

# **1 Household behaviour and the environment: Key findings and policy implications**

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The third OECD Survey on Environmental Policies and Individual Behaviour Change (EPIC) explores households' environmental attitudes and actions in the areas of energy, transport, waste and food systems across nine OECD countries. This overview chapter presents the main findings, including insights into the current state of public opinion on these environmental issues. It draws out implications for policy support – especially in creating the enabling conditions for promoting behavioural change.

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## Key messages

The third round of the OECD Survey on Environmental Policies and Individual Behaviour Change (EPIC) was implemented in 2022. The EPIC Survey explores household decisions related to energy, transport, waste and food systems and covers over 17 000 households in nine countries. This chapter presents an overview of the key observations arising from the data:

- **Energy use:** Respondents are more likely to practise easily adopted energy-saving actions, such as turning off the lights when leaving a room (92% of respondents), than actions that are harder to adopt or could reduce comfort, behaviours such as minimising the use of heating or cooling (68%). Uptake of renewable energy and low emissions energy technologies is more limited, even when these options are available. Among households for whom installation is possible, less than one-third have installed heat pumps (30%), solar panels (29%) and battery storage (27%). Uptake is particularly low for technologies that are costly or not well-understood.
- **Transport:** While reliance on cars is higher in rural areas, car use is still significant even in urban areas where it accounts for 50% of commuter travel. The highest reliance on private cars for urban commuting is in the United States (65%), Canada (56%) and Israel (56%). Overall, 75% of households report that at least one household member uses a car on a regular basis. However, more than half (54%) indicate that improved public transport, i.e. cheaper, more frequent and more widespread services, would encourage them to drive a car less. The high reliance on private cars in all countries highlights the potential for electric cars in decarbonising the transport sector. A reported barrier to their uptake appears to be a lack of charging infrastructure: 33% of respondents report that there are no charging stations within three kilometres of their residence.
- **Waste practices:** Households act to reduce waste by engaging in low-effort activities, but struggle to change their consumption habits. For example, many households use reusable shopping bags (83%), but fewer buy second-hand items (37%) or rent items rather than buying them (22%). Households with drop-off services or services that collect recyclable waste at their residence produce on average 26% and 42% less mixed (i.e. non-recyclable) waste than households without these services. Households that are charged for mixed waste disposal report composting 55% of their food waste, while those that are not charged report composting 35% their food waste. Up to 16% of households report disposing of electric and electronic waste along with mixed waste.
- **Food consumption:** Affordability (64%), taste (61%), freshness (60%) and nutritional value (54%) are respondents' top priorities when making food purchases; the environmental impacts of food products are reportedly less important, even among those who are environmentally concerned. Across countries, 24% of households consume red meat several times a week, and less than half of respondents (ranging from 20% in France to 41% in Israel) indicate that they would be willing to substitute conventional meat with a lab-grown alternative. Those who are reluctant to do so express reservations about lab-grown meat (e.g. its health impacts).

### Policy implications

- Overall, availability, affordability and convenience are key incentives for households to make environmentally sustainable choices. Policies should therefore seek to remove barriers to action related to these aspects, while creating the right incentive framework to encourage uptake. Survey results point to a number of policy priorities:

- **Make sustainable choices available and feasible.** Key bottlenecks to sustainable behaviour include a lack of availability and awareness, e.g. of renewably generated electricity options or charging stations for electric vehicles, as well as feasibility, e.g. solar panels for tenants or solar energy options (e.g. community solar) for those living in apartment buildings.
- **Provide incentives that promote sustainable choices.** Affordability and convenience are important factors for encouraging sustainable choices, especially around transport and food. Income and environmental concern are important factors in many household decisions, but environmental concern alone does not appear to be enough to change certain behaviours (e.g. eating red meat or using a car, when alternative modes are feasible).
- **Leverage existing public support to advance environmental policies.** Respondents systematically express less support for taxes and fees than for measures that make sustainable alternatives more affordable, such as subsidies. Policy complementarity is an important consideration, as households' acceptance of and ability to respond to tax-based measures depends on the alternatives they have available to change their behaviour. In addition to providing sustainable alternatives, complementary policies to taxes and fees include a recycling of the revenues generated (e.g. to fund improvements in public transport).
- **Bundle incentives to maximise impact.** Certain environmental behaviours go hand in hand. Complementary incentives can reward environmental action in one domain by providing incentives for action in another domain. For example, those who shop with reusable containers could receive discounts on sustainable food items.

## 1.1. Introduction

Environmental pressures from household consumption are significant. Without greater policy effort, their impacts are likely to intensify over the coming years as populations and disposable incomes grow. Strategies that promote environmentally sustainable lifestyles and consumption patterns are urgently needed for reducing these pressures.

Analysis by the Intergovernmental Panel on Climate Change (IPCC) shows that strategies that change households' daily choices (demand-side strategies) have the potential to reduce greenhouse gas (GHG) emissions by 40-70% (2022<sub>[1]</sub>). Examples of these changes include avoiding conventional car use and air travel, shifting to plant-based diets and improving energy efficiency in residential buildings. In the energy sector, demand-side management approaches are a well-established tool for managing energy use. Examples include the introduction of on-site energy generation and storage, such as solar panels, or the use of smart meters to make households more aware of their energy use (Warren, 2018<sub>[2]</sub>).

Reducing the intensity of individual and household behaviour that negatively impact the environment is also a key factor in tackling many other environmental issues, including natural resource management, land-use change and pollution (IPBES, 2019<sub>[3]</sub>). It can also improve the basic constituents of well-being, such as economic stability, health and nutrition (IPCC, 2022<sub>[1]</sub>; IEA, 2022<sub>[4]</sub>; OECD, 2019<sub>[5]</sub>). In food systems, adopting plant-based diets can reduce the amount of land needed for agriculture by an estimated 76% (Poore and Nemecek, 2018<sub>[6]</sub>). In the realm of waste management, small charges on single-use plastic bags have been found to reduce disposable bag use by over 40% (Homonoff, 2018<sub>[7]</sub>).

To be successful, strategies to shift to more sustainable consumption patterns (e.g. from private cars to public transport, walking or cycling) and to reduce the environmental impact of existing consumption patterns (e.g. using more efficient household appliances) require supporting technologies and infrastructure (Creutzig et al., 2021<sub>[8]</sub>). Critically, they also require households to make changes to their behaviour (Dubois et al., 2019<sub>[9]</sub>). This is not only because the effectiveness of many technologies relies on their uptake by individuals and households, but also because behaviour change alone can help to reduce environmental impacts substantially (Box 1.1).

### Box 1.1. The avoid-shift-improve framework

The avoid-shift-improve (ASI) framework highlights the potential of three types of behavioural approaches for reducing environmental impacts (IPCC, 2022<sub>[1]</sub>):

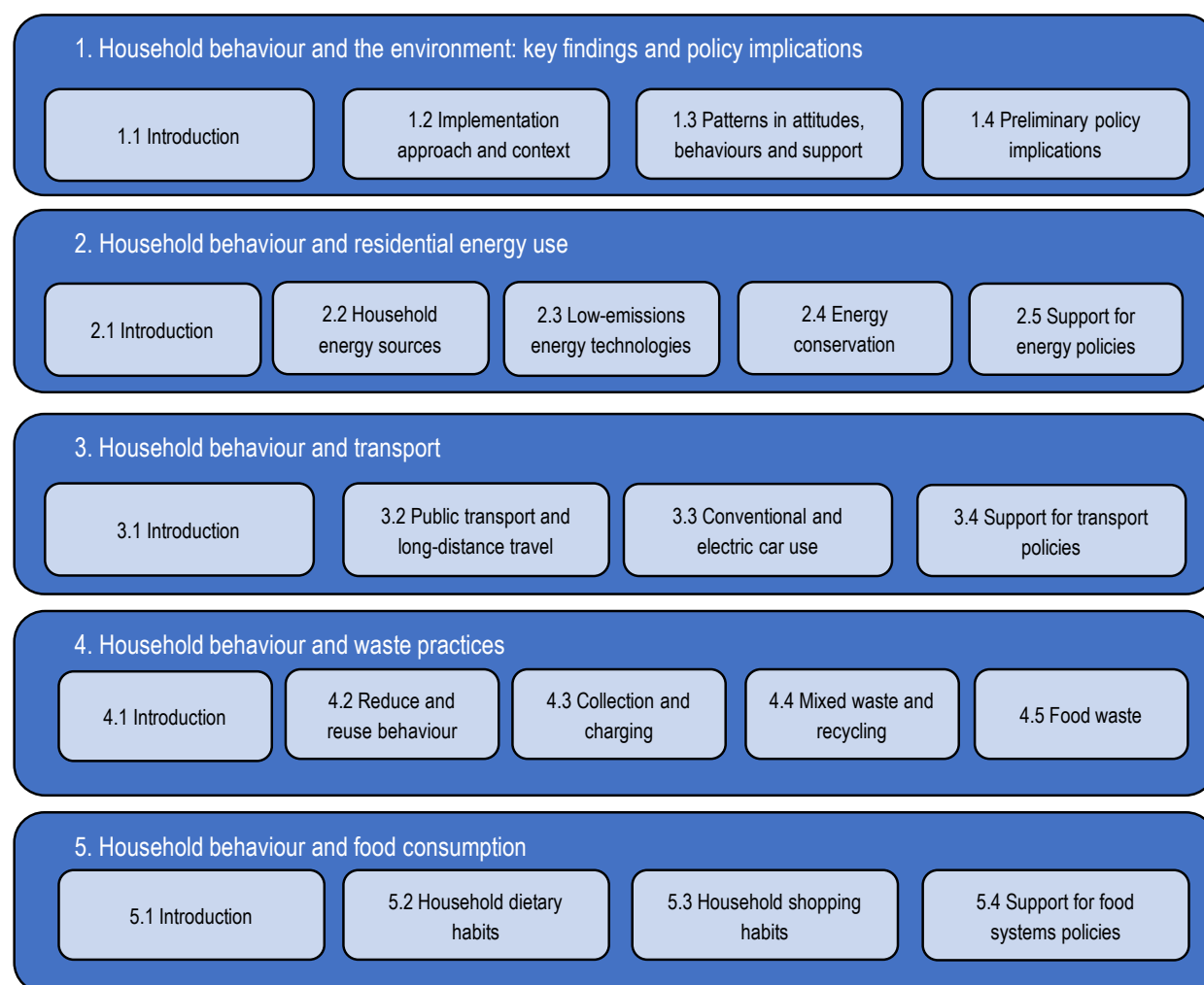
- *avoid* unnecessary consumption or damaging activity
- *shift* consumption or activity towards less environmentally damaging alternatives
- *improve* the environmental performance of the activity in question.

