existing policies at the tail end of the policymaking process, rather than being used to inform and contribute to them from the outset. We think that this criticism may originate in the early applications of BI in policy, when behavioural experts were tasked with enhancing policy uptake by citizens and had limited influence on policy design (**Box 2**). Typically engaged in the final stages of policy formulation, BI experts had limited opportunities to change policies, as these were already discussed and set beforehand. Perhaps this initial application of BI has led to the mistaken view that BI can be used only as a plug-in tool, rather than being employed to understand the behavioural aspects of a policy challenge from the very beginning of the policy cycle. By intervening at the margin of traditional policy, this may have led BI to have only small, marginal impact, as it can make traditional policies only slightly more effective and efficient (Van Ryzin, 2021). The use of BI as a plug-in tool has thus reinforced the unfortunate association between BI and marginal effects on behaviour.

---

[18]   To create meaningful and enduring change, a more holistic approach is necessary. While a nudge may initiate awareness and some changes in behaviour, comprehensive solutions are essential for addressing the multifaceted nature of a problem and ensuring a lasting impact. In particular, the pivotal role of habits in long-term behavioural modification is often underestimated (Verplanken and Orbell, 2022).

[19]   See Li et al. (2019) for more details on the use of the motivation–opportunity–ability framework for explaining behaviour.

[20]   'Behavioural Public Policy should be seen as a pluralist, non-deterministic and multipurpose approach that allows the application of behavioural insights "throughout the policy process" and in combination with regulatory policies' (Ewert, 2020).

Box 2. Stair prompts to encourage physical activity

Nudges to use the stairs are an example of a 'plug-in' contribution of BI to broader public health and environmental policies. These nudges encourage individuals through various means to take the stairs rather than escalators or lifts in public spaces such as train stations or workplaces (Lewis and Eves, 2012). Putting motivational messages or footprints on the floor leading to the stairs is cheap and easy to implement. Those are however only plug-in policies because they are implemented after the stairs have been built. Making staircases more accessible, visible, pleasant and safe may be more effective, but also more costly. A deeper involvement of BI would lead to the design of better buildings and transport systems that encourage physical activity, rather than taking this infrastructure as a given ([21]).

We acknowledge that using BI to propose post hoc fixes can sometimes be the only option available if the design of policies did not consider behavioural issues *ex ante* ([22]). However, we argue that BI has a much broader range of applications than merely to support behavioural interventions (Hallsworth, 2023). Involving BI early in the preparatory and policy design phases would help to better identify and increase understanding of policy issues and craft policy tools, both behavioural and traditional, based on a more comprehensive understanding of human behaviour. The development of the Consumer Rights Directive ([23]) is a successful example of the application of this approach (**Box 7**). We believe that using BI early in the policy process could lead to policies with larger impact and more enduring results.

However, early integration may make it challenging to measure the contribution of BI in the final outcome. The success and credibility of BI has often been linked to the use of randomized controlled trials (RCTs) to test the effectiveness of behavioural interventions (Einfeld, 2019). The earlier established BI methods and knowledge are integrated into the policymaking process, the more complex it may become to assess their contributions to the effectiveness of the implemented policy. This conundrum holds particularly for traditional policies or policy mixes informed by BI. An early acceptance of behavioural models in the policymaking process may reduce the willingness to assess them against traditional rational-choice approaches. This could lead to greater reliance on established evidence rather than conducting repeated evaluation.

Takeaway messages

— BI is not limited to policies targeted at individuals. BI also encompasses strategies that aim to enable systemic changes by addressing both individual behaviours and broader societal structures or rules (**Box 10**).

— BI does not just boil down to behavioural interventions. BI can inform traditional policies as well (**Box 7– Box 8**). The confusion between BI and behavioural interventions might be due to the extensive literature on nudges and the original use of BI as a fix for existing policies.

---

[21] The first 'nudge buildings' are now being designed and constructed, incorporating principles from behavioural science to, for example, facilitate neighbourly interaction and energy conservation (Bakoula, 2019). More generally, the EU encourages sustainable transformations in the built environment and lifestyles with its new European Bauhaus initiative.

[22] For example, BI can always serve a signalling or diagnostic role, helping to identify weaknesses in existing policies.

[23] A directive is a legislative act that sets out a goal that Member States must achieve. However, it is up to the individual Member States to devise their own laws on how to reach these goals.

This might have led to the misconception that influencing behaviour with nudges is the main application of behavioural sciences.

— BI does not merely provide plug-in tools. BI contributes fundamental insights that can shape policy from inception to implementation. It should be fully integrated into the development of new policies.

— BI is not restricted to 'soft' interventions. BI can also inform a spectrum of traditional policy instruments, from regulatory frameworks to economic incentives, demonstrating its versatility beyond 'soft' approaches. BI can thus support the design of more coercive policies (**Box 7** – **Box 8**).

— The impact of BI is not inherently marginal and should not be conflated with the often-marginal effects of nudging on policy. In addition, the context and targeted population are key factors in determining the effectiveness of nudges.

3. Establishing a basis for understanding what behavioural insights can do for policy

A first step to understanding the potential of BI is to propose clear definitions of key terms. We first define the concept of a policy mix. We then define what a 'system' is and how we can use this concept. This sets the stage for explaining how BI can help to promote a systemic approach to policymaking.

3.1. Defining a policy mix

Policymakers can use many tools to achieve policy outcomes (Harrison, 1998; Pacheco-Vega, 2020). These tools include traditional policy instruments and behavioural interventions. **Traditional policy instruments** generally rely on the assumption that people make rational decisions and respond to incentives. They include tools such as regulation (involving rules that mandate or restrict actions), government action (implementing programmes or services that directly manage or influence certain public sectors or needs), incentives such as taxes and subsidies (financial motivations for certain behaviours) and information provision (providing people with the necessary information to act in the desired way). **Behavioural interventions** recognise that people's decisions are often influenced by cognitive biases, emotions, environmental and social factors. They include tools such as nudges that guide people towards making better choices by altering the context in which they make decisions.

A combination of these tools is called a **policy mix** (Howlett, 2004; Howlett and Mukherjee, 2020). The choice and combination of the types of tools are guided by many principles, among which are efficiency (choosing the least costly way to achieve a goal), complementarity (making sure that tools work well together) and coherence (different policies not contradicting each other) [24]. All policy tools within a policy mix typically aim to achieve a common goal, for example plastic reduction and recycling (**Box 3**).

Box 3. Combining policy tools for plastic reduction and recycling

> In the EU, only about 32 % of plastics is recycled, with the rest being burned (43 %) or put in landfill (25 %) (European Parliament, 2018). This failure undermines efforts to get people to sort their plastics into separate containers. Indeed, people are less likely to sort plastic waste if they know, or believe, it will be burned rather than recycled. This is because recycling is often motivated by the pursuit of environmental goals. A broad plastics strategy [25] was put in place to remedy this issue. It involves a mix of policy tools targeting different stakeholders in the overall system that manages and mitigates plastic pollution. Companies are required to reduce plastic packaging and to take charge of the environmental costs associated with their products. Moreover, the use of microplastics is restricted. On the consumer side, the strategy recommends a container-deposit system for plastic bottles and making grocery shoppers pay for the use of plastic bags [26]. Working on both sides of the equation means that everyone is called on to contribute, which can improve the acceptability of new policies.

---

[24]   For a comprehensive overview of evaluation criteria for the choice of policy tools, please refer to OECD (2021, p. 18).

[25]   Commission communication – A European strategy for plastics in a circular economy (COM(2018) 28 final) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN).

[26]   Plastic bag levies are behaviourally informed incentives. They are set so low that they should not matter, according to traditional economic analysis. However, they act to change the default (you have to ask for a bag), remind us of the social norm and make the cost of plastic bags explicit (Jakovcevic et al., 2014). This is enough to induce long-lasting behavioural change.

The synergy between various policy tools is intended to address complex challenges more holistically, leveraging their strengths to target different aspects of a problem or operate at different levels (e.g. local, national, international). This coordinated approach aims to mitigate potential conflicts or redundancy between policy tools, ensure coverage of various dimensions of the issue and enhance the overall effectiveness of the policy response.

3.2. Defining a system

We define a **system** as a complex network of interrelated and interdependent components that collectively function within a structure that is defined by a set of rules and norms to deliver outcomes (Del Valle et al., 2024). The components are the individual elements within the system, such as people, groups, organisations and institutions. Those elements relate with each other (e.g. employers and employees) and assume roles (e.g. monitoring and production). The rules and norms, encompassing social norms as well as legislation and regulations, guide and govern the behaviours and interactions of individuals within the system. In this definition, individuals are an integral part of the system, and so individual and systemic aspects complement rather than oppose each other [27].

Solutions to 'wicked policy problems' (Rittel and Webber, 1973) often require addressing multiple system components as well as the structures governing their interactions. Addressing the structure without considering the behaviour of its elements (e.g. individuals) can produce solutions that turn out to be ineffective or produce unintended consequences. Conversely, addressing specific behaviours without considering the structure in which they occur can lead to unintended outcomes because of interactions with other components of the system. The argument put forward by Chater and Loewenstein (2022), namely that the use of BI in policy relies too much on targeting individual behaviour at the expense of structural 'system-level' reform, is not without merit, but relies on an understanding of BI as mainly intervention focused. We believe that BI not only should act at the level of the individual but can also inform the structuring of relationships, rules and norms that govern behaviour within the system.

In the context of common resource management, an illustrative case is the use of grazing land for cattle in Southern Africa. In environments where community trust is low, introducing fines helps to deter overuse of common resources effectively (Vollan, 2008). However, in environments where community trust is high, fines can disrupt pre-existing cooperative behaviours and are therefore counterproductive (Gneezy and Rustichini, 2000; Ostrom, 2000). Such examples show that one must be aware of the nature and quality of **relationships** between individuals before devising **rules** – such as introducing fines – to govern those interactions. Similarly, self-control issues may be less the result of individual characteristics than of the influence of the system within which the individual operates: individual behaviour cannot be analysed independently from the system in which it occurs (Hofmann 2023). For example, achieving healthy nutrition goals is much easier in neighbourhoods where fresh and healthy foods are widely available than in those in which they are not (**Box 1**). Similarly, one will find it more difficult to choose healthy drink options when taxes on sugar are low and soft drinks are thus both cheap and high in sugar or when one is constantly exposed to aggressive marketing and advertising of junk food.

---

[27] The distinction between these two aspects is similar to that between micro- and macroeconomics. The former is useful for understanding the behaviour of individual stakeholders in the economy, while the latter aims to provide a comprehensive view of the economy by considering the interactions between multiple markets and sectors. Both help to inform an understanding of economic behaviour and policy issues overall.

4. Harnessing the full potential of behavioural insights in policymaking

Having clarified the definition of a policy mix and the concept of a system, we now explore wider applications of BI, from designing behavioural interventions to facilitating the comprehensive and systemic rethinking of policies and practices (Hofmann, 2023).

First, as commonly understood, BI can address the behaviour of system components, such as individuals, by modifying behaviour within the framework of existing rules, for example with nudges (Section 4.1). Second, BI can focus on the rules themselves, either by recommending the application of traditional policy instruments, influencing their development from the outset, or by reshaping existing traditional policies (Section 4.2). Indeed, BI can inform the early design of policies by considering the psychological, social, cultural and structural factors that affect how policies are perceived and received by the public, as well as by anticipating both positive and negative spillover from targeted to non-targeted behaviours. Third, BI can inform a policy mix that simultaneously modifies rules and influence individual behaviours to achieve specific goals (Section 4.3). Fourth, beyond fostering the achievement of specific goals, BI can help in outlining how different policy goals and their supporting policies combine to affect individual behaviour (Section 4.4). This helps in identifying possible contradictions or synergies between policies that serve different goals (**Box 4**). Finally, BI can contribute to a system that functions more effectively. For example, it can identify and gather input from relevant stakeholders, analysing their behaviours, relationships, and key influencing factors. This process results in a map that highlights leverage points where barriers emerge and where policy tools, designed with human behaviour in mind, can be effectively developed (Section 4.5).

Box 4. Potential to foster coherence across policy areas: the farmer's example

Policies targeting farmers are an example of where a focus on the individual can help to identify important issues. The Farm-to-Fork strategy, part of the European Green Deal, aims to help farmers to follow more sustainable agricultural practices, while the Common Agricultural Policy maintains subsidies based on productivity but also includes an environmental component through farmers' voluntary participation in eco-schemes ([28]). The two objectives seem to partially conflict, potentially causing confusion among farmers about which course of action to take. In such cases, taking the farmer's perspective on the policy landscape could help to evaluate policy interconnection and coherence from a behavioural perspective.

Figure 1 illustrates the variety of policy scopes that BI can contribute to. The inner circle of the figure represents the ability of BI to deliver behavioural interventions targeting individual behaviours. Beyond this, the scope of BI extends to understanding the behavioural elements of a policy problem to inform the design of policy tools, including traditional policy instruments (e.g. taxes, subsidies, bans, regulations) and behavioural interventions. In a wider circle of application, BI can enhance a policy mix by crafting behavioural interventions that complement other policy measures, achieving shared objectives. When possible, BI can be embedded into the design process of *every* policy tool, whether behavioural or traditional, forming a policy mix insofar as human behaviour is critical to policy success. This approach promotes policy consistency and minimises overlaps and conflicts among policy tools within the mix. Furthermore, BI can help to identify synergies and conflicts in

---

([28]) For the interested reader, greening the Common Agricultural Policy has been investigated from a behavioural perspective by Barreiro-Hurle et al. (2023).

terms of behavioural outcomes between policies in different areas. The behavioural lens helps to analyse the interaction between various policies that (potentially) have different goals and therefore different and possibly contradicting consequences on the behaviour of the same individuals. The outer circle represents the potential of BI to address systemic issues. One way to do this is with the help of behavioural systems mapping (Hale et al., 2022).

