

Tackling Environmental Problems with the Help of Behavioural Insights

POLICY HIGHLIGHTS



1

What can policy makers learn from behavioural sciences?

Individual and collective decision-making, from daily consumption decisions to once-in-a-lifetime investments, can give rise to or worsen environmental problems. The outcome of relevant policies depends on whether they can provide individuals, households, organisations and firms with incentives to make more environmentally sustainable decisions. Hence, policies need to be developed on the basis of realistic representations of the mechanisms driving individual and collective decision-making.

Individual decision-making is affected by limited cognitive resources and short-sightedness, and is often influenced by consideration of other people's well-being. Such features of human behaviour can be viewed as deviations from the rational decision-making model postulated in standard economic theory and are called *behavioural biases*. These biases are ultimately reflected in consumption and investment decisions, as well as in decisions regarding compliance with environmental regulation. Box 1 describes the main biases which have the potential to impact environmental policy and its effectiveness.

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BEHAVIOURAL INSIGHTS PROVIDE ANOTHER ARROW IN POLICY MAKERS' QUIVER TO PROMPT MORE ENVIRONMENTALLY SUSTAINABLE BEHAVIOURS.



Shedding light on behavioural biases, insights from behavioural sciences – behavioural insights or BIs – can help policy makers obtain a deeper understanding of the behavioural mechanisms contributing to environmentally harmful choices and develop more effective policies to address environmental problems. Behavioural insights can be used both to improve the effectiveness of existing policy instruments and to devise new ones, providing another arrow in policy makers' quiver to prompt more environmentally sustainable behaviours. They should not, however, be viewed as a substitute, but as a complementary tool to traditional environmental policy instruments, such as pricing and regulation.

Box 1. Behavioural biases impacting environmental policy

Bounded rationality

Human problem solving is constrained by limited cognitive abilities.

Framing effect: the way an option is presented (or framed) affects individual choice among alternatives. More specifically, individuals can draw different conclusions from the same amount of information, depending on how it is presented and the relative salience of its elements.

Loss aversion arises when the cost associated with giving up something is perceived as greater than the benefit that would accrue to the acquisition of the same thing. Loss aversion can help explain the endowment effect and the status-quo bias:

- **Endowment effect:** Individuals tend to view the value of a good that could be lost or given up as higher than the value of the same good when it appears as a potential gain.
- **Status-quo bias:** When comparing features of alternative options to those of the status quo, their disadvantages loom larger than the advantages; this leads to inertia.

Bounded willpower

People sometimes make short-sighted choices that are not in their long-run interest.

Inconsistencies between individual beliefs and behaviours can be denoted as **cognitive dissonances**. This phenomenon leads to an **attitude-behaviour gap**, a mismatch between beliefs and concrete behaviours. Sometimes, people may react to this mismatch by aligning their beliefs to their behaviour instead of the opposite.

Myopia in **intertemporal choices:** individuals tend to show time-inconsistent preferences when considering decisions characterised by time-varying discount rates. This means that they will apply discount rates that are higher in the short run than in the long run (hyperbolic discounting), rather than constant over time. In other words, individuals with this type of preferences would rather obtain 1 Euro today than 1 Euro and 10 cents tomorrow, but when presented with the choice between receiving 1 Euro in one year and 1 Euro and 10 cents in one year and one day, they will gladly wait for an extra day. This type of discounting drives short-sighted decisions, placing disproportionate weight on immediate costs and benefits relatively to long-term ones.

Bounded self-interest

Individuals are often willing to sacrifice their own interests to help others.

Individuals are not motivated exclusively by their own utility: **altruism**, **fairness** and **social norms** also affect individual decision-making. While altruism and fairness need not be defined, social norms and their impact on consumer behaviour deserve further scrutiny. People conform to behaviours which are perceived as the norm in society, and compare their own behaviour to these ideal benchmarks.

Sources: Carlsson and Johansson-Stenman (2012); DellaVigna (2009); Gsottbauer and van den Bergh (2011); Kahneman (2003); Mullainathan and Thaler (2000).