In the buildings sector, modelling suggests that avoidance strategies such as adjusting dwelling sizes to household size or improving the energy efficiency of homes, could reduce greenhouse gas emissions by around 78%. In the land transport sector, shifting towards the use of electric cars could account for much of the sector's emissions reduction potential, if this transition is combined with an electricity sector sourced entirely from renewables. In the food sector, around 41% of emissions reductions could be achieved through avoid and shift behaviours alone, such as avoiding food waste and shifting to flexitarian, vegetarian or vegan diets. In the manufactured goods sector, avoid measures (e.g. sharing instead of buying new products) and improve behaviours (e.g. using recycled materials) could achieve emissions reductions of 41% (Creutzig et al., 2021<sub>[8]</sub>).

Realising the potential of individuals' choices for improving sustainability and well-being can be challenging. The difficulty of changing behaviour is well established in the literature (van Valkengoed, Abrahamse and Steg, 2022<sup>[10]</sup>; Blake, 2007<sup>[11]</sup>). Individuals' motivation and capacity for change are heavily influenced by numerous factors, including the socio-economic and technological systems in place that determine the resources, constraints and options available to consumers (Kaufman et al., 2021<sup>[12]</sup>; Sorrell, 2015<sup>[13]</sup>). Developing policies that are effective at inducing desired behavioural change requires a well-developed understanding of the determinants of individual and household behaviour, including the role of institutions therein (van Valkengoed, Abrahamse and Steg, 2022<sup>[10]</sup>; Blankenberg and Alhusen, 2019<sup>[14]</sup>).

The OECD Surveys on Environmental Policies and Individual Behaviour Change (EPIC) explore what drives household behaviour and how policies may affect decisions in key consumption areas. Following similar surveys in 2008 and 2011 (OECD, 2011<sup>[15]</sup>; OECD, 2014<sup>[16]</sup>), this third round covers a sample of more than 17 000 households. The survey was implemented in nine OECD countries (Table 1.1): Belgium (BEL), Canada (CAN), France (FRA), Israel (ISR), the Netherlands (NLD), Sweden (SWE), Switzerland (CHE), the United Kingdom (GBR) and the United States (USA). It addresses household behaviour in four key areas: energy use, transport, waste practices, and food consumption. Chapters 2 to 5 present the findings of the four thematic areas (Figure 1.1). This overview chapter describes the methodology, key findings and policy implications.

**Figure 1.1. Report roadmap**



## 1.2. Implementation approach and context

### 1.2.1. Methodology

In addition to collecting information on reported environmental behaviours, the survey records the socioeconomic characteristics of respondents and households, as well as the characteristics of their residence and residential location. Each round of the EPIC Survey is described in Table 1.1. The questionnaire for the third round of the survey can be found in Annex A.

**Table 1.1. OECD EPIC surveys: coverage, thematic areas and sample sizes**

	2008	2011	2022
Countries included	Australia	Australia	
			Belgium
	Canada	Canada	Canada
		Chile	
	Czech Republic		
	France	France	France
		Israel	Israel
	Italy		
		Japan	
	Korea	Korea	
	The Netherlands	The Netherlands	The Netherlands
	Norway		
	Mexico		
		Spain	
	Sweden	Sweden	Sweden
	Switzerland	Switzerland	
		United Kingdom <sup>1</sup>	
		United States	
Total sample size	10 000	12 303	17 216
Methodology for measuring preferences and behaviour	Self reporting	Self reporting	Self reporting + choice experiments
Number of thematic areas	5	5	4
Possibility to test hypothetical policy interventions	No	No	Yes
Distributional issues addressed	No	No	Yes
Implementation medium	Online	Online	Online

1. The sample from the United Kingdom includes households in England, Northern Ireland, Scotland and Wales.

The EPIC Survey provides a rich dataset of self-reported behaviours. There is considerable cross-country variation in a number of factors that might affect the results. These include differences in the proportions of households living in urban and rural areas, as well as differences in the proportion of households that own or rent their homes. Summary statistics for these variables, as well as socioeconomic characteristics other than those used to generate representative quotas (i.e. gender, age, income and region), can be found in Annex B, along with methodological details on the implementation of the EPIC Survey. Box 1.2 presents the discrete choice experiments, an important methodological novelty in the third round of the EPIC Survey, which will be analysed in future work.

As a stated preference approach, the EPIC Survey gathers data by asking individuals to either report their actual behaviour, or how they would behave in a given hypothetical situation. This approach can help indicate the effectiveness of existing environmental policies, as well as the potential impact of hypothetical policy measures. A number of considerations should be taken into account when interpreting the results of stated preference data.<sup>1</sup> For example, self-reports tend to be more accurate for habitual behaviour (e.g.

turning off the lights when leaving a room) than for those that are planned (e.g. installing a heat pump). In addition, the context in which data collection takes place has implications for how the data should be interpreted. For example, extreme events such as economic downturns or natural disasters can affect household's budgets and their ability to pay, in addition to other factors such as their awareness of an issue. This in turn can influence how respondents respond to survey questions (Mourato and Shreedhar, 2021<sup>[17]</sup>). This is discussed further in Section 1.2.2.

### Box 1.2. Using discrete choice experiments to refine our understanding of decision making

In discrete choice experiments, subjects are asked to make hypothetical choices by selecting a preferred alternative from a menu of options (Bateman et al., 2002<sup>[18]</sup>; OECD, 2018<sup>[19]</sup>). Stated preference data generated by discrete choice experiments enable an estimation of how much respondents value the various characteristics of the options presented. These characteristics could relate to products (e.g. the price of, or GHG emissions from, energy supply); actions (e.g. convenience of using disposable rather than refillable containers); or elements directly affected by environmental policies (e.g. the cost and convenience of owning an electric car).

Relative to stated preference approaches, discrete choice experiments have several advantages. First, they can provide a more accurate reflection of the types of choices that respondents are likely to face in the real world given the specific characteristics, availability and prices of these different options. Examples include the choice between reusable and single-use packaging or private and public transport.

Second, discrete choice experiments can generate data that provide a richer picture of preferences than simpler stated preference elicitation methods. Specifically, the data generated by choice experiments allow for an estimation of how much respondents value the characteristics of the options being considered, also known as willingness-to-pay. Examples include travel time, travel cost, and comfort for transport mode options, or cost and convenience for waste reduction practices. The data can also provide insights into how respondents make trade-offs between these characteristics and how sensitive their choices are to changes in the characteristics of the options presented.

Finally, the EPIC Survey data allow for disaggregation at the household level to understand how these values and sensitivities vary across the population according to location or socio-demographic variables such as age, income and gender. This can provide useful information on the role of individual-specific factors in environmental behaviours and preferences for different types of environmental policy instruments.

### 1.2.2. Implementation context

The third EPIC Survey was implemented in June-July 2022, more than a decade after the second round of the survey, in 2011. Changes since then to the environmental, political, technological and economic context have all contributed to the need to reassess environmental attitudes and behaviours, as well as the effectiveness of environmental policies.

The research community has played an important role in bringing into focus the dynamics of the recent changes in the physical environment and their interactions with the human environment (IPBES, 2019<sup>[3]</sup>; IPCC, 2022<sup>[1]</sup>; IPCC, 2023<sup>[20]</sup>). The increased frequency and intensity of environmental change witnessed across the world, as well as the media coverage of the associated damage, have enhanced public awareness further of the human impact on the planet and the urgent need to limit and address these impacts. Media outlets have also played an important role in reporting on the actions taken by governments and the private sector and in providing platforms to raise awareness and engagement on the urgent need to address pressing environmental challenges and climate change.

While political progress has varied, environmental issues have generally risen up national and international agendas. Governments have agreed to accelerate action to meet climate and other environmental objectives, with milestones including the adoption of the Paris Agreement on Climate Change in 2015 and the Global Biodiversity Framework in 2022. A resolution to reach agreement on an internationally legally binding instrument to end plastic pollution, including in the marine environment, is also foreseen by the end of 2024. Resource efficiency and transitioning to a more circular economy (i.e. pursuing circularity in materials use) have risen rapidly to the top of environmental agendas in the past decade (OECD, 2022<sup>[21]</sup>).

Technological innovations have also altered the landscape for possible action by individuals and households. The cost of electricity from large-scale solar photovoltaic facilities declined by 88% between 2010 and 2021, while the cost of onshore and offshore wind declined by 68% and 60%, respectively. As a result, these renewables were less expensive to produce than new fossil-fuel fired power generation in 2021 (IRENA, 2022<sup>[22]</sup>). Larger battery packs that extend the range of electric cars, and more extensive coverage of charging stations, have also made electric cars increasingly better substitutes for conventional cars. Smarter energy end use applications, which enable consumers to track their real time and accumulated energy consumption, have the potential to change energy use patterns. Digital platforms have also enabled new modes of transport (e.g. electric kick-scooters) and car use, such as car-sharing platforms and carpooling or ride-sharing platforms. The range of plant-based food items available to consumers has also significantly expanded in recent years. While these examples do not provide a complete overview, they point to the scale of technological changes that have taken place over the past decade.