Figure 1. Policy scopes where behavioural insights can contribute
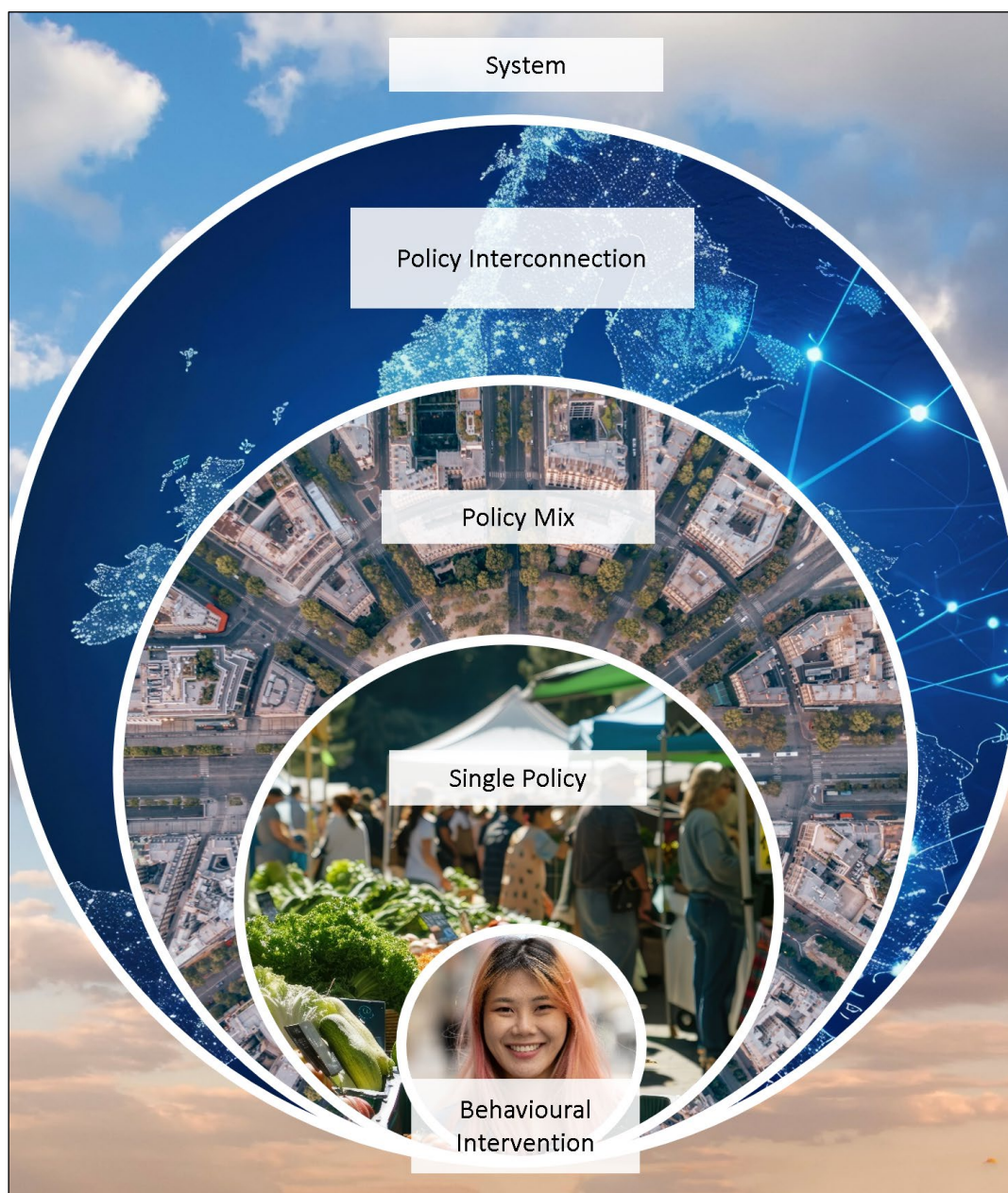
Source: Created by the authors.

Table 1 adds to **Figure 1** by outlining the different roles that BI can play in the policymaking landscape, with examples related to energy consumption.

In the rest of this section, we explore each type of BI integration in detail, providing examples of the roles and effectiveness of the types of BI at different levels of policy integration and evaluating their potential to impact the system.

Table 1. Contribution of BI across different policy scopes

Policy scope	Role	Description	Example
Behavioural interventions	Influence individual behaviour and improve communication of existing policies	Targeting specific behaviours through interventions such as nudges. Communicating the benefits of policies.	Implementing a nudge providing real-time feedback on electricity use compared with neighbours. Designing leaflets emphasising the environmental benefits of reducing electricity consumption.
Single policy	Ground policy choice and guide policy design	Identifying behavioural aspects in a policy area, recommending the most suitable policy option(s), informing their design and evaluating their behavioural consequences.	Conducting an analysis of the behavioural factors underpinning consumer choice of electronic appliances. Suggesting a ban on the sale of the least energy efficient appliances or a tax rebate on the purchase of the most energy efficient appliances based on human behaviour evidence. Assessing the public acceptability of these policy options among different groups of people.
Policy mix	Complement traditional policies	Proposing behavioural interventions to complement traditional policy instruments.	Designing a behavioural intervention, such as a social norm campaign, to complement subsidies and regulations with the common objective to increase the adoption rate of home insulation measures.
	Leverage synergies across policy tools in a specific policy area	Informing both behavioural interventions and traditional policy instruments forming a policy mix to improve its coherence.	Designing a cohesive policy mix where energy consumption taxes are informed by surveys of their acceptability in the population and designed to leverage loss aversion. Complementing behaviourally informed taxes with a nudge providing real-time feedback on electricity use.
Policy inter-connection	Enhance policy coherence across different policy areas	Understanding how various policies from different policy areas interact and impact behaviour. Taking the perspective of relevant stakeholders to understand the policy landscape.	Analysing interactions between energy efficiency regulations, tax incentives for renewable energy, climate, industrial and housing policies. Sending a survey to firms and households to assess policy awareness and evaluate how policies collectively drive investments in energy efficient technologies.
System	Achieve a better-functioning, more cohesive system	Mapping stakeholders and their behaviour and relationships. Pinpointing leverage points where behavioural analysis and targeted policy tools can help to unlock the system.	Applying behavioural systems mapping to identify leverage points in the home energy retrofit sector. Conducting workshops to map relationships between stakeholders, behaviours and influences within the system, with a focus on both privately rented and owner-occupied housing. Finding leverage points and recommending interventions such as government-led investment, awareness campaigns, financial-sector involvement and improving trust in supply chains [a].

(a)   This example is based on Hale et al. (2022).

Source: Created by the authors.

4.1. Behavioural insights devising behavioural interventions

Typical examples of behavioural interventions are nudges and boosts ([29]). Behavioural interventions are often used as a **plug-in** tool in the policy process once the policy options have already been decided on. One way to use behavioural interventions is as follow-up to already existing traditional instruments, such as regulations. An example of this would be the case of a label being mandated by a regulation, and behavioural scientists being called in to design the label *ex post*, making sure that it is effective (**Box 5**).

Box 5. BI informing EU labelling systems

Energy labels. In the context of the Energy Labelling Directive (2010) ([30]), behavioural studies underlined the risks of information overload and recommended including information only about a product's energy use to aid more sustainable consumer decisions, rather than also including information about water use, depletion of natural resources and disposal of toxic waste.

Environmental labels. A behavioural experiment with European consumers (Dessart et al., 2021; Thøgersen et al., 2024) showed that graded environmental labels (e.g. from A to E) work better, in terms of promoting environmentally friendly choices, than positive labels (e.g. green stick) for the best options or negative labels (e.g. red cross) for the worst options. This evidence informed the Directive on empowering consumers for the green transition as well as the impact assessment for the Eco-design Regulation for smartphones ([31]).

Another way to use behavioural interventions is to support the communication of traditional policies that may be already in place, with the objective of making them more transparent and acceptable (**Box 6**).

Box 6. BI supporting the communication of EU policies

Perceptions of the Fit for 55 Package ([32]). Vandyck et al.'s 2023 study proposed using communication levers for effective climate policy, such as highlighting the benefits of energy efficiency projects funded by climate policy revenues. In addition, it proposed using boosts, 'thinks' and nudges+ ([33]) to address misconceptions about the distributional effects of climate policies, including those of the Fit for 55 Package.

While behavioural interventions target individuals, changes in individual behaviour can trigger a **cascade of effects**, leading to more **systemic changes** (Centola, 2010; Centola et al., 2018).

([29]) Boosts focus on empowering individuals to make better decisions by enhancing their skills and knowledge (Hertwig and Grüne-Yanoff, 2017). For an alternative and recent classification of behavioural interventions, we refer the reader to Dewies and Reisch (2024).

([30]) Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (OJ L 153, 18.6.2010, p. 1) (http://data.europa.eu/eli/dir/2010/30/oj).

([31]) Commission Regulation (EU) 2023/1670 of 16 June 2023 laying down ecodesign requirements for smartphones, mobile phones other than smartphones, cordless phones and slate tablets pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) 2023/826 (OJ L 214, 31.8.2023, p. 47) (http://data.europa.eu/eli/reg/2023/1670/oj).

([32]) https://commission.europa.eu/strategy-and-policy-priorities-2019-2024/european-green-deal/delivering-european-green-deal/fit-55-delivering-proposals_en.

([33]) 'Thinks' prompt people to reflect on their decision. Nudges + are hybrid interventions that combine elements of nudging and reflective thinking. They either inform individuals about the nudge or encourage them to reflect on it, thereby incorporating a level of conscious awareness into the nudge (Banerjee et al., 2023; Banerjee and John, 2024).

Individuals who change behaviour can inspire and help others to follow suit. Early adopters of new technologies, such as electric cars, can encourage technological improvements, infrastructure development and efficiency gains that then foster adoption by more people and eventually generate large changes. Such cascade and feedback effects can also be triggered or encouraged by behaviourally informed policies. For example, introducing nutrition labels for food, especially labels that are easy to read, directly visible, understandable, trusted and actionable, can encourage demand by consumers for healthier products. This in turn can trigger changes in the food consumption habits of consumers, for example less consumption of sugar, and a healthier reformulation of products by producers (Centola, 2010; Burgaz et al., 2023). The latter then affects all consumers, including those not initially sensitive to the health aspects of food. Behaviourally informed labels can therefore lead to changes in the food system by changing consumers' choice process.

Widespread adoption of behavioural changes at the individual level can lead to systemic shifts, especially when these changes alter social norms. However, 'cascades – small interventions that lead to large and lasting change – are rare' (Stevenson, 2023). There is no certainty in obtaining a system-level impact when limited-scope interventions are put in place. This leads us to the next sections, where we discuss policies with wider scopes.

4.2. Behavioural insights grounding and informing traditional policies

Shifting our focus from behavioural interventions, it is important to acknowledge that not all behaviours can be influenced in a sufficient way through subtle changes in choice architecture. Traditional policy instruments might be necessary, for example when the behaviour is supported by a system of rules, laws and regulations. BI can play a crucial role in determining whether traditional policy instruments are needed and, if so, how they should be designed to change behaviour.

4.2.1. Behavioural insights grounding traditional policies

When BI identifies behavioural barriers or issues, this does not mean that the solution must be behavioural. BI can **result in** the recommendation of traditional policy instruments like regulations, incentives or information provision (Sunstein, 2023). The 2011 EU Consumer Rights Directive ([34]) (**Box 7**) serves as a prime example of how BI can end up recommending traditional policy instruments.

Box 7. Example of BI leading to traditional policy instruments

> **Ban of online pre-ticked boxes.** The 2011 EU Consumers Rights Directive included measures that were informed by BI from the outset. BI warned that pre-ticked boxes for additional services when shopping online exploited consumer inattention and the tendency to follow the default. Consequently, behavioural scientists recommended their ban. In the directive, the ban was eventually replaced with a consumer's right to reimbursement, which discouraged firms from setting defaults. The period during which consumers could withdraw from a sales contract was also extended from 7 days to 14 days, recognising the psychological issue behind impulse buying.

([34]) Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council (OJ L 304, 22.11.2011, p. 64) (http://data.europa.eu/eli/dir/2011/83/oj).

4.2.2. Behavioural insights informing the design of traditional policies

Beyond grounding traditional policies, BI also helps to identify behavioural elements in the domains affected by them. We give examples below where BI has supported the design and impact assessment of traditional policies by identifying behavioural tendencies, barriers and levers, leading to changes in the rules of the system ([35]). Behavioural analyses informed the development of the EU Consumer Rights Directive (**Box 7**), the revision of the Energy Efficiency Directive, the Energy Poverty Recommendation ([36]) and the Energy Efficiency Financing Recommendation (**Box 8**).