2 What are behavioural interventions and what are their roles in policy making?

Behavioural interventions are policy initiatives which are designed explicitly on previously existing behavioural evidence and/or based on a new experiment. When it comes to their role in the policy-making process, behavioural insights can be thought of as tools with a triple use:

Problem diagnosis

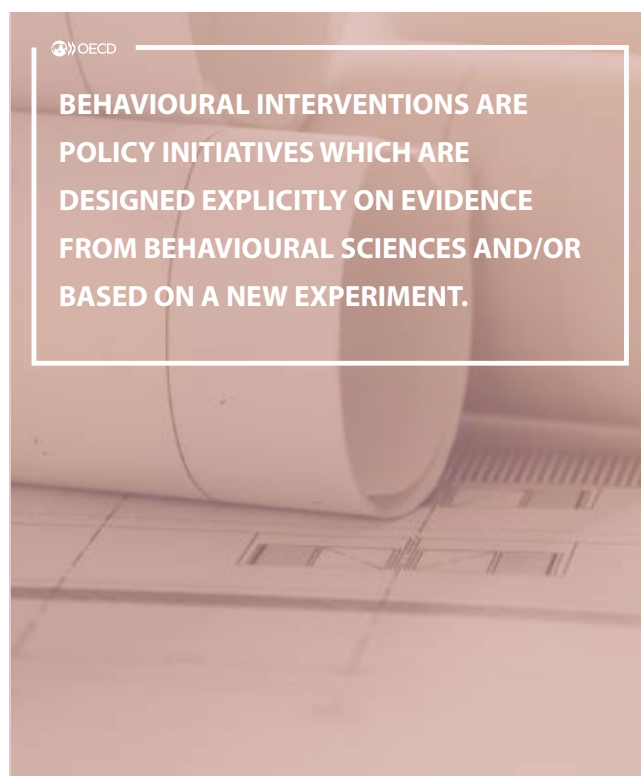
Policy makers can use behavioural insights to recognise the behavioural patterns and diagnose the behavioural biases contributing to the environmental problem they aim to tackle. This is necessary for the identification of the behavioural levers on which effective policy interventions should rely. A deeper understanding of the cognitive mechanisms at the core of individual decision-making can pave the way for more effective design, implementation and evaluation of policies to tackle environmentally damaging behaviours.

Policy design and implementation

Once a given behavioural bias has been identified as contributing to environmental damage, behavioural insights can inform the design and implementation of policies, building upon a more realistic view of individual behaviour and its interaction with environmental policy instruments. Policy makers can use a range of **behavioural levers** to design and roll out an appropriate policy intervention. Extending the classification provided by Mont, Lehner and Heiskanen (2014), seven main types of behavioural levers have been distinguished. These levers are, in fact, the building blocks of behavioural interventions and, as such, constitute concrete tools for policy makers: they are described in detail in Box 2.

Policy evaluation

Applying behavioural insights to policy making motivates a thorough evaluation approach. In order to test the effectiveness of a certain behavioural intervention, its outcomes should be empirically assessed. Measurable indicators of policy effectiveness should be defined prior to implementing the intervention. Analysing variations in these indicators allows evaluating whether the intervention has been successful according to policy makers' objectives.



Box 2. Typologies of behavioural levers

Simplification and framing of information

Simplifying complex information can prevent information overload. Framing aims at representing information by consciously activating certain values and attitudes of individuals. The way information is framed can also affect how it is processed by its recipients. For example, energy efficiency labels can be framed to provide a sense of the relative ranking of an electric appliance with respect to the best-in-class one, and the savings that one could enjoy when switching to the latter.

Changes to the physical environment

The physical environment can substantially affect individual decision-making, especially in contexts in which choices are made spontaneously, on the basis of automated mechanisms and habits. Examples of such interventions are changes in the location and appearance (e.g. colour) of recycling bins, or the installation of automatic (sensor-based) water taps to curb water consumption.