In the two years leading up to the third EPIC Survey, societies and economies globally had been significantly affected by the COVID-19 pandemic and its associated crises. By the end of 2021, many countries had eased COVID-19 restrictions, and while the global economy was experiencing some recovery in trade, employment and income, progress was imbalanced across countries and sectors (OECD, 2021<sup>[23]</sup>). Economic projections were nonetheless cautiously optimistic for 2022, but this changed with Russia's large-scale aggression against Ukraine. The war and the associated geopolitical uncertainty, combined with continuing pressures from the COVID-19 pandemic, contributed to a cost-of-living crisis in 2022. Low-income households, emerging markets and developing economies were hardest hit, primarily due to steep increases in energy and food prices. The supply shocks induced by the invasion also affected the global economy (OECD, 2022<sup>[24]</sup>). Disrupted transport routes increased trip distances and the carbon footprints of the transport of some goods.

The EPIC Survey was implemented in mid-2022, when the most significant COVID-19-related restrictions (lockdowns and international travel bans), had been lifted in all the sample countries. However, the period continued to be characterised by historically high energy prices, inflation and geopolitical tensions. The particularities of this context could have several implications for survey responses. Self-reported levels of support for tax instruments, for example, may be lower, while support for policy measures involving financial support (e.g. grant and subsidies) may be higher. Similarly, reported preferences for lower-cost energy saving measures may be greater than for measures with higher investment costs. Further, the particular context of the energy crisis may have also led to increased interest in energy efficiency technologies. Equally, the lingering impacts of the COVID-19 pandemic may have dampened households' willingness to, e.g. use public transport. Increasing economic concerns may make disincentive measures (e.g. taxes) less politically palatable; however, they can make measures that align sustainable habits with monetary savings (e.g. energy conservation) more likely to be adopted.

These contextual factors should not be seen as a limitation of the study. On the contrary, it is scientifically worthwhile to elicit preferences in the wake of social shifts, and the descriptive results presented here reflect the unique circumstances of 2022. The EPIC Survey can contribute to a body of evidence aiming to better understand environmental behaviours in the context of potential changes in individual preferences in a time influenced by interlocking crises.



### 1.3. Patterns in environmental attitudes, behaviour and support for policies

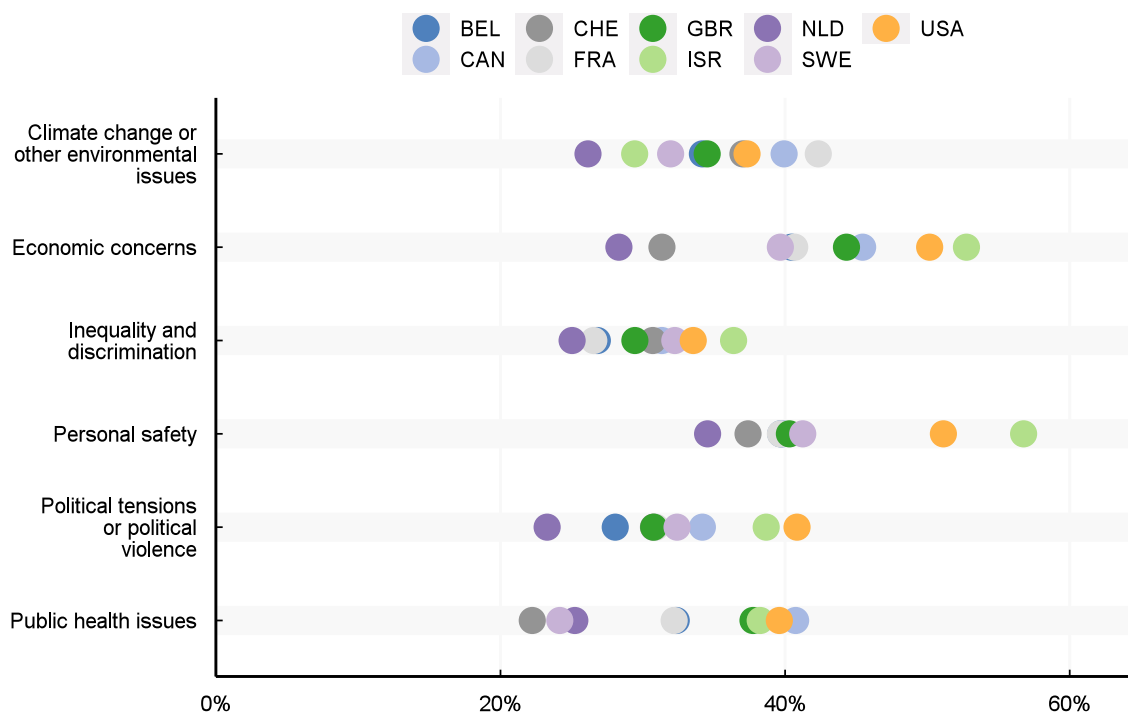
A focus on behaviour change in this report relies on a well-developed understanding of the attitudes of the sample population and how those attitudes interact with exposure to different policy measures. This section provides an overview of respondents' environmental attitudes.

Respondents of the EPIC survey are most concerned about personal safety and economic issues. Overall, 42% and 41% of respondents report personal safety and economic concerns as very important, respectively (Figure 1.2). In the 2022 survey, public health was less often highlighted as a very important issue of concern, despite the impacts of the COVID-19 pandemic during the two years preceding survey implementation. However, this may also reflect the fact that at the time of the survey, the participating countries had lifted many, if not most of their COVID-19 restrictions.

Over a third of respondents (35%) indicated that climate change or other environmental issues (e.g. pollution) as a very important issue of concern. In five countries, climate change and other environmental issues were ranked among the top three issues of concern. Across many countries, concern for climate change and the environment tends to be expressed to a greater extent by women, respondents with higher education, and older segments of the population. A greater concern for climate change and environmental issues among older respondents could be explained in part by a higher proportion of high-income respondents among older age groups (Figure 1.3). The relatively small difference in issue importance between those with and without higher education in some countries may suggest that awareness of climate change is becoming more widespread in the public discourse.

**Figure 1.2. Concerns about the economy and personal safety outrank concerns about the climate and the environment in most countries**

Percentage of respondents rating various issues as very important



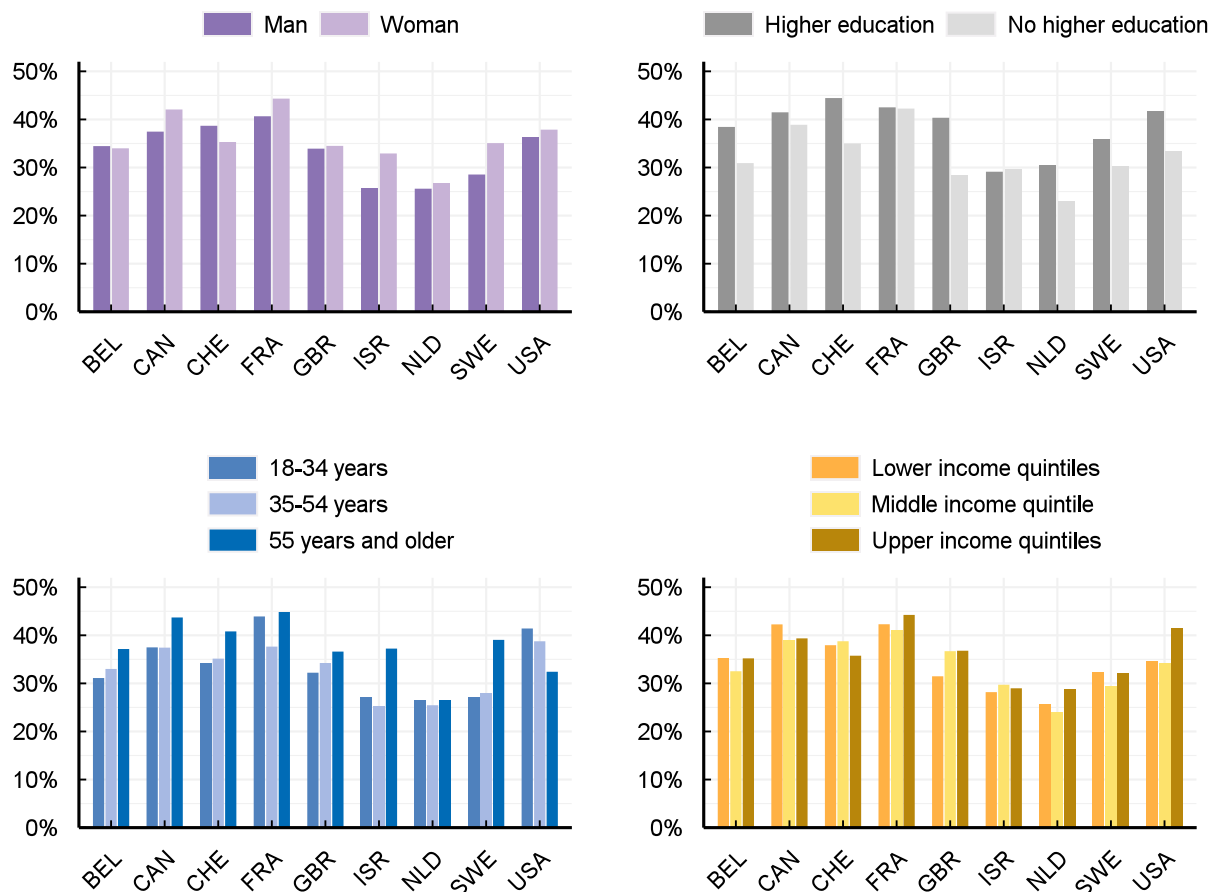
Note: This survey item asked respondents: "How important are each of the following issues to you personally?" Respondents rated the level of importance on a 5-point scale from "not at all important" to "very important".

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

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**Figure 1.3. Importance of environmental issues varies across gender, education, age and income**

Percentage of respondents rating climate change and environmental issues as very important



Note: This survey item asked respondents: “How important are each of the following issues to you personally?” Respondents rated the level of importance on a 5-point scale from “not at all important” to “very important”. The figure shows the percentage of respondents rating climate change and environmental issues as very important (exclusively respondents stating 5 on a scale 1-5). Lower income quintiles refer to income quintiles 1 and 2, middle income quintile refers to income quintile 3, and upper income quintiles refer to income quintiles 4 and 5.