Box 8. BI informing EU policies: the case of energy

> JRC studies (Bertoldi and Della Valle, 2021; Bertoldi et al., 2021; Economidou et al., 2021) informed the **Revision of the Energy Efficiency Directive** ([37]), in particular the sections on the drivers of energy efficiency decisions. They helped to identify original solutions that are reflected in Article 22 on 'Information and awareness raising'. The same studies informed the sections on the drivers of energy efficiency investment in the **Energy Efficiency Financing Recommendation** ([38]), cf. Section 2.1.1 'Scope and objective'. Other JRC studies (Della Valle and Czako, 2022; Menyhert, 2022, 2023) also helped to identify the drivers of energy poverty considered in the **Energy Poverty Recommendation** ([39]) and informed the section 'Consumer empowerment' in the accompanying EU guidance on energy poverty ([40]).

In these cases, concerns identified by using BI were considered when developing traditional policies and regulations. BI identified deeply ingrained behavioural tendencies and recommended changes to the decision-making context, ensuring that policies prevented the exploitation of those behavioural patterns through regulatory measures or recommendations to Member States.

4.3. Behavioural insights informing a policy mix

Behavioural interventions are often part of a wider 'policy mix' (defined in Section 3). A policy mix can combine both traditional policy instruments and behavioural interventions. Combining those different types of tools can be more effective than combining only behavioural interventions or only traditional policy instruments (Alt et al., 2024).

When used in this way, behavioural interventions do not substitute for more comprehensive, system-level reforms; instead, behavioural and traditional policies complement each other, with BI helping to improve their combination to achieve policy goals (Carlsson et al., 2021).

([35]) Tool No 69 of the European Commission's better regulation guidelines (European Commission, 2023) explains the 'DO IT' approach we use to help policymakers in this process.

([36]) A recommendation is a non-binding act by which the EU means to achieve certain ends without imposing a mandatory legal framework.

([37]) Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (OJ L 231, 20.9.2023, p. 1) (http://data.europa.eu/eli/dir/2023/1791/oj).

([38]) Commission Recommendation of 12 December 2023 on transposing Article 30 on national energy efficiency funds, financing and technical support of the Directive (EU) 2023/1791 on energy efficiency (OJ C, C/2023/1553, 19.12.2023) (http://data.europa.eu/eli/C/2023/1553/oj).

([39]) Commission Recommendation (EU) 2023/2407 of 20 October 2023 on energy poverty (OJ L, 2023/2407, 23.10.2023) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AL_202302407).

([40]) Commission staff working document – EU guidance on energy poverty (SWD(2023) 647 final) (https://energy.ec.europa.eu/publications/commission-staff-working-document-eu-guidance-energy-poverty_en).

4.3.1. Integrating behavioural insights into a policy mix: two approaches

We discussed the suboptimal plug-in role of BI in Section 2, where BI **reactively** addresses gaps or inefficiencies after traditional policies have been implemented. In such cases, BI is called in to **fix** the policy (i.e. adding a behavioural intervention to complement, at the margin, the traditional policy in place). Here, we focus on a policy mix, which implies an overarching strategy to combine behavioural interventions and traditional policy instruments, in tandem, ensuring that they complement each other from the outset to achieve a shared objective.

We distinguish between the two roles that BI can have within a policy mix: the first exclusively relates to designing behavioural interventions within the mix and the second relates to involving BI in designing and selecting all policy tools of the policy mix.

A limited involvement of BI in the design of a policy mix means BI informs only the behavioural interventions forming it. Those then act alongside traditional policy instruments whose design is not specifically informed by BI. **Box 9** gives an example of a behavioural intervention (displaying warning labels on tobacco packs) that acts in concert with taxes and bans to discourage smoking.

Box 9. BI informing exclusively the behavioural interventions in a policy mix

> **Smoking cessation programmes.** The EU Tobacco Control Directive ([41]) employs warning labels with emotionally impactful images. The goal was to influence smoking perceptions, and warning labels have been shown to increase awareness of the harmful effects of tobacco products and to motivate people to quit smoking (European Commission, 2021). These labels may also deter tobacco consumption and young people from starting smoking. Broader regulatory measures, such as public smoking bans and increased tobacco taxes, often proceed without direct BI input, while targeted behaviourally informed interventions such as warning labels complement these by encouraging individual behavioural changes.

To date, examples of a cohesive policy mix, where BI informs all policy tools in the mix, are scarce, but current reflection led by the CCBI aim to gather details of such applications. For example, a consumer journey mapping project aims to anticipate future energy policies and a JRC exploratory research project promotes interactions between scientists and policymakers to discuss the future of biodiversity policies (**Box 10**).

Box 10. BI enhancing the cohesion of policies in a policy mix

> **Energy policymaking.** The EU Policy Lab and the Directorate-General (DG) ([42]) for Energy are considering collaborating on mapping the consumer journey for products from purchase to disposal. This approach would identify each stage's barriers and opportunities. Using solar panels as an example, high upfront costs could be mitigated with subsidies or tax incentives, while maintenance issues might be addressed through mandatory warranties or a certified repair framework. Simplified comparison tools or making some options the default could reduce decision-making complexity. Emphasising post-purchase support could reassure consumers about ongoing maintenance and service. This method would ensure that policies address all aspects of consumer interactions, supporting the development of future energy policies, whether behavioural or traditional.

([41]) Directive 2014/40/EU of the European Parliament and of the Council of 3 April 2014 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco and related products and repealing Directive 2001/37/EC (OJ L 127, 29.4.2014, p. 1) (http://data.europa.eu/eli/dir/2014/40/oj).

([42]) DGs are policy departments which are responsible for different policy areas at the European Commission.

> **Biodiversity policymaking.** The EU Policy Lab is organising a workshop involving behavioural scientists, natural scientists and EU policymakers from various DGs, including agriculture, health, environment, climate and others. The aim is twofold: (1) to explore avenues for behavioural research in this area, thereby informing future traditional and behavioural policies at the Commission, and (2) to offer insights into how to integrate BI into biodiversity policymaking. These discussions will allow for the incorporation of perspectives from diverse sectors and provide an opportunity for policymakers to understand the potential of BI and call on its evidence early in the policy process to inform any type of policy tool.

These two opportunities aim to lay the foundation for envisioning all potential policy tools, both behavioural and traditional, that could form part of a future policy mix while keeping human behaviour at the core.

4.3.2. Sequencing behavioural interventions and traditional policy instruments in a policy mix

Traditional policy instruments and behavioural interventions can be applied at the same time, but one can also pave the way for the other. The question of which type of policy tool should come first then arises. It is often better to implement structural, systemic changes, which require adaptation and effort on the part of both the state and its citizens, rather than demanding individual change without a sufficient counterparty. For example, increasing carbon taxes has a disproportionate effect on people living in rural and suburban areas with poor access to public transport. Increasing those taxes must therefore go along with improving access to public transport for this category of people. The same logic applies when attempting to encourage cycling. A behavioural analysis of the choice to cycle shows that the infrastructure (bike lanes) must first be put in place (**Box 11**).

Box 11. Traditional policy instruments before behavioural interventions in a policy mix

> **Promoting cycling.** To effectively promote cycling, it is crucial to understand the psychological factors that influence cyclists' behaviour, such as their perceptions of risk and their ability to maintain habits (Winters et al., 2011; Dill and McNeil, 2013), rather than solely focusing on broader policy goals such as reducing congestion and pollution or improving public health. Providing clearly marked, obstacle-free and continuously maintained cycling lanes helps to reduce anxiety and encourages routine cycling. Without such infrastructure, promoting cycling can be counterproductive, as cyclists sharing the road with cars may feel unsafe, leading many to abandon the practice. Ensuring proper infrastructure first is key, as it naturally fosters cycling behaviour (Meder et al., 2018).

The examples above underline the benefit of thinking about the dependence of behaviour on the context and changing the context to ease changes in individual behaviour. This change in context is itself informed by BI; for example, the design of cycle lanes considers the risk perceptions of cyclists.

However, while system change is often a condition for behavioural change, it can still make sense to introduce behavioural interventions first, for example when there are crises or emergencies. This can be a way to alleviate the issue before more extensive policies can be put in place. In these cases, BI can have significant effects that could not be achieved in the short term by structural change. This is illustrated by the policies put in place to deal with the 2022 energy crisis arising as a result of Russia's unprovoked invasion of Ukraine (**Box 12**). The plan was explicit in making the difference between short- and long-term measures. It justified the use of behavioural interventions to encourage energy savings because they were likely to achieve reductions in consumption quickly. It

also acknowledged that those policies had to be complemented in the longer term with policies aiming to achieve structural change and adaptation ([43]).

Box 12. Behavioural interventions before traditional policy instruments in a policy mix

> **The REPowerEU plan and energy crisis.** The EU faced an energy crisis at the start of the full-scale unprovoked invasion of Ukraine by Russia in February 2022. The EU responded with the REPowerEU plan to reduce dependency on Russian fossil fuels. As part of this plan, the EU 'save energy' plan took a two-pronged approach: (1) achieving immediate energy savings through voluntary choices and (2) accelerating and strengthening structural, mid- to long-term energy efficiency measures. The International Energy Agency, in coordination with the European Commission, developed a series of simple steps that citizens could take to save energy ([44]).

4.4. Behavioural insights informing policy interconnection

We outlined that BI can best contribute to a policy mix by informing both behavioural interventions and traditional policy instruments, ensuring they are aligned and avoid sending individuals conflicting messages. While a policy mix is often confined to a single policy area, the role of BI can extend to the interplay between policies from *different* areas, each with distinct goals. It is often essential to consider how policies from one area may influence those of another, and vice versa.

The way we propose to assess policy interconnection is by adopting the perspective of stakeholders affected by various policies. In this case, BI brings a stakeholder-centric perspective to the policy landscape, offering a clearer view of how the various policy signals intersect in attempting to influence stakeholders' behaviour. An illustrative example is that of unaligned policy signals targeting farmers (**Box 4**). Different policies aim to increase agricultural productivity (agricultural policy), ensure healthy food for consumers (health policy) and stop biodiversity loss (environmental policy). Examining the policy landscape from the farmer's perspective can pinpoint policy silos (Froy and Giguère, 2010) and tensions or contradictions between policies. This exercise could then foster a unified policy framework that farmers can navigate seamlessly. A 'user' perspective can also reveal the frustration that farmers feel when confronted with complex and contradictory bureaucratic demands from different regulatory authorities (Fernández-i-Marín et al., 2023; Mills et al., 2023) ([45]). Taking this perspective helps to 'design functions and organisations around users – not government' (OPSI, 2017). It encourages better coordination between different regulatory authorities and levels of administration, and reduces the risk of creating 'regulatory thickets' – a phenomenon where overlapping rules and diverging policy goals hinder effective governance (Barbieri and Konrad, 2021) ([46]).

A study from behavioural development economics about low fertiliser use in Africa provides an illustrative example that unveils connections between financial and agricultural rules (**Box 13**).

([43]) Many early policies to reduce the spread of COVID-19 also called on quick behavioural interventions (Betsch, 2020; Van Bavel et al., 2020; Krpan et al., 2021), such as maintaining social distance or promoting proper sneezing etiquette, while waiting for the development of a vaccine and investing in capacity upgrades of the health system.

([44]) https://www.iea.org/reports/playing-my-part.

([45]) https://ec.europa.eu/commission/presscorner/detail/en/IP_24_1002.

([46]) Behavioural audits have been successfully carried out to help policymakers to identify design elements that harm consumers in their journeys on online marketplaces (Mills et al., 2023). The same approach can be used to design better interactions between State administrations and their citizens.

Box 13. Behavioural barriers and solutions in the use of fertilisers in some African countries

Low fertiliser use is among the reasons why some African countries do not realise their high agricultural potential. The common approach to this problem is to lower the cost of fertilisers and disseminate information about their benefits. Subsidies are costly, however, and information campaigns are often not effective. Interviews with farmers identified a key period where money was not invested in fertilisers but was instead spent on more immediate needs. This period fell between when farmers received payment for last year's crop and started cultivation of the following year's crop. The issue was that, between those dates, farmers could barely save any money, which left them needing to spending the money on other, more immediate, needs. The solution was to promote the use of savings accounts for fertiliser purchases, and to market and deliver fertiliser right after the harvest to align with farmers' cash flow (Brune et al., 2011; Duflo et al., 2011).

In the example in **Box 13**, by taking the perspective of farmers, behavioural experts not only identified a key issue that was outside the traditional economic analysis of incentives and information, but also addressed a broader financial issue (lack of access to savings) and its impact on agricultural practices. This example showcases the importance of understanding the interconnections between financial and agricultural rules from the stakeholder's point of view.

This approach to policy interconnection adopts an **inside-out perspective**, focusing on the viewpoint of those directly impacted by policies. It helps to reduce conflicts arising from differing policy perspectives between policymakers and those affected. By shifting the focus to desired outcomes rather than preferred policies, it allows policymakers to concentrate on what they aim to achieve [47].

4.5. Behavioural insights contributing to systemic change

BI has already contributed to systemic change on many occasions. The innovative system underpinning the 'micro-lending revolution' led, in particular, by the Grameen Bank in Bangladesh (Robinson, 2001), and described in **Box 14**, is a notable example. It illustrates how BI identified a key leverage point and incited a shift towards more inclusive, community-based financial models, benefiting previously excluded populations.

Box 14. The micro-lending revolution

Through the 'micro-lending revolution', the systemic issue of limited access to credit among the poor was alleviated by providing loans to groups of applicants rather than to individuals. This principle leveraged community dynamics such as peer pressure and reputation (Milinski et al., 2002) to ensure timely loan repayment. It created a self-sustaining system with internal accountability, reducing the need for external enforcement, such as loan monitoring by bank employees.