Changes to the default policy

As individuals are prone to status-quo bias, they often postpone making decisions until or unless it becomes inevitable to do so. Defaults can, thus, have a great impact in contexts in which people are resistant to change. An example of such interventions is a change to the default setting of thermostats (i.e. to a lower baseline temperature in order to foster energy savings).

Use of social norms and comparisons

As individuals are social beings, not solely driven by their own payoffs, they are affected by the way people surrounding them behave (social norms), by how they compare to their peers (social comparison) as well as by moral injunctions. An example of this type of intervention is the comparison of a household's energy or water consumption to the consumption of a same-sized household in the same neighbourhood.

Use of feedback mechanisms

Several routine behaviours, such as energy consumption or waste disposal, have considerable environmental impacts. However, these impacts are often not sufficiently salient for consumers. Providing them with timely feedback can make such contexts more transparent, increasing awareness of environmental externalities stemming from daily consumption choices. For example, real-time in-home displays connected to smart energy meters can provide real time feedback on energy consumption and costs.

Reward and punishment

Schemes can be used as “carrots and sticks”, associating a salient, material payoff to consumers' achievements. For example, rewarding households who have been particularly savvy with water consumption during scarcity periods may generate a positive norm for water conservation.

Goal setting and commitment devices

As individuals are bound by status-quo bias and inertia, effortful behaviour changes can be encouraged by setting specific and measurable goals and using commitment devices to regularly follow up on progress. One such example involves pinning down an objective of energy savings and following up on the objective with regular feedback and tips.

Source: adapted from Mont, Lehner and Heiskanen (2014).

3 How have governments applied behavioural insights to environmentally relevant policy making?

Different governance levels may be better positioned to apply behavioural insights to tackle different environmental problems. Certification schemes for fuel efficiency and energy efficiency, for instance, have been tested at the national, federal or international (e.g. European Union) level to support the adoption of more efficient products. On the other hand, interventions acting upon services provided at the municipal level (e.g. local transport, water supply, waste collection management) can be launched and monitored more easily at that level. These factors are reflected in the increasingly active role that different administrative levels have been taking up in applications of behavioural insights: from teams and projects launched within city administrations, to teams within a prime minister's office, to specialised units within a given ministry or government agency.

Since the launch of the pioneering Behavioural Insights Team in the United Kingdom in 2010, governments and institutions at different territorial levels have been organising their work on applications of behavioural insights to environmentally relevant policy following two main approaches:

1. Setting up in-house behavioural insights teams:

- At centralised or regional level, working on a range of policy areas (Australia, Canada, European Commission, France, Germany, United Kingdom, United States and South Africa),
- Within the Ministry of Environment, working specifically on environmental policy (Australia, Israel, The Netherlands).

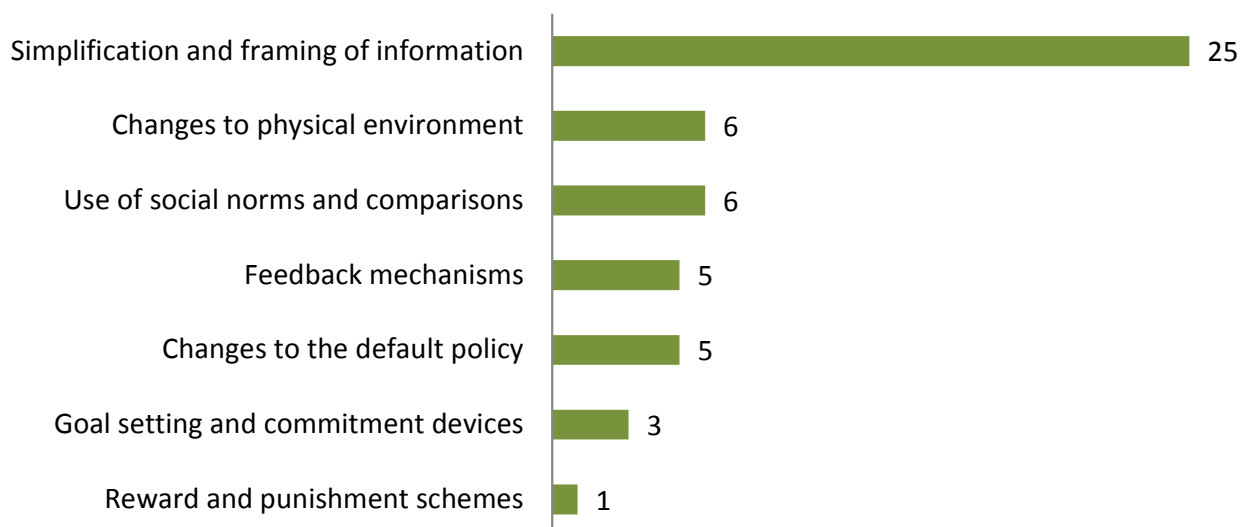
2. Developing ad-hoc projects:

- This is usually in cooperation with consulting firms, NGOs, international organisations or universities or research centres specialised in the development of behavioural interventions and the assessment of their impacts (Chile, Colombia, Costa Rica, Denmark, European Commission, the European Economic and Social Committee, Germany, the Nordic Council, Norway, Sweden, Switzerland).

Within both groups, there is substantial heterogeneity in the extent to which countries and institutions have embraced the integration of behavioural insights in policy making. This translates in different levels of financial and human resources devoted to this process. In general, countries and institutions which have chosen to build an internal specialised team currently seem to be more advanced than their counterparts which have started to explore the potential of behavioural interventions solely through external partnerships. This is apparent both in the scope of the interventions that have been implemented (i.e. the range of policy areas covered) and in the sophistication of methodologies applied in this process.



Figure 1. Behavioural levers in reviewed behavioural interventions



Following the typology presented in Box 2, Figure 1 provides a snapshot of the distribution of levers applied in the behavioural interventions reviewed in this report. The majority of interventions (69%) are based on simplification and framing of information. Some of these interventions rely on simplification in order to ease cognitive limitations arising e.g. in the interpretation of particularly complex information that environment agencies may provide to regulated firms. Others increase the salience of future costs and benefits associated with investments to improve insulation for housing. This can help consumers tackle the short-sightedness often hampering such inter-temporal choices.

Changes to the physical environment (17%) have included the installation of real-time in-home displays connected to smart electricity meters to enhance salience of power consumption and the introduction of stickers reminding of the importance of water conservation next to water taps. Social norms and comparisons (17%) have been used to induce energy and water conservation, as well as to prevent littering. All the other types of behavioural levers have been relatively underexploited. Green defaults, for instance, could be further exploited to promote energy conservation by e.g. altering thermostat settings.

4

What do we know ?

Overview of policy experiences and lessons learned

Encouraging energy conservation and private investment in energy efficiency

Several governments have used behavioural interventions to promote energy conservation and encourage private investments in more energy efficient technologies. A number of interventions focus on the appropriate framing of energy efficiency labels, with the ultimate goal to increase the uptake of more energy efficient goods. Evidence showing that consumers are sensitive to the way the energy efficiency scale is presented have already been used as input in the European Commission's proposed revision of energy efficiency labels. Furthermore, multiple interventions demonstrate that complementing energy efficiency labels with estimates of lifetime running costs can encourage choosing more efficient household appliances. Other interventions which have been shown to reduce energy consumption include providing real-time feedback on energy consumption through in-home displays, changing default options to more energy-saving settings and benchmarking one's own energy consumption against that of one's peers.

Promoting the purchase of more fuel efficient cars

The few behavioural interventions in this domain have investigated the role of alternative fuel efficiency labels and ways of providing information on CO₂ emissions in the purchase of new cars. Empirical evidence shows that complementing labels with information about expected fuel costs over a period of multiple years, and especially benchmarking these costs against those of the most fuel-efficient or average car in the same class, can promote the purchase of more fuel-efficient models. The US Environmental Protection Agency took this evidence into account when designing their new fuel economy label.