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

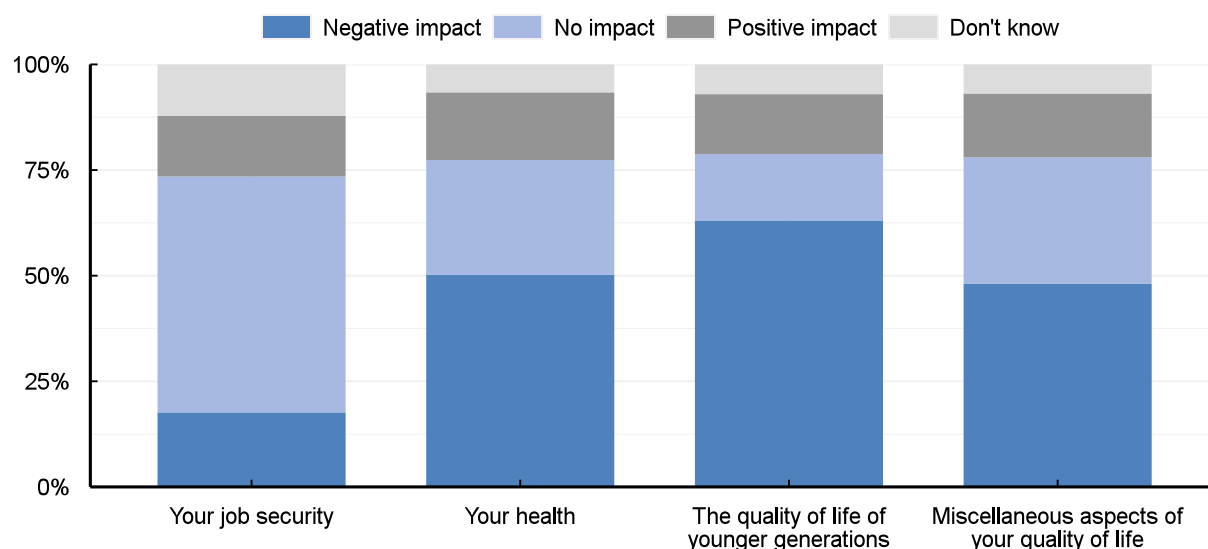
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Of all the environmental issues covered in the survey, climate change was ranked as one of the top three issues of concern in all countries. Further findings indicate that resource scarcity (e.g. of water or food) was the second most frequently cited issue. Respondents across countries also ranked concerns related to pollution (water, outdoor air and plastic pollution) and the fragility of land ecosystems among the top three issues of concern.

More than half of respondents expect climate change and environmental issues to reduce the quality of life of both current and future generations (Figure 1.4). It is interesting to note that fewer respondents across all countries foresee an impact on their job security. No significant differences are observed across age, gender or income levels for the proportion of respondents expecting that climate change will have negative impacts on all aspects of their lives.


**Figure 1.4. Most respondents expect climate change to reduce younger generations' quality of life**

Percentage of respondents



Note: This survey item asked respondents: "How do you expect climate change (e.g. rising average temperatures, changes in extreme weather events) or other environmental issues to impact the following?" Respondents rated the impact on a 5-point scale from "very negatively" to "very positively".

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

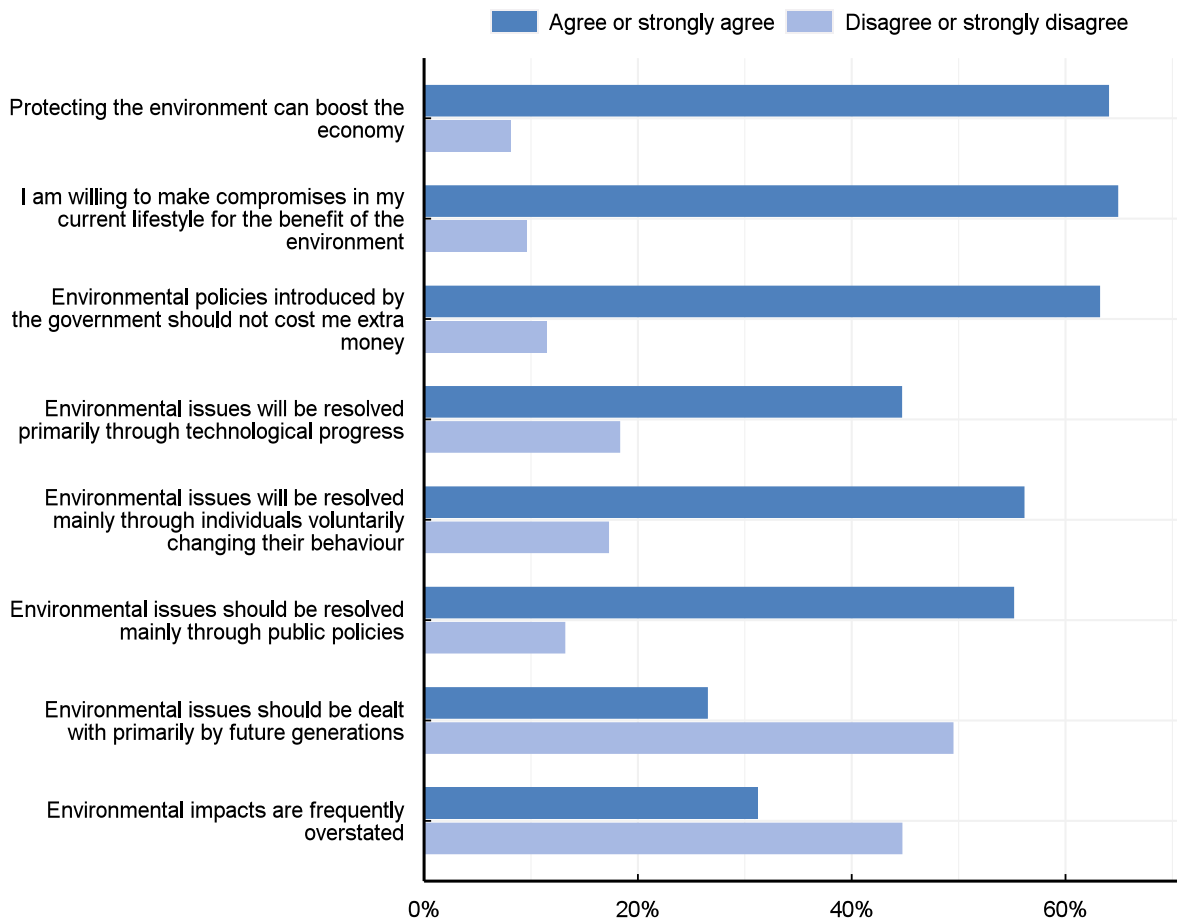
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Respondents' perceptions of their own role in addressing climate change and other environmental issues, as well as their support for potential policy measures, can be observed from their agreement with statements about environmental problems and their solutions (Figure 1.5). A majority of respondents (65%) said they were willing to make personal compromises to their current lifestyles for the benefit of the environment. For almost as many respondents (63%) these compromises should not cost them extra money.<sup>2</sup> Approximately 40% of respondents agreed or strongly agreed with both statements, pointing to a likely challenge for governments in implementing demand-side measures.

While there are slight variations across countries, those in lower- and middle-income percentiles are more likely to agree or strongly agree that environment and climate policies should not personally cost them extra money. This observation is consistent with findings from an OECD survey into the determinants of public acceptance of climate policies in 20 high- and middle-income countries (Dechezleprêtre et al. (2022<sub>[25]</sub>); see Box 1.3). That survey concluded that support for climate policies depends on respondents' own household's gains and losses, in addition to the perceived effectiveness of the policies in reducing greenhouse gas emissions. Figure 1.5 also reflects respondents' confidence in policy action and technological innovation for addressing climate change and other environmental issues. In comparison, respondents generally do not agree that these issues are overstated or should be left for future generations to deal with.

### Figure 1.5. Most respondents would make lifestyle compromises to benefit the environment

Percentage of respondents agreeing or strongly agreeing, or disagreeing or strongly disagreeing, with statements



Note: This survey item asked respondents: "To what extent do you agree with each of the following statements?" Respondents stated their level of agreement on a 5-point scale from "strongly disagree" to "strongly agree".

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

StatLink  <https://stat.link/2uaw5d>

#### Box 1.3. What drives environmental attitudes?

Individual and household demographic variables alone cannot explain perceptions of environment or climate change issues. Broader socio-political variables, including political orientation and worldviews, also play an important role (Poortinga et al., 2019<sup>[26]</sup>; Whitmarsh and Capstick, 2018<sup>[27]</sup>). While this goes beyond the scope of the EPIC Survey, a related OECD survey that examined understanding of and attitudes towards climate change and climate policies in 20 high and middle-income countries concluded that political leaning, among other factors, is significantly correlated with policy views and overall reasoning and beliefs about climate change (Dechezleprêtre et al., 2022<sup>[25]</sup>). These findings are consistent with those emerging from another survey on climate perceptions in 22 European countries and Israel (Poortinga et al., 2019<sup>[26]</sup>). Research focusing on France only, however, does not find a strong correlation between awareness of climate change and political affiliation (Douenne and Fabre, 2020<sup>[28]</sup>). Research further suggests that cross-national differences may be related to experiences with extreme weather events, vulnerability to the impacts of climate change, the nature of media coverage of climate-related issues and dependence on fossil fuels (Poortinga et al., 2019<sup>[26]</sup>).

### **1.3.1. Environmental behaviour has changed over time**

A few broad observations can be made about trends in environmental behaviours over time in countries which have participated in more than one survey.<sup>3</sup> Canada, France, the Netherlands and Sweden participated in all three rounds of the EPIC Survey (2008, 2011 and 2022), while Israel and Switzerland participated in both the second and third rounds.