The micro-lending revolution exemplifies a successful scaling of behavioural interventions, but many other interventions fail to persist beyond the publication of an RCT study (DellaVigna and Linos, 2022). This underscores that the survival of typical intervention-based approaches often depends on successful backward scaling, starting from the final implementation point of policy. Sometimes, reflections on scaling arise too late – e.g. after pilot interventions have already shown promise –, lack commitment from relevant (policy) decision-makers, or fail to properly consider the administrative and financial costs of scaling. Such delays might prevent an intervention from aligning with broader

---

[47] For example, different policymakers may use different statistics to evaluate the effectiveness of their policies. Those can be translated into their effects on individual stakeholder behaviour for ease of comparison.

system drivers (e.g. incentives, policy frameworks) and may overlook the importance of early buy-in and input from influential stakeholders who can help to identify relevant barriers and levers.

We argue that a **more proactive and systematic approach** is needed for BI to contribute to systemic change. This involves **ensuring behavioural interventions are crafted with scalability in mind**, **informing the design of traditional policy instruments from the outset** and, last but not least, **understanding and working with complex systems**. Without a systemic understanding of the stakeholders, incentives, and interactions within these systems, external interventions risk failure. Complex systems operate according to their own internal logic, which, if misunderstood, can result in unsustainable and/or unintended outcomes (Dekker, 2012).

The behavioural systems method developed by Del Valle et al. (2024) is an evolving framework that exemplifies a systematic approach to integrating BI with systems analysis. Systems analysis encompasses the whole range of scientific disciplines that focus on understanding and addressing complex systems ([48]). **Behavioural systems analysis** comprises six steps (Del Valle et al., 2024):

1. **Set the stage.** Identify key stakeholders and the connections through which they influence and interact with each other.
2. **See the system.** Use qualitative methods, such as workshops or interviews with stakeholders, to map the system's structure, highlighting feedback loops and bidirectional relationships.
3. **Regroup and refine.** Identify the relevant stakeholders and the connections that have the most potential to drive impactful change and validate models against observed data.
4. **Look for leverage points.** Pinpoint critical opportunities likely to trigger significant system improvements.
5. **Design and deploy targeted interventions.** Conduct behavioural analysis at leverage points and develop targeted interventions to address barriers to system functionality.
6. **Integrate and iterate.** Monitor intervention outcomes, assess spillover effects and integrate insights back into the system to enable improvements.

Combining BI with systems analysis enables a deliberate and coordinated approach to achieving systemic and sustainable change. A behavioural systemic approach helps not only to identify surface issues but also to reveal the root behavioural patterns that sustain these problems.

A key component derived from systems analysis involves mapping key stakeholders, their behaviours and their relationships. For example, Hale et al. (2022) developed policy recommendations for retrofitting existing homes in Wales to improve energy efficiency. Their work included creating a **behavioural systems map** based on expert stakeholder insights collected in workshops, depicted in **Figure 2** ([49]).

([48]) Systems analysis regroups a variety of disciplines, including but not limited to system innovation, system dynamics, design for policy and strategic foresight. An overview of the relevance of systems analysis tools for behavioural systems is available in Del Valle et al. (2024, pp. 18–23). There are more and more illustrations of how behavioural sciences can be combined with systems analysis to 'understand and reimagine broken behavioural systems' (Del Valle et al., 2024). We provide more examples of collaboration in Section 5.

([49]) This approach is called "Participatory system mapping" and described in detail by Barbrook-Johnson and Penn (2021).

Figure 2. Behavioural systems map: decarbonising existing homes in Wales through private landlords
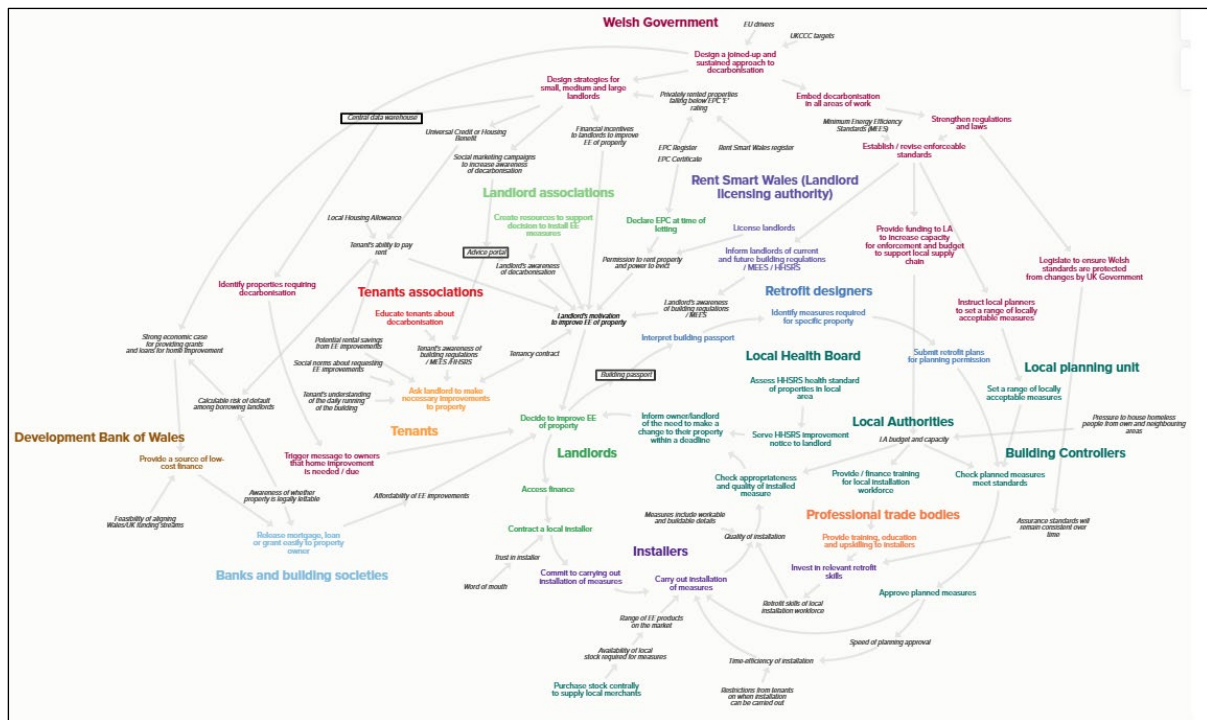
Source: Figure 2 in Hale et al. (2022)
https://kumu.io/JoHale/walesdecarbonisation#landlords

Such maps adopt an **outside-in perspective**, allowing researchers to 'see the system' (Hallsworth, 2023), identify key leverage points ([50]), design policy tools tailored to the system's characteristics, and provide the contextual details necessary for successful scaling ([51]) and integration of policy tools ([52]). By zooming out, researchers can represent the complexity and granularity of the problem, resulting in a comprehensive picture of the interplay of stakeholders, influences, policies and feedback loops that relate to the problem. They can also highlight where traditional policies may require adaptation.

Using a behavioural systems lens to understand complex policy problems is not yet common. However, it is increasingly recognised as essential (OECD, 2022). The scope of behavioural systems analysis is much wider than that of behavioural analysis, as the latter is typically limited to identifying the behavioural factors relevant in a given situation to derive suitable policy tools. A well-established methodology and guidelines for policy-related application have yet to be fully developed. Chamberlin et al. (2024) pave the way for applying behavioural science with a systems perspective to climate adaptation policies ([53]). The CCBI aims to contribute to this dynamic and encourages other BI units within governments or international organisations to cooperate to further developing these guidelines.

([50]) Once the behavioural systems map is completed, leverage points can be identified using insights from experts and stakeholders, supported by the APEASE criteria—assessing acceptability, practicality, effectiveness, affordability, safety, and equity.

([51]) These contextual details are broadly discussed in Mažar and Soman (2022).

([52]) This perspective facilitates an understanding of the role of existing traditional policy instruments, including the constraints or adverse incentives they may create in addressing behavioural barriers.

([53]) They focus on a case study of pastoralism in northern Kenya's arid and semi-arid regions
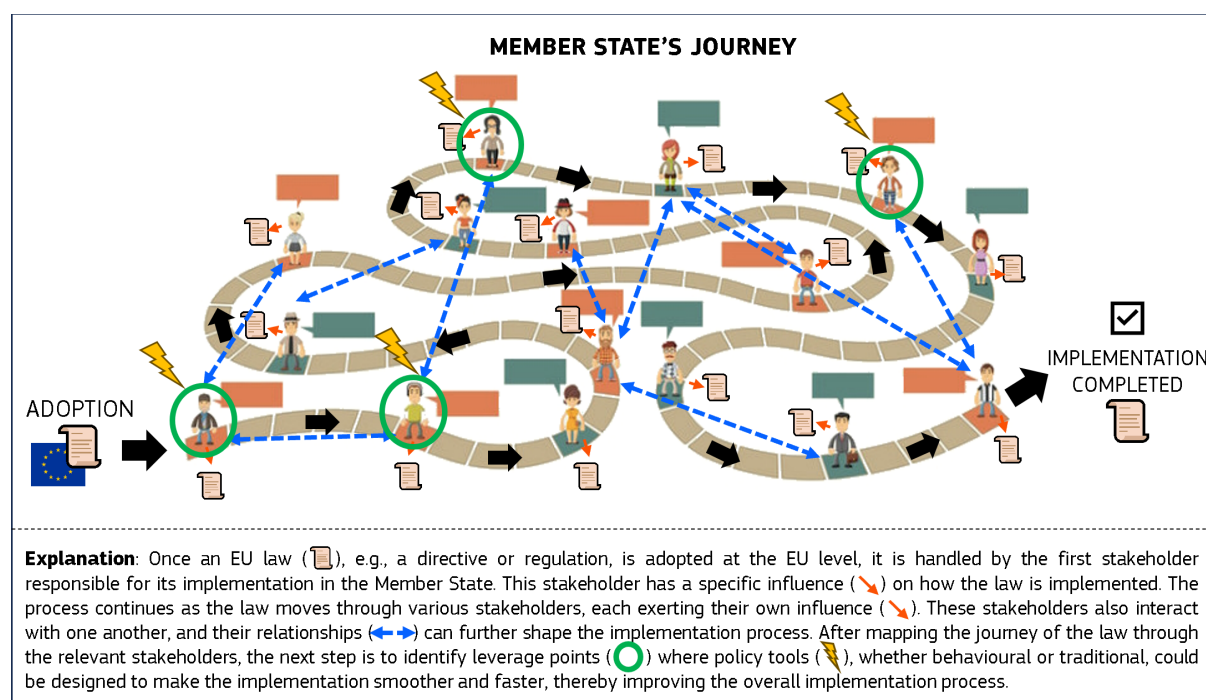
We advocate for **combining an outside-in perspective**, which provides a comprehensive overview of stakeholders, behaviours, and external factors, **with an inside-out perspective**, focused on understanding the system from the stakeholder's point of view. This dual approach fosters a dynamic process, where zooming out to understand the broader system feeds into zooming in to identify and understand specific behaviours, perspectives and leverage points, and vice versa. At each leverage point, the full spectrum of policy tools – whether behavioural or traditional – should be considered.

Box 15 describes an EU Policy Lab collaboration between BI, design for policy and strategic foresight that uses this dual approach to improve EU green policy implementation across Member States (⁵⁴).

Box 15. BI combined with the disciplines of design for policy and strategic foresight

Mitigating barriers to implementing EU green policy. This project investigates the behavioural factors underpinning common policy implementation obstacles, including financial, political and governance barriers. It maps the journey of EU law from adoption to enforcement in Member States, identifying key stakeholders and their interactions and influence on the implementation process (**Figure 3**). The project aims to explore behavioural aspects at critical stages, develop and test targeted policy tools at multiple leverage points, and provide country-specific recommendations to enhance green policy implementation. The initiative began with a workshop where public administration representatives reflected on the behavioural drivers behind implementation challenges (Dupoux and Martens, 2025). The workshop resulted in behavioural hypotheses to be further explored through interviews, surveys, behavioural systems and journey maps, and experiments.

Figure 3. Mapping EU law journeys to identify implementation barriers

Explanation: Once an EU law (📜), e.g., a directive or regulation, is adopted at the EU level, it is handled by the first stakeholder responsible for its implementation in the Member State. This stakeholder has a specific influence (↘) on how the law is implemented. The process continues as the law moves through various stakeholders, each exerting their own influence (↘). These stakeholders also interact with one another, and their relationships (◄─►) can further shape the implementation process. After mapping the journey of the law through the relevant stakeholders, the next step is to identify leverage points (⭕) where policy tools (🔧), whether behavioural or traditional, could be designed to make the implementation smoother and faster, thereby improving the overall implementation process.

Source: Adapted by the authors from the map image in Jeffrey Rum's article, 'A Journey Map in 7 Steps', available at https://www.linkedin.com/pulse/journey-map-7-steps-jeffrey-rum/

(⁵⁴)   By implementation, we mean the process from the adoption of EU law (both directives and regulations) through to their practical application, enforcement and compliance within Member States. EU green policy is a collective term for EU initiatives aimed at environmental sustainability, including but not limited to the European Green Deal.

Qualitative insights from the disciplines of design for policy and strategic foresight, which are commonly viewed as systems analysis disciplines, can inform the mapping of implementation processes across Member States by detailing the relevant context (**Box 15**). These insights highlight variations in institutional frameworks, stakeholder interactions and forward-looking approaches to implementation, ensuring that BI considers and intervenes within the broader system. Nonetheless, this is just one approach to combining BI with systems analysis to improve a system. We expand on the need for BI to collaborate with systems analysis and other disciplines in Section 5.