Encouraging water conservation

Behavioural interventions to promote water conservation have used a diverse set of levers. Messages on the water bill comparing household's consumption with the average household in the same neighbourhood and guidance on the concrete steps that households can take to save water have been shown to prompt conservation. Likewise, placing stickers emphasising the need to save water next to faucets has also proven to induce conservation. In Switzerland, an interesting intervention showed that using in-home displays to provide real-time feedback on hot water consumption in the shower leads to both energy and water savings.

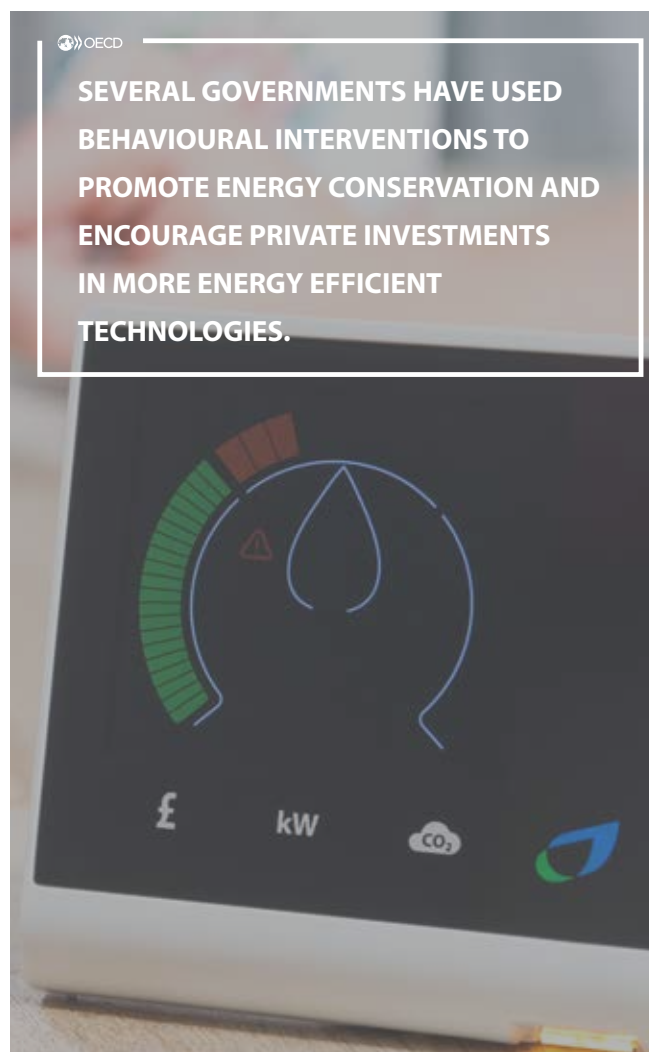
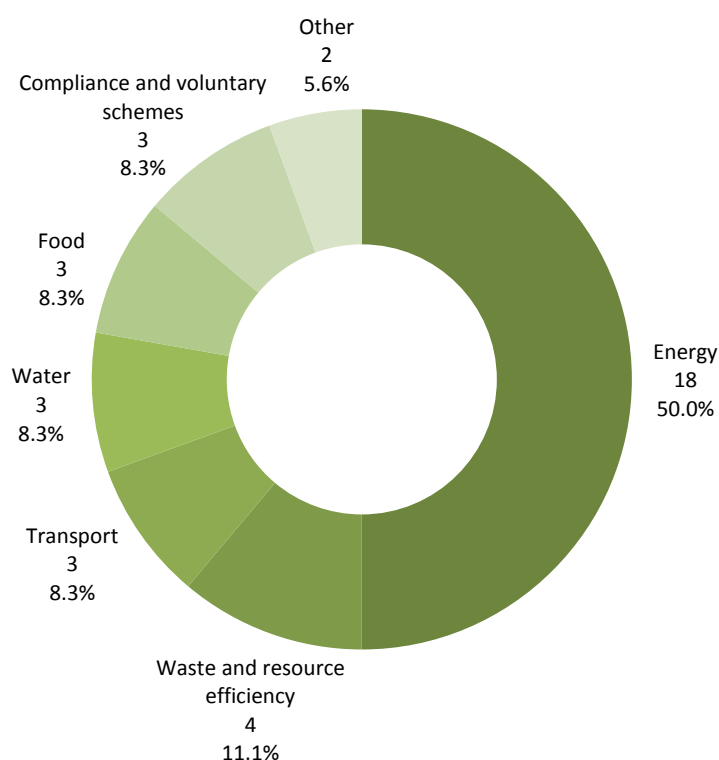