Survey results suggest that some low-emissions energy options have become more available to households. In Sweden, for example, approximately 15% more households report having an option to purchase renewably generated electricity in 2022 compared to 2011. In the Netherlands, approximately 40% more households report smart meter availability. However, reported adoption of low-emissions energy options does not match this greater availability. There was no significant change in the main types of primary energy sources reported between 2011 and 2022 (i.e. electricity vs. fossil-fuel-based energy). The data also suggest that lowering the costs of energy efficiency equipment and renovations is now more important to respondents than it was in 2011. Differences in the samples limits the extent to which direct comparisons of the results can be made across survey rounds.

There have also been some changes in the coverage of collection services and in waste charging schemes. For example, survey results suggest an increase in services that collect recyclable waste from households' residences in France, the Netherlands and Sweden. The survey also suggests slight increases in the use of per-unit charges for waste charging schemes in Canada and the Netherlands. As in 2011, the provision of recycling collection services is still associated with less mixed waste generation on average.

Direct comparisons of transport and food consumption results over time are less straightforward as the questions asked in these sections of the survey have changed more over the three rounds. In 2022, public transport investments received the most widespread support of any policy measure surveyed, surpassing support for subsidies for low-emissions cars, which received the highest support in 2011. Factors identified as important for improving public transport have remained the same over time and include more convenient and cheaper services. Meanwhile, survey results do not indicate substantial increases in organic food consumption. In 2011, the share of food expenditure dedicated to organic fruit and vegetables ranged from 13% to 35% in repeat survey countries. In 2022, the proportion of households reporting that they often or always consume organic food ranges from 15% (in Canada) to 31% (in Switzerland).

### **1.3.2. The COVID-19 pandemic has had an impact on some environmental behaviours**

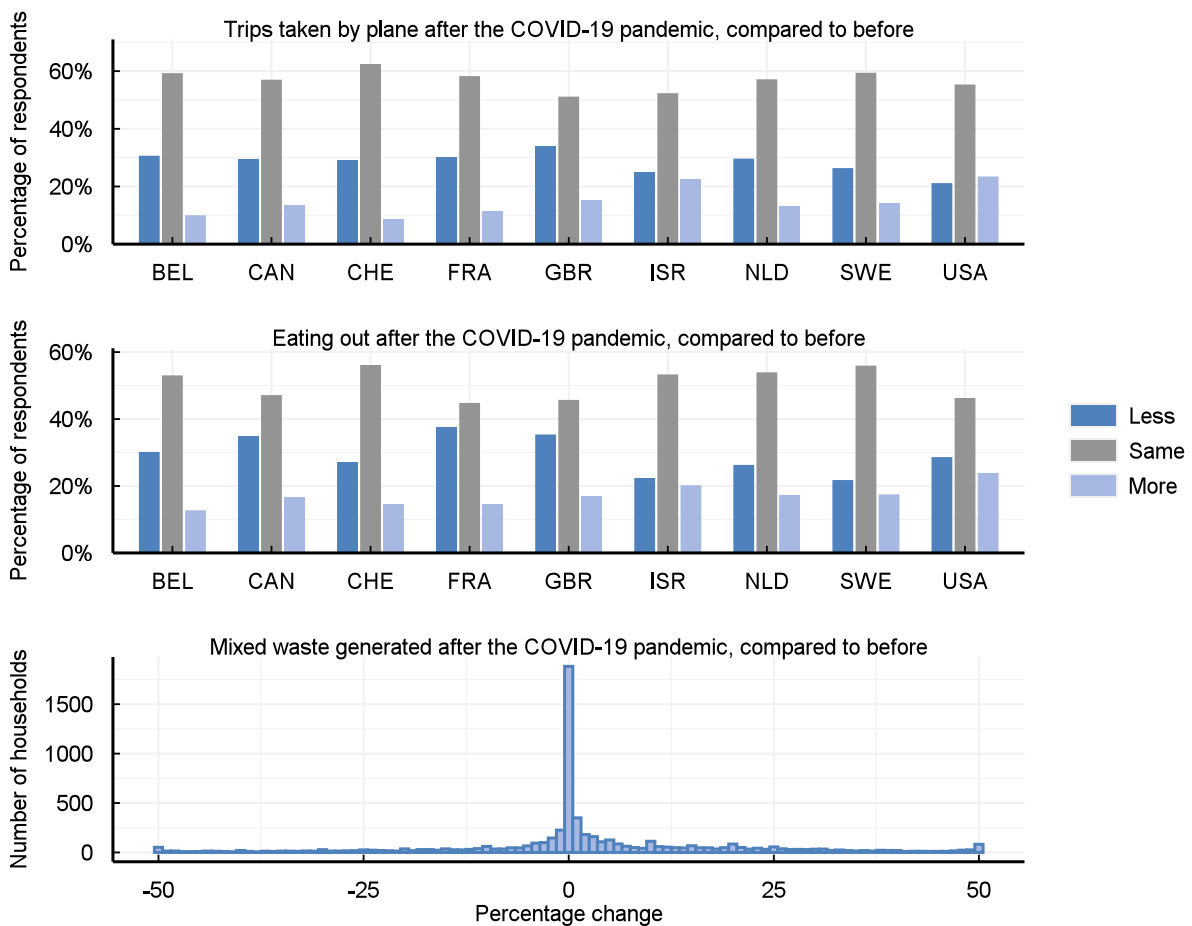
The COVID-19 pandemic has had repercussions for behaviour in many areas. Individual travel, energy use, consumption, food and waste behaviour shifted dramatically during lockdown periods worldwide. As the COVID-19 pandemic subsided, a gradual removal of restrictions led to a return to normal for some environmentally relevant behaviours, while other shifts appear to be more persistent (de Palma, Vosough and Liao, 2022<sup>[29]</sup>).

Several mechanisms are at play in some of the more enduring behaviour changes. First, COVID-19 has led to changes in the conditions that shape behaviour, such as prices and income (affecting households' purchasing power and relative prices); the consumer options available (e.g. transportation modes and infrastructure, teleworking, expanded e-commerce); and policy-driven regulations and incentives (e.g. subsidies for bicycle purchases or restrictions on natural gas use). Second, evidence from other extreme events suggests that the pandemic may have also changed how households react to a given set of constraints when making decisions that can impact the environment, such as how they allocate their household budget (Hanaoka et al., 2011<sup>[30]</sup>; Bogliacino, Montealegre and Folkvord, 2020<sup>[31]</sup>; Cassar, Healy and von Kessler, 2017<sup>[32]</sup>). Some evidence also suggests that the pandemic has increased public awareness of global issues. For example, research suggests that it may have made purchasing locally produced products a higher priority in some locations (Dangelico, Schiaroli and Fraccascia, 2022<sup>[33]</sup>). Other evidence indicates that while the pandemic decreased plastic use in the short term due to reduced economic activity, it does not appear to have affected the long-term trend of increasing plastic use (OECD, 2022<sup>[21]</sup>).

Responses to the EPIC Survey add to this body of evidence, revealing some changes in circumstances or intentions as of mid-2022 (Figure 1.6):

- Although most survey respondents (57%) expect to fly as much after the COVID-19 pandemic as before, 28% indicate that they expect to fly less.
- Meanwhile, 29% respondents indicate that they expect to eat out less frequently after the COVID-19 pandemic compared to before, whereas 17% expect to do so more often; similarly, 25% of respondents expect to order food for delivery less often compared to 15% who expect to do so more often.
- Households overwhelmingly report that their volumes of mixed and recyclable waste have not changed since the COVID-19 pandemic.

**Figure 1.6. The COVID-19 pandemic has only affected a minority of households' environmental behaviour**



Note: The survey item on plane trips asked respondents: "Compared to before the COVID-19 pandemic, how often do you expect to use the following modes of transport for long trips (100 miles/200km or more one way) once the pandemic is well under control?". The survey item on food consumption asked: "Compared to before the COVID-19 pandemic, how often do you expect to eat out once the COVID-19 pandemic is well under control?". For these items, the response options were: More than before, Slightly more than before, Same as before, Slightly less than before, Less than before, Don't know, I don't expect to do this. The survey item on waste asked respondents: "On average, how many of the following bags/bins of mixed waste (i.e. non-recyclable and non-compostable waste) does your household generate each week?". For this item, respondents were able to indicate the percentage increase or decrease.

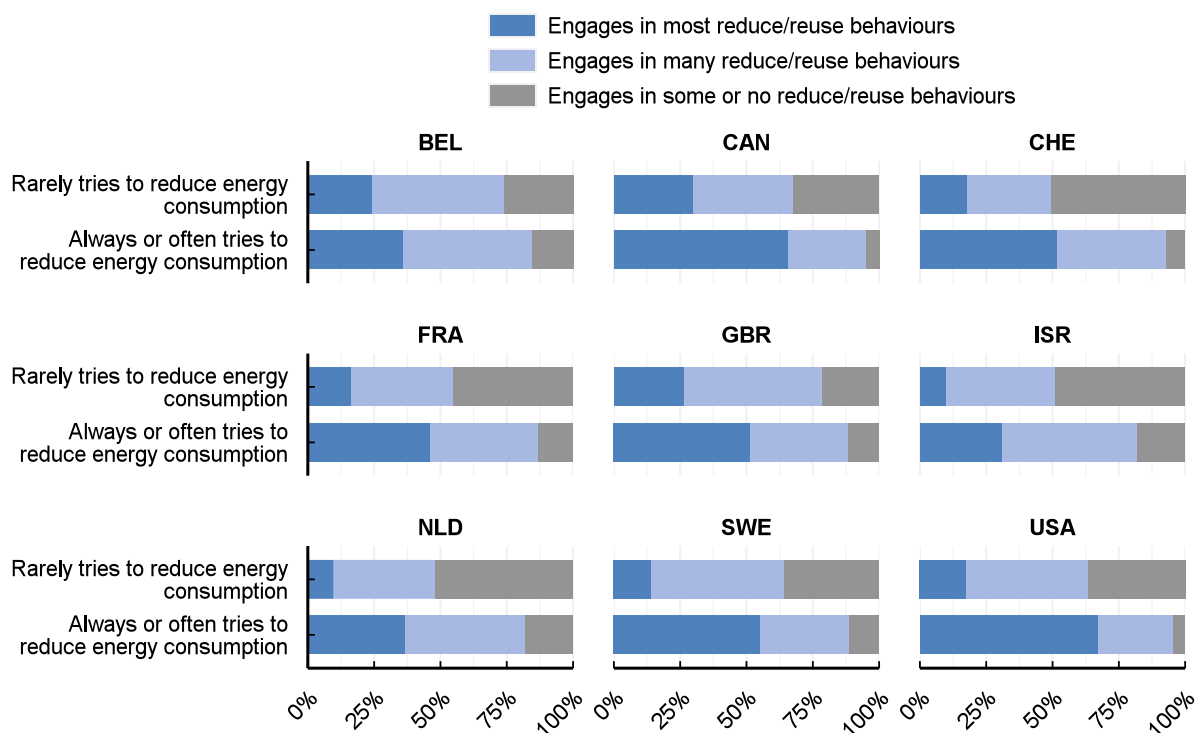
Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