4.6. Key messages and discussion

BI should be integrated into all stages of the policy cycle whenever policy success relies on behaviour change, with particular emphasis on the earliest stages. BI is often confined to informing behavioural interventions, but this is a narrow perspective. BI primarily aims to provide an understanding of behaviour and can therefore inform any kind of policy tool that will eventually change behaviour, whether behavioural or traditional, or a mix, within or across policy areas. BI can be combined with systems analysis to map and understand systemic issues that have a behavioural root. Recognising the two-way dynamic between individuals and the systems they operate within aims to identify behavioural issues leading to systemic failures and systemic issues leading to behavioural failures.

We explicitly distinguished between behavioural interventions and traditional policy instruments to align with current literature, which often contrasts the individual frame (mainly associated with behavioural interventions) with the systemic frame (often associated with traditional policy instruments) (Chater and Loewenstein, 2022). However, this dualism might be flawed (Brownstein et al., 2022), as behavioural considerations underpin many policy tools (Schneider and Ingram, 1990). We advocate for a behavioural systems approach that involves finding behavioural pathways to address structural challenges (Chamberlin et al., 2024; Del Valle et al., 2024).

5. Achieving a systemic impact of behavioural insights

There is an opportunity for behavioural scientists to further explore and demonstrate the full potential of BI for policy, contributing to systemic impact. This involves embracing interdisciplinarity by collaborating with subject-matter experts and systems analysts (Section 5.1) and ensuring that policies with a strong human element are developed with 'BI at their core' (Section 5.2).

Interdisciplinarity is key for achieving systemic change. Integrating BI with systems analysis allows for a more comprehensive understanding of how individual actions and institutional structures interact with and influence each other. Furthermore, BI must be integrated with expertise from the specific scientific domains relevant to the policies being developed, for example natural sciences.

Involving BI from the start of the policy process ensures that a behavioural lens is applied throughout the entire policy cycle (Hallsworth, 2023). This offers two distinct advantages. First, early inclusion of BI in policy planning can lead to greater openness to its contributions, as no policy decisions or positions have yet been solidified. Second, early integration gives behavioural scientists the opportunity to make their research more policy relevant by incorporating feedback from policymakers (Höhler et al., 2023). Policymakers, in turn, can leverage early advice from behavioural scientists to identify behavioural barriers and levers related to their policy goals, thereby focusing on policies that effectively address these factors.

5.1. Relying on interdisciplinary research

The integration of BI into policymaking goes hand in hand with the interdisciplinary strategies required to address current complex societal challenges. This section explores the potential for collaboration with systems analysts (e.g. design for policy, foresight, systems dynamics) that are known for their analytical and transformative approaches to systems, alongside other scientists, such as natural scientists, who provide critical insights into the policy context and essential tools. These collaborative efforts aim to ensure that the application of BI in tackling multifaceted societal problems is both impactful and nuanced, moving beyond a narrow understanding of human behaviour as mere mechanical causal interactions between natural objects.

5.1.1. Involving behavioural and systems analysis disciplines together

'My basic point here is that behavioural science researchers are almost always trying to nudge in the context of complex systems in which they can at best tweak behaviour at the margin' (Thaler, 2021).

In our context, Thaler's perspective encourages a more robust collaboration with disciplines focused on systemic change. There are multiple disciplines that seek to understand and change the system. Some of their tools offer high potential for the integration of BI (Del Valle et al., 2024). Tools can be quantitative or qualitative. Relevant tools include agent-based modelling (Chersoni et al., 2022; Savin et al., 2023), system dynamics, social network models and complexity sciences generally. Qualitative tools include systems thinking and social design. Our goal is not to provide an exhaustive list of the range of disciplines that could collaborate with BI. Instead, we highlight some interesting examples below, specific to the EU Policy Lab. The EU Policy Lab comprises the BI Team (i.e. the CCBI), the **Design for Policy** Team and the **Strategic Foresight** Team. Design for policy acts as a creative catalyst for innovation in policymaking. By relying on participatory processes, it facilitates problem exploration, generates insights, and enables the creation and testing of alternative solutions. Through collaboration and co-creation with policymakers, scientists, and stakeholders, design supports every stage of the policy process. Foresight explores long-term futures and develops shared visions for

policymaking. It provides strategic, future-oriented input, fosters an anticipatory culture within institutions, and refines methods and tools to integrate foresight into decision-making processes effectively.

In **Box 16**, we describe two collaborations between the CCBI and the Design for Policy Team.

Box 16. Collaboration between the Design for Policy Team and the CCBI

Developing EU-harmonised waste sorting labels. The CCBI was tasked by DG Environment to develop and design harmonised waste sorting labels to be used in Member States as part of the proposed Packaging and Packaging Waste Regulation. Due to the requirement to develop effective and accepted labels, the project includes a dedicated participatory design component led by the Design for Policy Team of the EU Policy Lab. This integrated approach involves the design of label prototypes based on insights from an experimental (behavioural) survey of citizens and participatory workshops involving various waste management stakeholders (including producers, industries, product packaging designers, label designers, non-governmental organisations, waste managers, experts and consumers). These insights are complemented by empirical evidence from behavioural experiments to test label prototypes.

Anticipatory research on artificial intelligence (AI) and fairness. The EU Policy Lab ran a project to investigate the role of human oversight in preventing discriminatory outcomes when using AI (EU Policy Lab, 2024). The project started with an experiment focused on the impact of AI support in hiring and lending decisions by banking and human resources professionals. The experiment examined the extent to which participants followed advice from fair versus biased AI systems, and participants discussed their decision-making processes and the experiment's relevance to their work. Following the experiment, the Design for Policy Team and the CCBI organised a workshop with a diverse group of experts from fields including AI, ethics, design, art and philosophy. Together, they developed strategies to reduce human and algorithmic biases. Finally, the findings and their policy implications were shared with various policymakers involved in AI fairness issues.

These participative processes can also support the creation of behavioural systems maps.

The CCBI also collaborates with the Foresight Team in the project described in **Box 10**. The final output is a workshop bringing together policymakers, behavioural scientists, and natural scientists to define a behavioural research agenda aligned with future biodiversity policymaking. To inform the workshop agenda, a Delphi survey – an essential foresight tool – is employed to align the perspectives of behavioural and natural scientists on behavioural research priorities, drawing on evidence from media analysis and literature reviews. By focusing on "weak signals" ([55]) and potential inflection points, such as emerging societal behaviours, policy trends, and technological innovations, foresight will help to identify areas where additional research could yield long-term impact. This forward-looking approach will encourage policymakers to move beyond immediate concerns and consider strategic, long-term solutions to address future biodiversity challenges. Beyond this project, collaboration with foresight also allows for the stress testing of behavioural interventions in future

---

[55] The method of weak signals in foresight refers to the practice of identifying and analysing subtle, early indicators of potential future trends, disruptions, or changes. These "weak signals" are often small, fragmented, or unrecognised pieces of information that suggest emerging developments before they become widespread or mainstream. By systematically observing and interpreting these signals, foresight practitioners aim to anticipate and prepare for possible future scenarios, including opportunities and risks.

scenarios (Schmidt and Stenger, 2021) [56] and enhances foresight scenarios by incorporating realistic human behaviours.

The EU Policy Lab aims for all its teams to collaborate when relevant, enhancing the comprehensiveness of evidence provided for policymaking. **Box 15** exemplifies such collaboration.

Overall, there is a need to develop methodologies that help to effectively capture the behavioural dynamics of complex systems. This is one of the aims of the collaboration with systems analysis disciplines.

5.1.2. Selecting the right sciences: context-driven integration of behavioural insights

Evidence that supports policymaking must come from all domains of science that are relevant to the specific context and goals of each initiative. There are already calls for more cross-disciplinary collaboration involving behavioural sciences in the context of biodiversity conservation (Balmford et al., 2021; Nielsen et al., 2021) and climate change mitigation (Nielsen et al., 2024), for example.

The JRC naturally fosters cross-disciplinary collaboration, as it leverages a diverse range of scientific disciplines. Beyond providing a conducive environment, the JRC encourages interdisciplinary research through its (internal) Exploratory Research Programme. This initiative offers additional funding for a selection of innovative and cross-disciplinary projects, complementing institutional research resources. **Box 10** showcases one application in biodiversity, where behavioural and natural scientists co-develop the workshop that involves policymakers from various DGs. Similarly, another ongoing exploratory research addresses energy savings in scientific laboratories, based on a collaboration between the CCBI and the JRC's Research and Infrastructure Unit and Energy Security, Distribution and Markets Unit.

Overall, an interdisciplinary approach enables a more holistic understanding of problems, leading to innovative solutions that identify and implement leverage points for systemic change. In this report, we underscore our commitment to leveraging a broad spectrum of knowledge to address complex issues, from public health and finance to environmental sustainability and the use of AI, in a way that aligns more closely with human behaviour and societal needs and goals. Further methodological reflections on the practical ways to do this will be described in a future report.

5.2. Embedding behavioural insights across the policy cycle, starting early

'Rarely, if ever, are researchers given the opportunity to design the entire choice architecture. We get to remodel the kitchen, but not design the entire home, let alone pick the lot on which it is built. … It might be more productive to … identify … projects where behavioural scientists can be involved at the very start, helping to create the blueprints of a program before ground has ever been broken' (Thaler, 2021).

---

[56] For example, the development of behavioural planning relies on a strategic foresight approach that helps practitioners to address system-level, anticipatory and contextual challenges. By systematically identifying potential forces that may affect behavioural interventions, this model enhances planning and implementation before interventions are executed.

This quote is focused on choice architecture but echoes other calls for a deeper integration of BI into the policymaking process (Duflo, 2017). During the early stages of the policy process (i.e. the anticipation and the formulation phases), it is important to understand the behavioural barriers that people are facing as well as potential public resistance to the policy. Incorrect assumptions at this point can limit the impact of BI, the range of policies under consideration and potentially jeopardise the effectiveness of the policy adopted (Van Bavel et al., 2013).

Baggio et al. (2021) outline progress made in fostering the integration of BI into EU policies. They illustrate how BI is introduced into the EU policy cycle, and how to mainstream BI at every level and stage of policymaking in the EU. Achievements include the consolidation of behavioural expertise with the creation of a dedicated team, the CCBI, in 2019. BI became part of the Better Regulation Toolbox, which sets out the principles that the European Commission follows when preparing new initiatives and proposals and when managing and evaluating existing legislation (European Commission, 2023). The toolbox states that BI must be considered whenever the effectiveness of a policy depends on human behaviour. Nevertheless, in practice, BI has been mostly confined to the impact assessment of already defined policy options when the scope has already narrowed.

We outline promising initiatives in which behavioural scientists were called on in the early development of EU policy initiatives in **Box 10**. The examples presented are very encouraging, moving from supporting towards guiding policymaking, and thus away from working on demand – quite often after the main policy decisions have been made – and to closer involvement in the whole policy process.

While early involvement of BI enables its full potential to be deployed, it remains equally important across all phases of the policy cycle whenever there is a behavioural element at stake. **Figure 4** illustrates how BI contributes at each stage of the policy cycle. The coloured quarters of the figure represent BI's contributions to the policy of interest at each stage of the policy cycle. In contrast, the grey outer circle illustrates BI's meta-level support for the policy process, which is overarching and not tied to any specific policy.

In the **anticipation phase**, whenever behaviour plays a crucial role in the success of the policy at stake, BI can contribute by identifying policy problems, failures or gaps early on (e.g. **Box 7**, **Box 8** and **Box 19**). A frequent contribution is the extensive review of the literature on the policy challenge. Collecting views from experts and stakeholders in interviews, focus groups or workshops can also prove useful (e.g. **Box 15**), especially for the creation of behavioural systems maps (Section 4.5) that capture the interactions of stakeholders, their behaviours, and the external factors influencing these behaviours. BI can also help to frame communications to attract public and political attention early on. These contributions ensure that policymaking is proactive rather than reactive, helping decision-makers to anticipate behavioural challenges that could undermine policy goals.

During the **formulation phase**, BI can guide the development of policy options. BI can offer combined behavioural and systems analysis that inform about potential feedback loops including ripple effects or possible unintended consequences of policy instruments. This could enable policymakers to design instruments that are not only evidence-based but also take into account the complexity of the systems within which they will operate. BI can also support the design and testing of policy options, ensuring that the policies are well-suited to real-world contexts and behavioural patterns (e.g. **Box 5**).

Figure 4. Behavioural insights across the policy cycle

Source: Created by the authors.

In the **adoption phase**, BI can develop messages and materials informed by behavioural insights to ensure that the behavioural stakes of recommended policy options are understood by policymakers. BI can also help policymakers to anticipate public reactions to proposed legislation and suggest policy refinements accordingly.

The **implementation phase** is where BI can help to make policies actionable. It can support Member States by enhancing policy uptake through the development of targeted behavioural interventions. Tailored communications, guided by behavioural insights, can ensure that both citizens and stakeholders understand and are motivated to act in alignment with policy goals (e.g. **Box 6**). These tailored approaches aim to bridge the potential gap between policy intent and on-the-ground action.

In the **evaluation phase**, BI can ensure that policies are assessed against their behavioural goals and adjusted as needed. The effectiveness of policies can be evaluated using behavioural metrics, such as changes in habits, attitudes, or perceptions, to inform future policy improvements. Through

behavioural audits, BI can also help to identify gaps in implementation and unintended consequences. It can then communicate evaluation activities, such as making key findings salient through visual aids, framing outcomes in relation to clear benchmarks, and presenting recommendations in an action-oriented format that makes next steps clear and accessible to different stakeholder groups. Communication in the evaluation phase aims to improve future adoption of similar initiatives by clearly conveying what worked and what did not. BI can finally provide iterative feedback to policymakers for policy refinement once a new policy cycle starts.