Figure 2. Breakdown of behavioural interventions by policy domain



Note: The labels indicate the number of interventions belonging to each policy domain, and their percentage with respect to the total number of interventions analysed in this report (36).

Behavioural insights have been applied to a wide array of policy areas: energy, water and food consumption, transport and car choice, waste management and resource efficiency, and compliance with environmental regulation and participation in voluntary schemes.

Figure 2 shows that the vast majority of behavioural interventions analysed in this report have focused on energy consumption and energy efficiency investments (18 applications). This is due to the importance of energy policy in the context of climate change action, and to the fact that monitoring energy consumption is relatively easy and, thus, facilitates empirical impact assessment.

Interventions developed in other policy areas have not garnered a comparable level of attention. For instance, evidence for only 4 such interventions

to resource efficiency and waste management policies was gathered. Only 3 interventions aimed at encouraging sustainable food consumption patterns. It is important to note that most of them targeted food waste, hence they also present a resource efficiency rationale.

The transport domain has not attracted a large number of behavioural interventions (3). Initiatives in this area have thus far mainly revolved around fuel efficiency indicators. Behavioural interventions aimed at enhancing compliance with environmental regulation and at increasing participation in voluntary schemes are also 3, as are behavioural interventions to water conservation policy. When it comes to the latter, it is important to note that behavioural insights have attracted attention also in contexts where water scarcity is not an issue.

Incentivising more sustainable food consumption

Behavioural interventions in this domain have been based on simplifying and framing information about food products. For example, persuasive messages inviting consumers to purchase imperfect-looking food products in order to prevent food waste have been shown to be effective even without substantial price cuts for such products. At the same time, the way in which the optimal quality guarantee of food products is framed (e.g. best-before date vs. production date) determines consumers' perceptions of their quality and safety and eventually whether consumers will throw away groceries while they are still perfectly safe for consumption. These insights have already motivated the European Commission to consider simplifying date markings on food products.

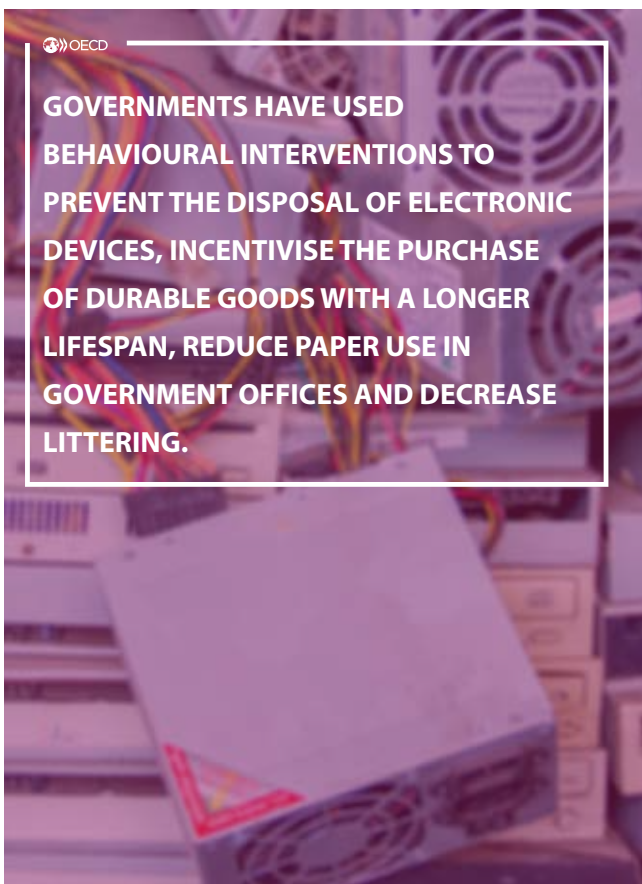
Preventing waste and encourage resource efficiency