### 1.3.3. Some environmental behaviours go hand in hand with others

The survey indicates a positive association between several types of environmental behaviour. For example, respondents who often or always try to conserve energy are more likely to reduce and reuse to avoid waste (e.g. borrowing or renting items instead of buying new ones) (Figure 1.7). In Canada, Sweden and the United States, for example, those who reduce and reuse most are significantly more likely to report that they always or often try to reduce their energy consumption than those that are less engaged in reduce and reuse behaviours. A similar pattern is evident between those who engage in energy conservation and sustainable food consumption. Figure 1.8 compares the frequency with which respondents consume seasonal foods with groups that either i) rarely or ii) always or often conserve energy.

**Figure 1.7. Respondents who conserve more energy are also more likely to reduce and reuse**

Percentage of respondents engaging in reduce and reuse behaviours grouped by energy conservation behaviour



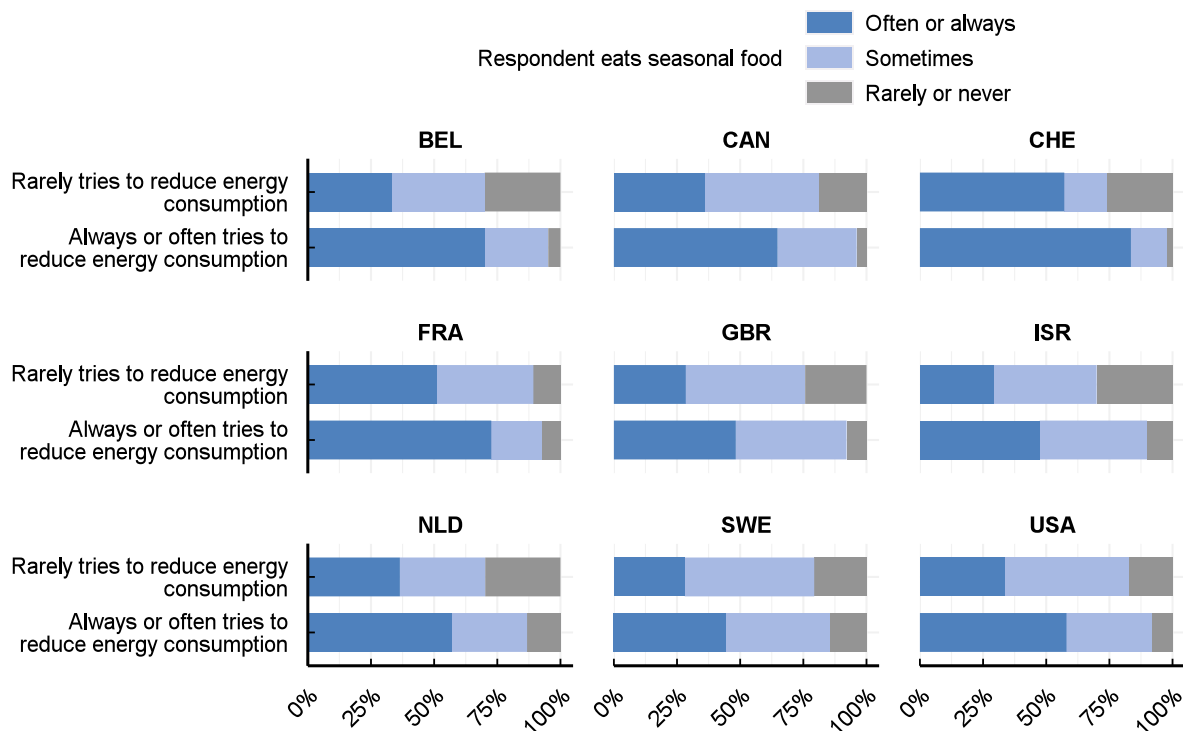
Note: The survey item on behaviours to reduce and reuse asked respondents "How often do you do the following in your daily life?". Respondents are classified as engaging in "most" behaviours if they on average often or always engage in 8 to 9 out of 9 behaviours; they are classified as engaging in "many" behaviours if they on average engage with 6 to 7 behaviours; and as "some or none" with less than 6. Respondents are grouped by their energy conservation behaviour, for which the survey asked "How often do you do the following in your daily life?". The figure shows the average behaviour across all energy conservation items.

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

StatLink  <https://stat.link/k82u3q>


## Figure 1.8. Respondents who conserve energy are also likely to practise sustainable food consumption

Percentage of respondents eating seasonal food grouped by energy conservation behaviour



Note: The seasonal food survey item asked respondents: "How often do you eat seasonal food?" Respondents could choose never or rarely, sometimes, often or always. Respondents are grouped by their energy conservation behaviour, for which the survey asked "How often do you do the following in your daily life?". The figure shows the average behaviour across all energy conservation items.

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

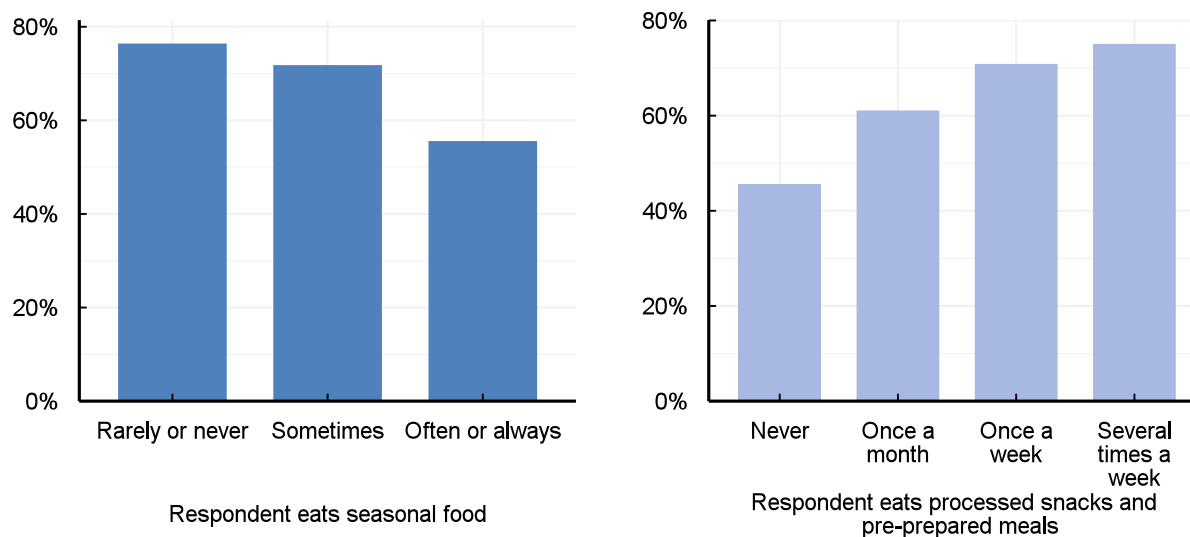
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There is also a positive association between certain food purchase and food waste behaviours. Figure 1.9 shows that those who report frequently eating seasonal food are also more likely to report that they do not waste food. The opposite appears to be the case for the consumption of processed foods, as those who consume processed foods more frequently report that they generate more food waste than those who never consume processed food. Policy measures could make use of this association by, for example, offering discounts on sustainable food items to those who bring their own containers shopping or have rented or borrowed from peer-to-peer platforms to reduce material resource use. Successfully implementing combinations of different policy measures would require an assessment of the distribution of their costs and benefits, as well as co-ordination across sectors.



**Figure 1.9. Respondents who eat sustainably are less likely to waste food**

Percentage of respondents wasting at least some food



Note: The food waste item asked respondents: "What type of food does your household usually throw away? Please exclude non-edible parts of food, e.g. peelings, apple cores, etc.". The figure shows the percentage of respondents who did not say: "My household never throws away any food". Respondents are grouped by their food consumption. The survey item on frequency of consumption of different types of foods asked respondents: "How often do you personally do the following?" For seasonal food, respondents could choose never, rarely, sometimes, often or always. For processed snacks, respondents could choose never, once a month, once a week or several times a week.