Beyond specific contributions to individual policies, BI can provide meta-level support across the policy cycle (grey outer circle in **Figure 4**). By fostering collaborative policymaking, BI can help policymakers to navigate potential conflicts across DGs, facilitating constructive discussions and consensus-building ([57]). Additionally, targeted BI training for public servants can equip them with the skills needed to incorporate behavioural insights into their daily work (e.g. **Box 17**). Lastly, BI could contribute to decision-making processes at the adoption phase. Insights from collaborative policymaking developed at the evaluation and anticipation phases could at least in part apply to decision-making in trilogues ([58]).

The rest of this section explores the initiatives that the CCBI uses and develops to continue reinforcing the role of BI in policymaking within the European Commission ([59]). The first line is to keep promoting a foundational understanding among policymakers of how BI can enhance policies – and this report is part of this effort. The second line is to develop collaboration and constant communication with policymakers regarding their agendas. This ensures that researchers in our team effectively integrate policymakers' needs and take account of the forces that influence these agendas. The third line is to speed up the gathering of behavioural evidence beyond the rate that is presently possible.

5.2.1. Fostering knowledge of behavioural insights

Before BI is integrated into the policy landscape, it is important to establish an environment that is receptive to its methodologies and insights (Kuehnhanss, 2019). This can be done by instilling a robust culture of BI among policymakers. By hosting BI-focused events or workshops, the establishment of this behavioural culture can be accelerated, ensuring that policymakers not only recognise BI but also realistically assess and value its contributions.

Yet, raising awareness is merely the beginning. Capacity building serves as the bridge that translates awareness into actionable policy strategies. A frequent misconception is that BI equates almost exclusively to behavioural interventions such as nudging (Section 2). The training we provide to policymakers aims to debunk this narrow perspective (**Box 17**). For example, it showcases how BI

---

[57] The JRC, as part of the Centre for Organisational Transformation, a multi-DG initiative, is currently conducting a project on collaborative policymaking that aims to improve cross-boundary collaboration within the European Commission by addressing barriers identified through an in-depth analysis of current working practices and a review of relevant scientific literature. The project focuses on enhancing collaborative processes during the upstream phase of EU policymaking. Its objective is to deliver science-based yet practical guidance to foster better collaboration in policy work. A central feature of the project is a pilot study designed to implement and assess behavioural interventions aimed at improving collaboration within real work settings at the Commission. See more details at this internal link.

[58] Trilogues are usually informal negotiation meetings held during the adoption phase of the European Union's legislative process. These meetings involve representatives from the European Commission, the European Parliament, and the Council of the European Union—the three principal institutions responsible for EU lawmaking. The purpose of trilogues is to foster compromise and reach a final agreement on legislative proposals.

[59] We must however acknowledge that BI is just one piece of the big policymaking puzzle, so we should not expect policies to be fully, or only, in line with what behavioural sciences would recommend.

can inform the design of traditional policy instruments and includes practical activities allowing policymakers to simulate BI-driven policy decisions, which offers them a first-hand glimpse of the benefits of embedding BI into their decision-making.

Box 17. Training programmes offered by the CCBI

> The CCBI offers various formats of BI training courses for policymakers. Introductory training courses outline key BI concepts and methodologies and how they can be used to answer policy questions. We also offer shorter training courses targeted at managers. These courses incorporate case studies of successful uses of BI relevant to specific policy DGs, as well as targeted methodological knowledge.

Beyond capacity building, communication about BI being applied to policy must be regular, relevant and relatable. Sharing success stories and case studies where BI was integrated early into policy processes can offer convincing examples of its potential impact. Keeping policymakers updated by translating the latest BI research and findings into policy-relevant and easily digestible key messages will ensure its continued relevance and use. This is the goal of our webinar series and newsletter (**Box 18**), as well as our regular presentations on the methods we use and our projects at different levels in Member States and EU institutions.

Box 18. Webinar series and newsletter

> The CCBI has set up a webinar series ([60]) to discuss recent research and its implications for EU policy with both researchers and policymakers. It has also established a newsletter series ([61]), which advertises ongoing and finished projects, discusses recent contributions and debates in behavioural sciences, and references useful material for continued study of behavioural aspects of policies.

5.2.2. Encouraging collaboration between behavioural scientists and policymakers and maintaining communication

The CCBI mainly engages in two types of research: request-driven and anticipatory research.

In request-driven projects, we respond to specific inquiries from DGs for behavioural evidence related to policy issues at various policy stages. When planning to use behavioural evidence, a specific DG can go 'solo' or draw on the expertise of the CCBI. In the latter case, a formal or an informal collaboration agreement can be signed (i.e. an administrative arrangement or a co-delegated budget line, respectively), whereby the CCBI commits to take care of designing, collecting, analysing and interpreting the relevant evidence. Such collaborations are most fruitful when agreed on at the very start of the policy process, when the problem definition and the identification of the policy options are still to be finalised. The development of the Recommendation on Gambling (2014) was the result of one instance of such a collaboration (**Box 19**).

In anticipatory research projects, the objective is to prepare evidence for potential future policies before topics are fully defined as policy issues (Baggio et al., 2021), creating an opportunity to integrate BI at the earliest stage of the policy cycle. Although promising, this approach requires

---

([60])   https://knowledge4policy.ec.europa.eu/behavioural-insights/ccbi-seminar-series_en

([61])   https://ec.europa.eu/newsroom/know4pol/newsletter-archives/view/service/2555. Subscription can be made at https://ec.europa.eu/newsroom/know4pol/user-subscriptions/2555/create.

effective and continuous communication between DGs and the CCBI, to align the behavioural research agenda with the agendas of the DGs ([62]).

For both types of research, a stable and long-term collaboration with policymakers will make it more likely that BI will be involved in the policymaking process as early as possible (**Box 19**).

Box 19. Stable and long-term collaboration with policymakers

The CCBI has established long-term cooperation with several DGs of the Commission, starting from the areas of health and consumer protection and widening to other areas such as competition, fairness, agriculture and the environment (Baggio et al., 2021). Our work on the Recommendation on Gambling (2014) ([63]) was exemplary in this respect. Driven by a clear political will, its drafting involved constructive work with both the finance and consumer DGs. This recommendation included several measures to address gamblers' behavioural issues, such as by letting gamblers set limits on how much they can gamble over a chosen period or take time out or self-exclude from gambling.

5.2.3. Making tools from behavioural insights more readily available

By amplifying the awareness and comprehension of BI among policymakers, behavioural scientists pave the way for its greater integration into the policymaking process. To expedite this process, the CCBI recently developed its own platform for online experiments, the I-bex platform (**Box 20**). The use of this tool encourages dialogue and cooperation among policymakers, research practitioners and scientists affiliated at universities and international organisations.

Box 20. The I-bex platform

I-bex enables us to program and conduct online experiments without relying on external providers other than to recruit samples of participants. This makes it easier and cheaper to meet the tight timelines often imposed by the DGs, thereby facilitating timely delivery of BI at early stages of policymaking. It also allows for greater flexibility, so that design and procedures align closely with policy needs. I-bex can accommodate various populations of subjects – both the public and population groups of particular interest, such as professionals or public officials.

([62]) Several methods exist for achieving this. One straightforward approach is to set up regular (e.g. bimonthly) meetings. An alternative is to gather policymakers and behavioural scientists at workshops for direct dialogue about policy issues. Another alternative would be to conduct internal stakeholder analysis designed to engage with the various DGs within the European Commission comprehensively and systematically.

([63]) Commission Recommendation of 14 July 2014 on principles for the protection of consumers and players of online gambling services and for the prevention of minors from gambling online (OJ L 214, 19.7.2014, p. 38) (http://data.europa.eu/eli/reco/2014/478/oj).

6. Conclusion: our vision

This report began by examining a series of critiques of BI as a policymaking tool. The debate ignited by Chater and Loewenstein (2022) prompted us to pause and reflect on the role of BI at the European Commission.

We argue in this report for the more systematic involvement of BI in policymaking, whenever a behavioural element is at play, and explore ways to integrate BI effectively into the policy process beyond its use in the design of behavioural interventions coming after the main policy decisions. We highlight the importance of incorporating BI at the beginning of the policymaking process, rather than as an afterthought. Following the Better Regulation Guidelines (European Commission, 2023) should broaden BI's involvement beyond the impact assessment stage of the policy cycle. A policy cycle 2.0 (Miller et al., 2024) would involve all competences within the EU Policy Lab, including BI, before the policy design process even begins. This would help to realise the potential of behavioural and systemic approaches to do more than just influence individual decisions, shape the broader policy environment for more effective policies, be they traditional or behavioural, and thus deliver better outcomes for EU citizens. This would lead to the designing of policies that are more in tune with how people actually think and behave in areas such as health, justice, safety, finance, education, employment, the environment and consumer protection.

This report recommends specific steps towards achieving this integration. Policymakers would follow tailored BI training sessions and receive regular updates on the latest BI research. Collaborative projects between policymakers and behavioural scientists would ensure that policies are designed with human behaviour in mind from the start. Moreover, work with other disciplines that focus on systemic change would help to address societal challenges more comprehensively.

This report also aims to motivate policymakers to see BI as an essential component of policy development and to incorporate it as early as possible in the policy cycle. It also seeks to support efforts within the EU Policy Lab, and specifically the CCBI, for the development of guidelines and practical methods for using behavioural sciences to address systemic issues. Systemic change is fundamentally rooted in human behaviour: while structural, political, economic, or technological challenges may set the stage, it is the decisions and actions of individuals that ultimately drive change. Behind every challenge lies the potential for human behaviour to alter the course, provided the right behavioural pathways are identified and leveraged. Our goal is to develop and refine our own expertise in behavioural systems analysis through hands-on projects, enabling us to share insights and guidelines with others. We also hope that, by sharing our experience, others will develop and open up their own expertise, fostering mutual learning and collective growth.

References

Allcott, H. and Rogers, T. (2014), 'The short-run and long-run effects of behavioral interventions: Experimental evidence from energy conservation,' *American Economic Review*, Vol. 104, Issue 10, pp. 3003–3037, https://doi.org/10.1257/aer.104.10.3003.

Alt, M., Bruns, H., DellaValle, N. and Murauskaite-Bull, I. (2024), 'Synergies of interventions to promote pro-environmental behaviors – A meta-analysis of experimental studies', *Global Environmental Change*, Vol. 84, 102776, https://doi.org/10.1016/j.gloenvcha.2023.102776.

Baggio, M., Ciriolo, E., Marandola, G. and van Bavel, R. (2021), 'The evolution of behaviourally informed policy-making in the EU', *Journal of European Public Policy*, Vol. 28, Issue 5, pp. 658–676, https://doi.org/10.1080/13501763.2021.1912145.

Bakoula, B. (2019), 'Le 1er immeuble nudge – BVA en partenariat avec OGIC', BVA Xsight, 28 October 2019, https://www.bva-xsight.com/news/le-premier-immeuble-nudge/.

Balmford, A., Bradbury, R. B., Bauer, J. M., Broad, S., Burgess, G. et al. (2021), 'Making more effective use of human behavioural science in conservation interventions', *Biological Conservation*, Vol. 261, 109256, https://doi.org/10.1016/j.biocon.2021.109256.

Banerjee, S., Galizzi, M. M., John, P., et al. (2023), 'Sustainable dietary choices improved by reflection before a nudge in an online experiment', *Nature Sustainability*, Vol. 6, Issue 12, pp. 1632–1642, https://doi.org/10.1038/s41893-023-01235-0.

Banerjee, S. and John, P. (2024), 'Nudge plus: Incorporating reflection into behavioral public policy', *Behavioural Public Policy*, Vol. 8, Issue 1, pp. 69–84, https://doi.org/10.1017/bpp.2021.6.

Barbieri, S. and Konrad, K. A. (2021), 'Overzealous rule makers', *Journal of Law and Economics*, Vol. 64, Issue 2, pp. 341–365, https://doi.org/10.1086/711354.

Barbrook-Johnson, P., & Penn, A. (2021), 'Participatory systems mapping for complex energy policy evaluation', *Evaluation*, Vol. 27, Issue 1, pp. 57–79, https://doi.org/10.1177/1356389020976153.

Barreiro-Hurle, J., Dessart, F. J., Rommel, J., Czajkowski, M., Espinosa-Goded, M. et al. (2023), 'Willing or complying? The delicate interplay between voluntary and mandatory interventions to promote farmers' environmental behavior', *Food Policy*, Vol. 120, 102481, https://doi.org/10.1016/j.foodpol.2023.102481.

Belardinelli, P. (2024), 'Behavioral public policy and the monopoly of nudging', in: Belardinelli, P. (ed.) *Mapping Behavioral Public Policy*, Springer Nature Switzerland, Cham, pp. 25–45, https://doi.org/10.1007/978-3-031-58531-9_3.

Benartzi, P., Beshears, J., Milkman, K. L., Sunstein, C., Thaler, R. H., Shankar, M., Tucker-Ray, W., Congdon, W. J. and Galing, S. (2017), 'Should governments invest more in nudging?', Psychological Science, Vol. 28, Issue 8, pp. 1041-1055, https://journals.sagepub.com/doi/10.1177/0956797617702501.