Governments have used behavioural interventions to prevent the disposal of electronic devices, incentivise the purchase of durable goods with a longer lifespan, reduce (printer) paper use in government offices and decrease littering. Behavioural levers for these purposes include

changing default settings, using social comparisons, and framing information in more understandable ways. For instance, evidence from the Netherlands shows that littering in the immediate surroundings of waste containers can be significantly reduced if containers are tagged with stickers informing individuals that most people in their neighbourhood do not litter. Littering can also be prevented by reminding individuals of the magnitude of the fine it can result in.

Promoting environmental compliance and participation in voluntary schemes

Behavioural insights can also help increase the compliance of firms and individuals with environmental regulation as well as the participation of firms in voluntary schemes. Behavioural interventions used for this purpose range from clearly framing relevant pieces of information to make them more salient, and sending regulated entities reminders of their obligations at key moments, to priming messages underlining the environmental benefits and competitive advantages associated with voluntary environmental certification. For example, messages emphasising the mandatory nature of these obligations, combined with timely reminders were shown to increase firms' compliance with reporting requirements by the Australian Department of the Environment. Messages highlighting the consequences of not complying have also proven to be effective.



5 Cross-cutting challenges and opportunities for future applications of behavioural insights

While the different policy areas covered in this report differ in the potential that applications of behavioural insights hold for them, some key challenges are cross-cutting across domains. One such challenge is generalisability: the extent to which findings from a behavioural intervention implemented in a specific (geographical, cultural and behavioural) context can be transferred to a different one is questionable. Another major issue for behavioural interventions is that little is known about the persistence of their effects over time.

Opportunities are instead apparent in cross-fertilisation across different policy areas characterised by similar behavioural biases. For example, both water and energy conservation can be incentivised through interventions based on social comparisons and interventions providing real-time feedback on consumption. At the same time, because behavioural sciences are strongly rooted in

rigorous empirical assessment, BIs can contribute to mainstreaming a culture of evidence-based environmental policy-making. This translates into learning from behavioural interventions and consequently adapting policies based on what has been empirically proven to work. Empirical evidence of policy outcomes can, in all contexts, help deliver better policies.

Many governments have made significant efforts to use insights from behavioural sciences to tackle environmental problems. While evidence of the potential contribution of applications of behavioural insights to energy-related objectives exists, more efforts are needed to pinpoint how other policy areas can benefit from unlocking the untapped potential of BIs. Promising domains for the application of BIs include waste management and resource efficiency, transport, water, and environmental compliance.

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Policy Highlights on Tackling Environmental Problems with the Help of Behavioural Insights

Behavioural insights can help policy makers obtain a deeper understanding of the behavioural mechanisms contributing to environmental problems, and design and implement more effective policy interventions. The report “Tackling Environmental Problems with the Help of Behavioural Insights” reviews recent developments in the application of behavioural insights to encourage more sustainable consumption, investment and compliance decisions by individuals and firms.

Drawing on interventions initiated by ministries and agencies responsible for environment and energy, as well as cross-government behavioural insights teams, it portrays how behavioural sciences have been integrated into the policy-making process. The report covers a variety of policy areas: energy, water and food consumption, transport and car choice, waste management and resource efficiency, compliance with environmental regulation and participation in voluntary schemes. It shows what has proven to work – and what has not – in policy practice in OECD countries and beyond.

Consult the full publication on line at <http://dx.doi.org/10.1787/9789264273887-en>.

Recent work on behavioural and experimental economics at the OECD Environment Directorate

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