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

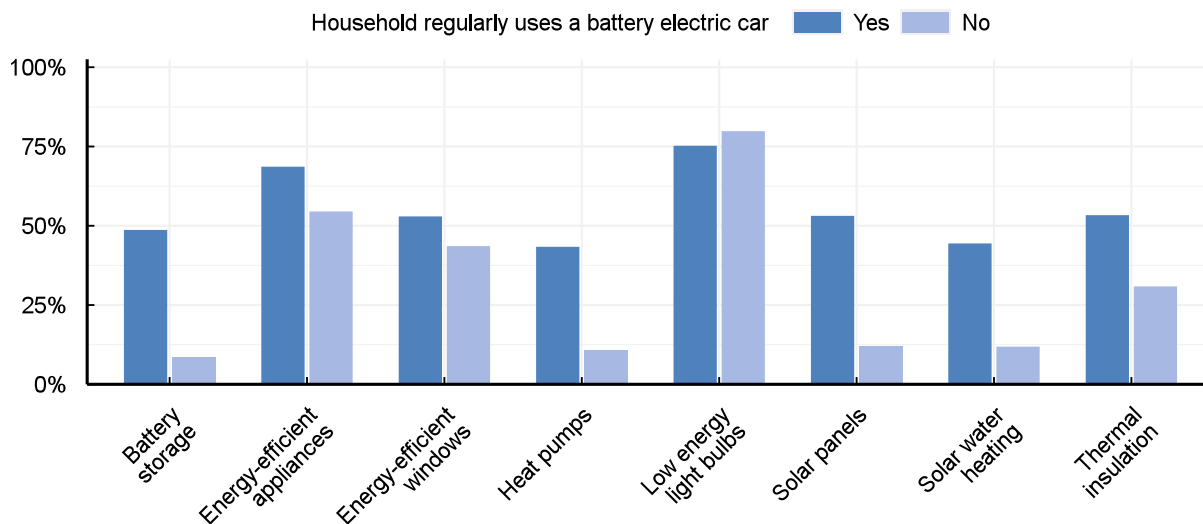
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Electric car use also appears to be associated with the installation of energy efficiency equipment (Figure 1.10). Given that electric car users are not necessarily more environmentally concerned than users of other types of cars (discussed in Chapter 3), these results deserve further investigation. However, the associations are weaker between regular use of electric cars and investing in energy efficient windows, appliances and lightbulbs, as most respondents report engaging in these easier-to-adopt behaviours, not just those who own electric cars. In some areas, these results could reflect existing policies in effect.

Overall, these results could reflect existing evidence that environmental concern, self-identity and perceived self-efficacy (i.e. believing that one's actions make a difference) can underlie correlations between environmental behaviours (Lauren et al., 2016<sup>[34]</sup>). The results in this section warrant further analysis of the extent to which the correlations between behaviour in different areas may be driven by specific factors such as environmental concern or income.

**Figure 1.10. Households that use electric cars are more likely to have energy efficiency equipment**

Percentage of respondents that installed energy efficiency equipment by use of electric car



Note: This survey item asked respondents: "Have you installed any of the following items over the past ten years in your current primary residence?" The graph groups respondents by use of a battery electric car, for which the survey item asked respondents "Do you or does anyone in your household regularly use any of the following (including company-provided equipment)? Please select all that apply."

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

StatLink  <https://stat.link/pceifk>

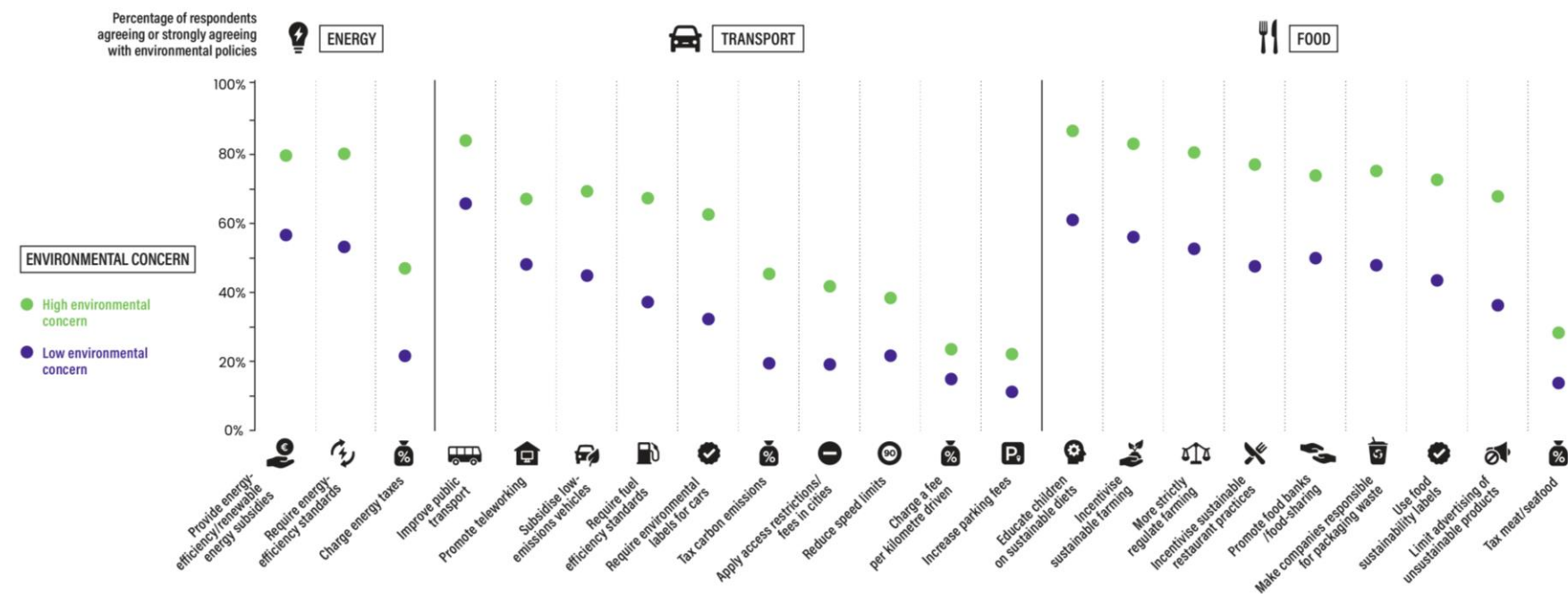
### 1.3.4. The policies respondents support are linked to their environmental attitudes

The survey shows that respondents who are highly concerned about the environment express greater support for a range of environmental policies (Figure 1.11). The picture is similar for respondents who report that they have confidence in their government, relative to those that report having no confidence. It is well known that respondents' attitudes influence their support for specific policy measures; evidence also suggests that exposure to policy measures themselves may increase support for them (Brown and Johnstone, 2014<sup>[35]</sup>).<sup>4</sup> The survey suggests that support is widespread for information-based measures (e.g. education on sustainable diets) and structural measures (e.g. improved public transport). However, it is consistently lower for taxes and fees (e.g. a fee per kilometre driven, increased parking fees, or a tax on meat and seafood), even among respondents who report high environmental concern. These findings suggest that efforts to increase environmental awareness could boost support for some types of environmental policies, but not others.

There is some country-level variation in policy support, in particular for energy and transport policies. For example, improvements to public transport are supported most by respondents in Israel, and least by those in the United States. A charge for every kilometre driven receives the least support in Israel but the most support in the Netherlands. Energy taxes are least popular in France but most popular in Switzerland and the Netherlands, while energy subsidies are supported most by respondents in Israel and least by those in Sweden and the United States. There is less variation in support for food-related policies across countries. Taken together, these results provide a picture of whether the public in the sampled countries are willing to accept the institutional and structural changes needed to address environmental issues, as well as to support the policies needed to create these changes. Given that household responsiveness to and acceptance of price-based measures can be influenced by the alternatives they are provided, policy complementarity is an important point for policymakers to consider. More details on policy support for each thematic area are provided in Chapters 2-5.

Figure 1.11. How level of environmental concern affects support for environmental policies

Percentage of respondents agreeing or strongly agreeing with environmental policies



Note: These survey items asked respondents: "To what extent do you support the following potential policy measures?" (for energy), "What do you think about the following measures to improve the environmental sustainability of food systems?" and "What do you think about the following actions governments can take to reduce environmental impacts from cars?". Respondents stated their level of agreement on a 5-point scale from "strongly against (strongly disagree)" to "strongly support (strongly agree)."

Source: OECD (2022), Environmental Policies and Individual Behaviour Change Survey.

## 1.4. Preliminary policy implications of the EPIC Survey results

This section highlights the main policy implications of the survey results drawn from the thematic chapters of this report. The discussion is exploratory and provides preliminary evidence of the effectiveness of particular policy measures. Further analysis of the EPIC Survey data will be conducted to generate more robust evidence of determinants of behaviours and attitudes and of the conditions under which specific policies appear to be most effective.

### 1.4.1. Energy use

The survey suggests that households tend to adopt energy-saving behaviours that are easy and cheap to implement (Chapter 2). While 92% of respondents report actions such as turning off the lights when leaving a room, actions that could reduce comfort or require more effort are less likely to be taken. For example, 68% of respondents try to minimise their use of heating or cooling, and 75% air dry laundry. In the United States and Canada, the share of households that air dry laundry is relatively lower (44% and 35%, respectively), potentially explained by climatic conditions in certain regions preventing such behaviour for part of the year. Of all the reasons cited for not adopting these measures, around half mentioned forgetfulness, lack of awareness and difficulty of changing habits. Among those with smart meters, 52% report not using the information provided by these devices, which provide consumers with information that could be useful in managing their energy use.

The reported availability of low-emissions energy technologies remains modest, despite technological advances and evident interest. Overall, 30% of respondents indicate that they would be interested in low-emissions energy options such as renewable energy or differentiated electricity rates if provided by their energy provider, but they have not been offered them. The reasons given for the limited uptake of technologies differ according to dwelling type, ownership status and, to a lesser extent, income. Many households report that it is not feasible to install low-emission energy technologies such as solar panels or heat pumps in their residences. Among those living in apartment buildings, for example, 63% report that solar water heating and solar panels for electricity are not feasible to install, compared to 16% of respondents living in detached houses. Yet even among households for whom installation is feasible, around one-third report using solar panels (29%), heat pumps (30%) or battery storage (27%). Of respondents for whom installation is feasible, around one-fifth (21%) cite prohibitive purchase and installation costs as an obstacle to adoption. Among those households that have not yet installed a heat pump, 20% report that they cannot afford one, while 18% indicate that they were not aware of the technology or that it was an option for them.

Of the policy measures included, respondents expressed lowest levels of support for taxing energy use, at 38% overall, ranging from 30% in France to 49% in Switzerland. Those expressing the greatest opposition to tax-based policy measures also have low levels of environmental concern and lack of confidence in the national government. Respondents expressed a high level of support for energy efficiency standards (71%), and two-thirds support subsidies to low-income households to help them pay for energy-efficiency equipment.