Bertoldi, P., Boza-Kiss, B., Della Valle, N. and Economidou, M. (2021), 'The role of one-stop shops in energy renovation – A comparative analysis of OSSs cases in Europe', *Energy and Buildings*, Vol. 250, 111273, https://doi.org/10.1016/j.enbuild.2021.111273.

Bertoldi, P. and Della Valle, N. (2021), *Mobilising Citizens to Invest in Energy Efficiency – An overview of concepts and approaches for encouraging decisions to invest in energy efficiency*, Publications Office of the European Union, Luxembourg, https://data.europa.eu/doi/10.2760/137315.

Beshears, J. and Kosowsky, H. (2020), 'Nudging: Progress to date and future directions', *Organizational Behavior and Human Decision Processes*, Vol. 161, pp. 3–19, https://doi.org/10.1016/j.obhdp.2020.09.001.

Betsch, C. (2020), 'How behavioural science data helps mitigate the COVID-19 crisis', *Nature Human Behaviour*, Vol. 4, Issue 5, 438, https://doi.org/10.1038/s41562-020-0866-1.

Brones, A. (2018), 'Food apartheid: The root of the problem with America's groceries', *The Guardian*, 15 May 2018, https://www.theguardian.com/society/2018/may/15/food-apartheid-food-deserts-racism-inequality-america-karen-washington-interview.

Brownstein, M., Kelly, D. and Madva, A. (2022), 'Individualism, structuralism, and climate change', *Environmental Communication*, Vol. 16, Issue 2, pp. 269–288, https://doi.org/10.1080/17524032.2021.1982745.

Brune, L., Giné, X., Goldberg, J. and Yang, D. (2011), *Commitments to Save – A field experiment in rural Malawi*, Policy Research Working Papers, The World Bank, Washington DC, https://doi.org/10.1596/1813-9450-5748.

Bryan, C. J., Tipton, E. and Yeager, D. S. (2021), 'Behavioural science is unlikely to change the world without a heterogeneity revolution', *Nature Human Behaviour*, Vol. 5, Issue 8, pp. 980–989, https://doi.org/10.1038/s41562-021-01143-3.

Burgaz, C., Gorasso, V., Achten, W. M. J., Batis, C., Castronuovo, L. et al. (2023), 'The effectiveness of food system policies to improve nutrition, nutrition-related inequalities and environmental sustainability: A scoping review', *Food Security*, Vol. 15, Issue 5, pp. 1313–1344, https://doi.org/10.1007/s12571-023-01385-1.

Camerer, C., Issacharoff, S., Loewenstein, G., O'Donoghue, T. and Rabin, M. (2003), 'Regulation for conservatives: Behavioral economics and the case for "asymmetric paternalism" ', *University of Pennsylvania Law Review*, Vol. 151, Issue 3, p. 1211.

Carlsson, F., Gravert, C., Johansson-Stenman, O. and Kurz, V. (2021), 'The use of green nudges as an environmental policy instrument', *Review of Environmental Economics and Policy*, Vol. 15, Issue 2, pp. 216–237, https://doi.org/10.1086/715524.

Centola, D. (2010), 'The spread of behavior in an online social network experiment', *Science*, Vol. 329, Issue 5996, pp. 1194–1197, https://doi.org/10.1126/science.1185231.

Centola, D., Becker, J., Brackbill, D. and Baronchelli, A. (2018), 'Experimental evidence for tipping points in social convention', *Science*, Vol. 360, Issue 6393, pp. 1116–1119, https://doi.org/10.1126/science.aas8827.

Chamberlin, W., De Filippo, A. and Wendel, S. (2024), *Applying behavioural science in policymaking for adaptation to climate change: A case study of pastoralism in the arid and semi-arid lands of northern Kenya*, draft internal report, International Institute for Sustainable Development, Winnipeg.

Chater, N. and Loewenstein, G. (2022), 'The i-frame and the s-frame: How focusing on individual-level solutions has led behavioral public policy astray', *Behavioral and Brain Sciences*, Vol. 46, pp. 1–60, https://doi.org/10.1017/S0140525X22002023.

Chersoni, G., DellaValle, N. and Fontana, M. (2022), 'Modelling thermal insulation investment choice in the EU via a behaviourally informed agent-based model', *Energy Policy*, Vol. 163, 112823, https://doi.org/10.1016/j.enpol.2022.112823.

De Ridder, D., Feitsma, J., Van Den Hoven, M., Kroese, F., Schillemans, T. et al. (2024), 'Simple nudges that are not so easy', *Behavioural Public Policy*, Vol. 8, Issue 1, pp. 154–172, https://doi.org/10.1017/bpp.2020.36.

Dekker, S. (2012), *Drift into Failure – From hunting broken components to understanding complex systems,* Ashgate, Farnham.

Del Valle, E. D., Jang, C. and Wendel, S. (2024), 'Behavioral systems: Combining behavioral science and systems analysis', *Busara Groundwork, Research Agenda*, Vol. 8.

Della Valle, N. and Czako, V. (2022), 'Empowering energy citizenship among the energy poor', *Energy Research & Social Science*, Vol. 89, 102654, https://doi.org/10.1016/j.erss.2022.102654.

DellaVigna, S. and Linos, E. (2022), 'RCTs to scale: Comprehensive evidence from two nudge units', *Econometrica*, Vol. 90, Issue 1, pp. 81–116, https://doi.org/10.3982/ECTA18709.

Dessart, J. F., Marandola, G., Hille, S. and Thogersen, J. (2021), 'Comparing the impact of positive, negative, and graded sustainability labels on purchase decisions', Science for Policy Briefs, European Commission, Joint Research Centre, https://publications.jrc.ec.europa.eu/repository/handle/JRC127006.

Dewies, M. and Reisch, L. (2024), *META BI: An interdisciplinary and context-rich classification of behavioural interventions*, University of Twente, Enschede.

Dill, J. and McNeil, N. (2013), 'Four types of cyclists? Examination of typology for better understanding of bicycling behavior and potential', *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 2387, Issue 1, pp. 129–138, https://doi.org/10.3141/2387-15.

Drewnowski, A. and Specter, S. E. (2004), 'Poverty and obesity: The role of energy density and energy costs', *American Journal of Clinical Nutrition*, Vol. 79, Issue 1, pp. 6–16, https://doi.org/10.1093/ajcn/79.1.6.

Duflo, E. (2017), 'The economist as plumber', *American Economic Review*, Vol. 107, Issue 5, pp. 1–26, https://doi.org/10.1257/aer.p20171153.

Duflo, E., Kremer, M. and Robinson, J. (2011), 'Nudging farmers to use fertilizer: Theory and experimental evidence from Kenya', *American Economic Review*, Vol. 101, Issue 6, pp. 2350–2390, https://doi.org/10.1257/aer.101.6.2350.

Dupoux, M. and Martens, D. *Barriers to implementing EU green policies*, Publications Office of the European Union, Luxembourg, 2025, JRC139792.

Economidou, M., Della Valle, N., Melica, G., Valentini, O. and Bertoldi, P. (2021), *Financing Energy Renovations at Local and Regional Levels*, Publications Office of the European Union, Luxembourg, https://doi.org/10.2760/52526.

Einfeld, C. (2019), 'Nudge and evidence based policy: Fertile ground', *Evidence & Policy*, Vol. 15, Issue 4, pp. 509–524, https://doi.org/10.1332/174426418X15314036559759.

EU Policy Lab (2024), 'Fair decision-making: Can humans save us from biased AI?', 25 March 2024, https://policy-lab.ec.europa.eu/news/fair-decision-making-can-humans-save-us-biased-ai-2024-03-22_en.

European Commission (2021), *Support study to the report on the application of Directive 2014/40/EU – Final report*, Publications Office of the European Union, Luxembourg, https://data.europa.eu/doi/10.2875/161406.

European Commission (2023), 'Better regulation: Guidelines and toolbox', 20 July 2023, https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation/better-regulation-guidelines-and-toolbox_en.

European Parliament (2018), 'Plastic waste and recycling in the EU: Facts and figures', 19 December 2018, https://www.europarl.europa.eu/topics/en/article/20181212STO21610/plastic-waste-and-recycling-in-the-eu-facts-and-figures.

Ewert, B. (2020), 'Moving beyond the obsession with nudging individual behaviour: Towards a broader understanding of behavioural public policy', *Public Policy and Administration*, Vol. 35, Issue 3, pp. 337–360, https://doi.org/10.1177/0952076719889090.

Fernández-i-Marín, X., Hinterleitner, M., Knill, C. and Steinebach, Y. (2023), 'Bureaucratic overburdening in advanced democracies.', *Public Administration Review*, Vol. 84, Issue 4, pp. 696–709, https://doi.org/10.1111/puar.13725.

Ferraro, P. J., Miranda, J. J. and Price, M. K. (2011), 'The persistence of treatment effects with norm-based policy instruments: Evidence from a randomized environmental policy experiment,' *American Economic Review*, Vol. 101, Issue 3, pp. 318–322, https://doi.org/10.1257/aer.101.3.318.

Froy, F. and Giguère, S. (2010). *Breaking Out of Policy Silos – Doing more with less*, Local Economic and Employment Development, Organisation for Economic Co-operation and Development, Paris, https://doi.org/10.1787/9789264094987-en.

Gneezy, U. and Rustichini, A. (2000), 'A fine is a price', *Journal of Legal Studies*, Vol. 29, Issue 1, pp. 1–17, https://doi.org/10.1086/468061.

Grüne-Yanoff, T. (2012), 'Old wine in new casks: Libertarian paternalism still violates liberal principles', *Social Choice and Welfare*, Vol. 38, Issue 4, pp. 635–645, https://doi.org/10.1007/s00355-011-0636-0.

Hale, J., Jofeh, C. and Chadwick, P. (2022), 'Decarbonising existing homes in Wales: A participatory behavioural systems mapping approach', *UCL Open Environment*, Vol. 4, https://doi.org/10.14324/111.444/ucloe.000047.

Hallsworth, M., List, J. A., Metcalfe, R. D., & Vlaev, I. (2017), 'The behavioralist as tax collector: Using natural field experiments to enhance tax compliance', *Journal of Public Economics*, Vol. 148, pp. 14–31, https://doi.org/10.1016/j.jpubeco.2017.02.003.

Hallsworth, M. (2023), 'A manifesto for applying behavioural science', *Nature Human Behaviour*, Vol. 7, Issue 3, pp. 310–322, https://doi.org/10.1038/s41562-023-01555-3.

Harrison, K. (1998), 'Talking with the donkey: Cooperative approaches to environmental protection', *Journal of Industrial Ecology*, Vol. 2, Issue 3, pp. 51–72, https://doi.org/10.1162/jiec.1998.2.3.51.

Hertwig, R. and Grüne-Yanoff, T. (2017), 'Nudging and boosting: Steering or empowering good decisions', *Perspectives on Psychological Science*, Vol. 12, Issue 6, pp. 973–986, https://doi.org/10.1177/1745691617702496.

Hofmann, W. (2023), 'Going beyond the individual level in self-control research', *Nature Reviews Psychology*, Vol. 3, Issue 1, pp. 56–66, https://doi.org/10.1038/s44159-023-00256-y.

Höhler, J., Barreiro-Hurlé, J., Czajkowski, M., Dessart, F. J., Ferraro, P. J. et al. (2023), 'Perspectives on stakeholder participation in the design of economic experiments for agricultural

policymaking: Pros, cons, and twelve recommendations for researchers', *Applied Economic Perspectives and Policy*, Vol. 46, Issue 1, https://doi.org/10.1002/aepp.13385.

Holz, J. E., List, J. A., Zentner, A., Cardoza, M., & Zentner, J. E. (2023), 'The $100 million nudge: Increasing tax compliance of firms using a natural field experiment', *Journal of Public Economics*, Vol. 218, Article 104779, https://doi.org/10.1016/j.jpubeco.2023.104779.

Howlett, M. (2004), 'Beyond good and evil in policy implementation: Instrument mixes, implementation styles, and second generation theories of policy Instrument choice', *Policy and Society*, Vol. 23, Issue 2, pp. 1–17, https://doi.org/10.1016/S1449-4035(04)70030-2.

Howlett, M. and Mukherjee, I. (eds) (2020), *Routledge Handbook of Policy Design*, Routledge, London.

Jakovcevic, A., Steg, L., Mazzeo, N., Caballero, R., Franco, P. et al. (2014), 'Charges for plastic bags: Motivational and behavioral effects', *Journal of Environmental Psychology*, Vol. 40, pp. 372–380, https://doi.org/10.1016/j.jenvp.2014.09.004.

Jimenez, G., Matchar, D., Choon-Huat Koh, G. and Car, J. (2021), 'Multicomponent interventions for enhancing primary care: A systematic review', *British Journal of General Practice*, Vol. 71, e10–e21, https://doi.org/10.3399/bjgp20X714199.

John, L.K., Loewenstein, G. and Volpp, K.G. (2012), 'Empirical observations on longer-term use of incentives for weight loss,' *Preventive Medicine*, Vol. 55, Supplement, pp. S68–S74, https://doi.org/10.1016/j.ypmed.2012.01.022.

Johnson, E. J. and Mrkva, K. (2023), 'When nudges have societal-level impact', *Behavioral and Brain Sciences*, Vol. 46, e163, https://doi.org/10.1017/S0140525X23000961.

Krpan, D., Makki, F., Saleh, N., Iris Brink, S. and Vlahinja Klauznicer, H. (2021), 'When behavioural science can make a difference in times of COVID-19', *Behavioural Public Policy*, Vol. 5, Issue 2, pp. 153–179, https://doi.org/10.1017/bpp.2020.48.

Kuehnhanss, C. R. (2019), 'The challenges of behavioural insights for effective policy design', *Policy and Society*, Vol. 38, Issue 1, pp. 14–40, https://doi.org/10.1080/14494035.2018.1511188.

Lewis, A. and Eves, F. (2012), 'Prompt before the choice is made: Effects of a stair-climbing intervention in university buildings', *British Journal of Health Psychology*, Vol. 17, Issue 3, pp. 631–643, https://doi.org/10.1111/j.2044-8287.2011.02060.x.

Li, D., Xu, X., Chen, C.-F. and Menassa, C. (2019), 'Understanding energy-saving behaviors in the American workplace: A unified theory of motivation, opportunity, and ability', *Energy Research & Social Science*, Vol. 51, pp. 198–209, https://doi.org/10.1016/j.erss.2019.01.020.

Linos, E. (2022), 'When Governments Use Nudges: Measuring Impact "At Scale"', in Mažar, N., & Soman, D. (eds.), *Behavioral Science in the Wild: Behaviorally Informed Organizations*, University of Toronto Press, pp. 20–27, https://doi.org/10.3138/9781487527525-004.

Maier, M., Bartoš, F., Stanley, T. D., Shanks, D. R., Harris, A. J. L. et al. (2022), 'No evidence for nudging after adjusting for publication bias', *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 119, Issue 31, e2200300119, https://doi.org/10.1073/pnas.2200300119.

Mann, M. E. (2021), *The New Climate War – The fight to take back our planet*, Public Affairs, New York.

Mažar, N., & Soman, D. (2022), Behavioral Science in the Wild: Behaviorally Informed Organizations, University of Toronto Press, 360 pages, ISBN: 978-1487527532, https://books.google.lu/books?id=Q4ltEAAAQBAJ.

Meder, B., Fleischhut, N. and Osman, M. (2018), 'Beyond the confines of choice architecture: A critical analysis', *Journal of Economic Psychology*, Vol. 68, pp. 36–44, https://doi.org/10.1016/j.joep.2018.08.004.

Menyhert, B. (2022), *The effect of rising energy and consumer prices on household finances, poverty and social exclusion in the EU*, Publications Office of the European Union, Luxembourg, https://doi.org/10.2760/418422.

Menyhert, B. (2023), *Energy Poverty – New insights and analysis for improved measurement and policy: Evidence from unique joint HBS SILC microdata from Hungary,* Publications Office of the European Union, Luxembourg, https://data.europa.eu/doi/10.2760/142749.

Mertens, S., Herberz, M., Hahnel, U. J. J. and Brosch, T. (2022), 'The effectiveness of nudging: A meta-analysis of choice architecture interventions across behavioral domains', *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 119, Issue 1, e2107346118, https://doi.org/10.1073/pnas.2107346118.

Milinski, M., Semmann, D. and Krambeck, H.-J. (2002), 'Reputation helps solve the "tragedy of the commons"', *Nature*, Vol. 415, Issue 6870, pp. 424–426, https://doi.org/10.1038/415424a.

Miller, C., Danilaviciute, L., Kormann da Silva, N. and Dirth, E. (2024), 'A policy cycle 2.0 for the European Commission', ZOE Institute for Future-Fit Economies, 2 May 2024, https://zoe-institut.de/en/publication/policy-cycle-2-0-for-the-european-commission/.

Mills, S., Whittle, R., Ahmed, R., Walsh, T. and Wessel, M. (2023), 'Dark patterns and sludge audits: An integrated approach', *Behavioural Public Policy*, pp. 1–27, https://doi.org/10.1017/bpp.2023.24.

Nielsen, K. S., Cologna, V., Bauer, J. M., Berger, S., Brick, C., et al. (2024), 'Realizing the full potential of behavioural science for climate change mitigation', *Nature Climate Change*, Vol. 14, pp. 322–330, https://doi.org/10.1038/s41558-024-01951-1.

Nielsen, K. S., Marteau, T. M., Bauer, J. M., Bradbury, R. B., Broad, S. et al. (2021), 'Biodiversity conservation as a promising frontier for behavioural science', *Nature Human Behaviour*, Vol 5, Issue 5, pp. 550–556, https://doi.org/10.1038/s41562-021-01109-5.

OECD (Organisation for Economic Co-operation and Development) (2017), *Behavioural Insights and Public Policy: Lessons from around the world*, https://doi.org/10.1787/9789264270480-en.

OECD (Organisation for Economic Co-operation and Development) (2021), *Applying Evaluation Criteria Thoughtfully*, https://doi.org/10.1787/543e84ed-en.

OECD (Organisation for Economic Co-operation and Development) (2022), *Redesigning Ireland's Transport for Net Zero: Towards systems that work for people and the planet*, https://doi.org/10.1787/b798a4c1-en.

OPSI (Observatory of Public Sector Innovation) (2017), 'Systems approaches – Working towards holistic solutions', https://oecd-opsi.org/work-areas/systems-approaches/.

Ostrom, E. (2000), 'Collective action and the evolution of social norms', *Journal of Economic Perspectives*, Vol. 14, Issue 3, pp. 137–158, https://doi.org/10.1257/jep.14.3.137.

Pacheco-Vega, R. (2020), 'Environmental regulation, governance, and policy instruments, 20 years after the stick, carrot, and sermon typology', *Journal of Environmental Policy & Planning*, Vol. 22, Issue 5, pp. 620–635, https://doi.org/10.1080/1523908X.2020.1792862.

Rittel, H. W. J. and Webber, M. M. (1973), 'Dilemmas in a general theory of planning', *Policy Sciences*, Vol. 4, Issue 2, pp. 155–169, https://doi.org/10.1007/BF01405730.

Robinson, M. S. (2001), *The Microfinance Revolution: Sustainable finance for the poor*, The World Bank, Washington DC, http://documents.worldbank.org/curated/en/226941468049448875/sustainable-finance-for-the-poor.

Robitaille, N., House, J. and Mazar, N. (2021), 'Effectiveness of planning prompts on organizations' likelihood to file their overdue taxes: A multi-wave field experiment,' *Management Science*, Vol. 67, Issue 7, pp. 4327–4340, https://doi.org/10.1287/mnsc.2020.3744.

Rogers, T. and Frey, E. (2015), 'Changing behavior beyond the here and now', in: Keren, G. and Wu, G. (eds), *The Wiley Blackwell handbook of judgment and decision making*, Wiley, Hoboken, NJ, pp. 723–748, https://doi.org/10.1002/9781118468333.ch25.

Rutter, H., Savona, N., Glonti, K., Bibby, J., Cummins, S. et al. (2017), 'The need for a complex systems model of evidence for public health', *The Lancet*, Vol. 390, pp. 2602–2604, https://doi.org/10.1016/S0140-6736(17)31267-9.

Savin, I., Creutzig, F., Filatova, T., Foramitti, J., Konc, T. et al. (2023), 'Agent-based modeling to integrate elements from different disciplines for ambitious climate policy', *WIREs Climate Change*, Vol. 14, Issue 2, p. e811, https://doi.org/10.1002/wcc.811.

Schmidt, R. (2022), 'A model for choice infrastructure: Looking beyond choice architecture in behavioral public policy', *Behavioural Public Policy*, Vol. 8, Issue 3, pp. 415–440, https://doi.org/10.1017/bpp.2021.44.

Schmidt, R. and Stenger, K. (2021), 'Behavioral brittleness: The case for strategic behavioral public policy', *Behavioural Public Policy*, Vol. 8, Issue 2, pp. 212–237, https://doi.org/10.1017/bpp.2021.16.

Schmitt, M. T., Neufeld, S. D., Mackay, C. M. L. and Dys-Steenbergen, O. (2020), 'The perils of explaining climate inaction in terms of psychological barriers', *Journal of Social Issues*, Vol. 76, Issue 1, pp. 123–135, https://doi.org/10.1111/josi.12360.

Schneider, A. and Ingram, H. (1990), 'Behavioral assumptions of policy tools', *Journal of Politics*, Vol. 52, Issue 2, pp. 510–529, https://doi.org/10.2307/2131904.

Sousa Lourenço, J., Emanuele, C., Almeida, S. R. and Xavier, T. (2016), *Behavioural Insights Applied to Policy: European report 2016,* Publications Office of the European Union, Luxembourg, https://data.europa.eu/doi/10.2760/903938.

Stevenson, M. (2023), 'Cause, effect, and the structure of the social world', *SSRN Electronic Journal*, https://doi.org/10.2139/ssrn.4445710.

Sunstein, C. R. (2018), 'Misconceptions about nudges', *Journal of Behavioral Economics for Policy*, Vol. 2, Issue 1, pp. 61–67, https://doi.org/10.2139/ssrn.3033101.

Sunstein, C. R. (2023), 'Behavioral science in the administrative state', *Administrative Law Review* Vol. 75, Issue 2, pp. 213–226.

Thaler, R. (2021), 'What's next for nudging and choice architecture?', *Organizational Behavior and Human Decision Processes*, Vol. 163, pp. 4–5, https://doi.org/10.1016/j.obhdp.2020.04.003.

Thaler, R. H. and Sunstein, C. R. (2003), 'Libertarian paternalism', *The American Economic Review*, Vol. 93, Issue 2, pp. 175–179.

Thaler, R. H. and Sunstein, C. R. (2008), *Nudge – Improving decisions about health, wealth, and happiness*, Penguin Books, New York.

Thaler, R. (2020), 'What's next for nudging and choice architecture?', *Organizational Behavior and Human Decision Processes*, https://doi.org/10.1016/j.obhdp.2020.04.003.

Thaler, R. H. and Sunstein, C. R. (2021), *Nudge – The final edition*, Penguin Books, New York.

Thøgersen, J., Dessart, F. J., Marandola, G. and Lena Hille, S. (2024), 'Positive, negative or graded sustainability labelling? Which is most effective at promoting a shift towards more sustainable product choices?', *Business Strategy and the Environment*, Vol. 33, Issue 7, pp. 6795–6813, https://doi.org/10.1002/bse.3838.

Thompson, R. F. (2014), 'Habituation: A history,' in McSweeney, F. K. and Murphy, E. S. (Eds.), *The Wiley Blackwell Handbook of Operant and Classical Conditioning*, Wiley Blackwell, pp. 79–94.

Van Bavel, R., Herrmann, B., Esposito, G. and Proestakis, A. (2013), *Applying Behavioural Science to EU Policy-making,* Publications Office of the European Union, Luxembourg, https://doi.org/10.2788/47172.

Van Bavel, J. J., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., et al. (2020), 'Using social and behavioural science to support COVID-19 pandemic response', *Nature Human Behaviour*, Vol. 4, Issue 5, pp. 460–471, https://doi.org/10.1038/s41562-020-0884-z.

Van Ryzin, G. G. (2021), 'Nudging and muddling through', *Perspectives on Public Management and Governance*, Vol. 4, Issue 4, pp. 339–345, https://doi.org/10.1093/ppmgov/gvab021.

Vandyck, T., Della Valle, N., Temursho, U. and Weitzel, M. (2023), 'EU climate action through an energy poverty lens', *Scientific Reports*, Vol. 13, Issue 1, 6040, https://doi.org/10.1038/s41598-023-32705-2.

Verplanken, B. and Orbell, S. (2022), 'Attitudes, Habits, and Behavior Change', *Annual Review of Psychology*, Vol. 73, pp. 327–352, https://doi.org/10.1146/annurev-psych-020821-011744.

Vlasceanu, M., Doell, K. C., Bak-Coleman, J. B., Todorova, B., Berkebile-Weinberg, M. M. et al. (2024), 'Addressing climate change with behavioral science: A global intervention tournament in 63 countries', *Science Advances*, Vol. 10, Issue 6, https://doi.org/10.1126/sciadv.adj5778.

Vollan, B. (2008), 'Socio-ecological explanations for crowding-out effects from economic field experiments in Southern Africa', *Ecological Economics*, Vol. 67, Issue 4, pp. 560–573, https://doi.org/10.1016/j.ecolecon.2008.01.015.

Wilkinson, T. M. (2013), 'Nudging and manipulation', *Political Studies*, Vol. 61, Issue 2, pp. 341–355, https://doi.org/10.1111/j.1467-9248.2012.00974.x.

Winters, M., Davidson, G., Kao, D. and Teschke, K. (2011), 'Motivators and deterrents of bicycling: Comparing influences on decisions to ride', *Transportation*, Vol. 38, Issue 1, pp. 153–168, https://doi.org/10.1007/s11116-010-9284-y.

Zhen, C. (2021), 'Food deserts: Myth or reality?', *Annual Review of Resource Economics*, Vol. 13, Issue 1, pp. 109–129, https://doi.org/10.1146/annurev-resource-101620-080307.

List of abbreviations and definitions

Abbreviations	Definitions
BI	Behavioural insights
CCBI	Competence Centre on Behavioural Insights
EU	European Union
JRC	Joint Research Centre

List of boxes

List of figures

List of tables

Getting in touch with the EU

In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

— by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),

— at the following standard number: +32 22999696,

— via the following form: european-union.europa.eu/contact-eu/write-us_en.

Finding information about the EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

EU open data

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

Science for policy

The Joint Research Centre (JRC) provides
independent, evidence-based knowledge and
science, supporting EU policies to positively
impact society

EU Science Hub
Joint-research-centre.ec.europa.eu