These findings point to a range of potential policy options to encourage more sustainable energy choices:

- **Increasing the availability and feasibility of sustainable options:** this could involve measures to incentivise the installation of energy efficiency equipment for landlords as well as homeowners, which would allow more consumers to choose these options.
- **Reducing adoption costs for households:** this could remove financial barriers to uptake of low-emissions energy options for some households. Policy measures could include, for example, subsidies for the installation of energy efficiency equipment.

- **Raising awareness of conservation practices and available technologies:** this could result in greater energy saving behaviour and uptake of low-emissions technologies, especially for those that consumers may be less aware of, such as heat pumps and battery storage. Potential measures could include reminders about energy consumption, practical tips on how to save more energy and general awareness campaigns.

### 1.4.2. Transport

While reliance on cars is higher in rural areas, car use is still significant even in urban areas where it accounts for 50% of commuter travel. Across the nine countries surveyed, 75% of households report that at least one household member uses a conventional private car on a regular basis. Car use does not vary significantly by level of environmental concern, highlighting households' car dependence and the constraints and inconveniences associated with changing this behaviour. However, 54% of respondents indicate that improved public transport services, including lower public transport fares, more frequent service and better network coverage, would encourage them to reduce their car use. Increasing the availability of public transport options is an important component of efforts to decarbonise the transport sector (see Chapter 3).

Insufficient charging infrastructure appears to be a barrier to greater electric car uptake for survey respondents. The large majority of respondents (more than 80%) that plan to buy a car within the next couple of years expect this to be a car that runs at least partially on fossil fuels. Overall, 33% of respondents report that there are no charging stations for electric cars within three kilometres of their home, ranging from 22% in the Netherlands to 43% in France. The majority of electric car users in the sample report that they charge their car at a location where it is normally parked.

In line with a general lack of support for taxes, the majority of all respondents were opposed to deterrent measures, such as having to pay a fee for every kilometre driven (57%) and increased parking fees (61%). However, investing in public transport systems enjoys widespread support in all countries, ranging from 72% of respondents in the United States to 84% in Israel. Subsidies for low-emissions vehicles are strongly supported by 24% of respondents.

Based on these observations, a number of policy options to encourage more sustainable mobility choices could be considered:

- **Improving public transport systems:** this could incentivise households to reduce car use, and could include investments to improve the frequency, accessibility and affordability of public transport systems.
- **Increasing the availability of charging infrastructure:** as a complement to other measures, this could increase the adoption of electric cars, especially in areas where there are fewer alternatives to car use.
- **Complementing taxes or other charges on car use with investments in public transport and better walking and cycling infrastructure:** this could make such policies more acceptable in light of widespread support for public transport improvements.

### 1.4.3. Waste practices

Household actions to reduce waste generation (e.g. reusing and repairing) are an important component of waste management (Chapter 4). Survey results suggest that households act to reduce waste by engaging in low-effort activities, but struggle to change their consumption habits. More than half of households report taking action to reduce and reuse: 83% of households report always or often using reusable shopping bags, 53% report frequently using refillable containers, 55% report repairing damaged items and 51% report buying products that are less environmentally harmful. However, considerably fewer households report frequently buying second-hand items (37%), renting or borrowing items (22%) and making things at

home (20%), indicating scope to increase engagement in these practices. Survey responses suggest, for example, that concern for the environment can be leveraged in efforts to increase demand for less environmentally damaging items.

The amount of recycling reported by households for all materials ranges from 34% in Israel to 71% in Switzerland. Lower rates are generally reported for composting food waste (ranging from 27% in Israel to 58% in Sweden) and recycling batteries (27% in Israel to 71% in Switzerland). Recycling collection services and charging schemes for mixed waste disposal are associated with lower discarded mixed waste and higher recycling rates. Households with access to drop-off points for recycling produce on average 26% less mixed waste per capita than those with no recycling service available, and households with door-to-door or kerbside collection produce 42% less discarded mixed waste.

Charging for mixed waste disposal is associated with more separation of food waste for composting in six out of nine countries. Overall, households being charged a per-unit fee for mixed waste disposal report composting 55% of their food waste, while those that are not charged report composting 35% of their food waste. A significant proportion of respondents in many countries report not being charged for disposal services (e.g. up to 41% in Israel). However, households' knowledge of how they are charged is likely to be imperfect. In addition, households report that greater financial incentives (43%), the option to have waste collected at home (37%) and more accessible recycling collection or drop-off services (39%) would encourage them to recycle and compost more. Widespread agreement that financial incentives would influence household waste practices highlights the potential for deposit-refund systems in reducing mixed waste generation.<sup>5</sup>

Information provision could also help to reduce waste generation and increase recycling. Up to 16% of households in Israel dispose of electric and electronic waste along with mixed waste, which could be due to lack of information on how or where to recycle them. As for food waste, the main reasons that respondents cited for throwing food away were because they forgot about it (36%) or cooked or bought too much (22%). Clarifying and standardising date labels, providing information on what can be frozen and for how long, as well as providing shopping or portion plans, were all identified by respondents as likely to be effective in helping them to reduce food waste. Many households that compost at least some food waste cite a lack of space (27%) and perceived unpleasantness (17%) as the main reasons for not composting more. Measures to provide households with equipment for composting and food waste collections could address some of these issues to increase composting rates.

The policy implications of these results suggest several measures that policymakers can take to reduce waste generation and encourage greater recycling and composting:

- **Providing better recycling services is important for reducing waste:** this could lead to lower levels of mixed waste generation and greater sorting. Collecting recyclable materials from households' residences appears to be most effective in this regard.
- **Expanding charging schemes for mixed waste disposal and improving awareness of these schemes:** this could also yield increases in recycling and reductions in generated waste. One example is per-unit (i.e. volume or weight-based) charges.
- **Providing better information on what to recycle and compost and how:** this could lift some reported barriers to greater engagement in recycling and composting. Examples include information on where to recycle batteries, and how to avoid food waste.

#### **1.4.4. Food consumption**

Affordability, freshness, taste and nutritional value figure among consumers' top priorities when making food purchases in the nine surveyed countries (Chapter 5). The environmental impacts of food products are reportedly less important, even among those who are environmentally concerned. This suggests that policies aimed at shifting dietary choices to more sustainable food items need to consider these priorities

(e.g. cost and taste). For sustainable food products (e.g. plant-based foods) that are inexpensive relative to less sustainable foods, this could involve campaigns emphasising their affordability, as well as their health benefits.

Overall, 24% of households consume red meat several times per week, ranging from 18% in the Netherlands to 34% in the United States. The frequency with which respondents consume meat varies more by income than by environmental concern. Consumption of white meat tends to be more frequent and varies slightly more across countries, while seafood is generally consumed less frequently and with even greater variability. Dairy products are the most frequently consumed animal product, with an average of 69% of households consuming them several times a week,<sup>6</sup> ranging from 60% in Belgium to 76% in Sweden. Given the significant environmental impacts of producing red meat, a policy focus on encouraging shifts to sustainable alternatives can yield large-scale environmental benefits.

Between 20% and 41% of respondents (in France and Israel, respectively) indicate that they would be willing to substitute conventional meat with a lab-grown alternative. Those who would not be willing cite reservations about the potential health impacts of lab-grown meat, its presumed inferior taste and nutritional value, high cost, and incompatibility with their culture or values. Supply-side production standards and environmental labelling of meat alternatives will be important measures to increase consumer confidence in new, more sustainable food products such as lab-grown meat.

Reported regular consumption of organic food ranges from 11-31% depending on the country. In all countries, environmental concern appears to be associated with the likelihood of purchasing organic food, as well as to consuming products that are in season and locally produced.

The survey asked respondents if they would support a range of food-related policies, including educational programmes, regulations on the use of pesticides, and incentives to encourage sustainable agricultural practices. With the exception of a tax on meat or seafood, there was broad support for nearly all the food-system policies treated in the survey, ranging between 71% and 78%, depending on the policy. These high levels of support should empower policymakers to take action to induce shifts to more sustainable diets, for example by:

- **Improving the affordability, availability, nutrition and taste of sustainable options:** these are universally important priorities for consumers when making food purchases and enhancing these characteristics could increase the appeal of sustainable food items among consumers.
- **Providing more information on the benefits of sustainable alternatives to meat and dairy:** this could reduce potential misconceptions about their cost or quality. Examples include labelling schemes and certification programmes to increase consumer knowledge on the environmental impacts of food products, as well as information about the lower cost of plant-based foods, as appropriate, or the attributes of lab-grown meat.
- **High levels of support for many food-system policies suggest that households may be relatively receptive towards policies that aim to induce shifts to more sustainable diets.** Support is highest for educating school children about sustainable diets, providing incentives for farmers to reduce environmentally harmful agricultural practices, and stricter regulation of pesticide use, industrial animal farming and aquaculture.

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## Notes

<sup>1</sup> Further discussion on the advantages and disadvantages of stated preference empirical approaches are discussed in Annex A.

<sup>2</sup> What is a primarily non-financial compromise for some respondents may be a financial compromise for other respondents. For example, while using public transport instead of a private car may entail non-financial costs (e.g. lower comfort) for a respondent living in an urban area, not using a car would entail financial costs for a rural resident who depends on a car for commuting.

<sup>3</sup> Differences in samples as well as in the formulation of some questions prevents direct comparisons of the results across survey rounds.

<sup>4</sup> The survey provides information on a host of factors that can help to explain variation in policy support across policy measures and countries, such as gender, income, residential features, employment status, age, household size, and education. A more comprehensive analysis that isolates the impact of individual drivers on policy support is beyond the scope of this report, however.

<sup>5</sup> Although the EPIC Survey does not provide information on the coverage or effectiveness of deposit-refund systems, other research suggests that well-designed systems can be effective (OECD, 2015<sub>[36]</sub>).

<sup>6</sup> Frequency is one measure of intensity of consumption. Other measures include expenditure as a percent of total food spending or caloric intake.



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