

# A Policy Toolkit for Implementing LiFE

Lessons from G20 experiences



# INTERNATIONAL ENERGY AGENCY

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# Foreword

India's G20 Presidency put the issue of sustainable development at the core of its programme. Indeed, the context is worrying. This year is on track to be the warmest ever, and the impacts of climate change are ever more visible. The energy sector clearly has a crucial role to play, accounting for around three-quarters of the greenhouse gases that humankind emits.

At the same time, energy is critical to development. The consumption of energy is unequally spread around the world, and billions of people remain without access to modern forms of energy. This has severe consequences for their welfare and for the economic development of the countries affected. At the same time, recent global energy market turmoil lingers on, and the affordability of energy consumption remains a key concern for policymakers, in particular in developing economies.

How to square this circle is the critical question.

Traditional approaches have focused on the supply side, and they have met with some success. Recent developments in the deployment of renewable energy are very encouraging, and India has been at the forefront of these trends.

But as highlighted by India in recent years, this approach is not enough. We also need to engage consumers to be part of the change. It is their choices when they purchase appliances, or motorbikes and cars, or houses and offices, which shape a huge share of global energy demand.

This is why I am delighted that the Indian G20 Presidency managed to ensure the adoption of the "G20 High Level Principles on Lifestyles for Sustainable Development". This represents the first time that a multilateral setting has agreed to key implementation principles for promoting more sustainable lifestyles and consumption choices.

I want to thank the International Energy Agency (IEA) for its work on this issue throughout India's G20 Presidency. The IEA provided a critical evidence base for demonstrating the importance of actions on the demand side to promote sustainable transitions. Its work together with our Presidency was a true demonstration of the value of the IEA.

This new report released by the IEA today has two important messages. Firstly, it shows that the LiFE movement is gaining traction, with new policies being announced around the world aimed at promoting sustainable lifestyles and consumer choices. This is good news. But – and this is the second message – the report also shows the importance of policies in driving change.

I thank the IEA for its work and leadership in this area, and I hope that they will continue to track and inform the implementation of the G20 High Level Principles on Lifestyles for Sustainable Development in the coming years under the Presidencies of Brazil and South Africa in 2024 and 2025 respectively.

Mr. Amitabh Kant

G20 Sherpa to the Government of India

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# Key findings

The energy system is fundamentally shaped by the consumption and behaviour choices of billions of consumers globally. For this reason, policy frameworks to drive more sustainable consumption choices and behaviours can play a critical role in energy transitions. The IPCC has estimated that by 2050, demand-side measures can reduce global GHG emissions in end-use sectors by 40-70% compared to baseline scenarios. This paper complements the IEA's first paper on the Lifestyle for Environment (LiFE) initiative, by setting out a toolbox of policy options for countries to consider. Launched by India, LiFE aims to promote more environmentally responsible consumption choices and behaviour worldwide.

How individuals choose to consume and behave is fundamentally shaped by the policies, incentives, infrastructure and norms that surround them. LiFE cannot achieve its objectives, therefore, without supportive policies that respect individual preferences and cultural factors. This paper proposes a menu of policy options around six categories: awareness raising, information accessibility, status quo nudging, financial incentives, mandatory standards, and public investments. The market failures and behavioural biases hindering more sustainable consumption choices and behaviours are multiple, and therefore policy frameworks to promote LiFE will need to be comprehensive.

Awareness is growing regarding the need to activate demand-side transitions through policies that align well with the objectives of the LiFE initiative. This paper provides a first-of-a-kind survey of LiFE-aligned policies in G20 countries and finds that the range and depth of these policies has grown in recent years. We track around 120 policies that have been implemented in the G20 that broadly align with the LiFE initiative. There is much that the implementation of LiFE can already build on. This paper highlights some areas where governments could go further, notably by making greater use of nudge policies such as environmental defaults, stronger policies to promote modal shifts in transport, and greater investments in active and public transportation modes in cities, which can have large returns.

Indeed, the benefits of a stronger implementation of LiFE-aligned measures would be significant. The IEA estimates that of the more than 2 billion tonnes of CO<sub>2</sub> that can be reduced through LiFE-aligned measures by 2030, of which almost 1.7 is in G20 countries. This would help consumers to save around USD 440 billion by 2030. Robust implementation of LiFE can also create around 17 million clean energy jobs globally by 2030, and spur around USD 1.6 trillion in clean energy investment from consumers globally by the same year. This would send a powerful signal to industry and drive market transformation, lowering the costs and increasing the accessibility of clean energy options.

# Introduction

At the 2021 Conference of the Parties to the United National Framework Convention on Climate Change (COP26), Prime Minister Narendra Modi of India announced “Mission LiFE”. The Lifestyle for Environment (LiFE) initiative aims to promote more environmentally responsible consumption choices and behaviour worldwide. The initiative was further developed and formally launched in October 2022 by Prime Minister Modi and the UN Secretary General António Guterres as “Mission LiFE”.

Mission LiFE aims to support the delivery of the Sustainable Development Goals (SDGs), set by the United Nations’ 2030 Agenda for Sustainable Development. SDG12 aims to ensure sustainable consumption and production patterns. By mainstreaming sustainable consumption choices and behaviours, LiFE can help to make significant advancements on SDG12, in particular SDG12.8, which aims to “by 2030 ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature”.

In February 2023, the IEA published a [report](#) which provided a first-of-a-kind quantification of the energy and emissions impacts of the global adoption of the kind of measures proposed by the LiFE initiative. It showed that sustainable consumption choices and behaviour by individuals can help moderate rising energy demand and emissions, support economic development and improve citizens’ welfare.

This follow-on report sets out to provide a concrete policy toolkit for advancing LiFE implementation at the level of countries, subnational jurisdictions and individuals, and through international fora such as the G20. The policy toolkit builds on experiences and best practices of LiFE-aligned policies that G20 members are already implementing.

## The importance of demand-side measures

The Intergovernmental Panel on Climate Change (IPCC) in its [AR6 Synthesis Report](#) confirmed the importance of demand-side measures and individual lifestyle changes in reducing greenhouse gas (GHG) emissions. By 2050, demand-side measures can reduce global GHG emissions in end-use sectors by 40-70% compared to baseline scenarios. Demand-side measures are adopted by individuals in their everyday life through changing the way they use infrastructure and by shifting to low-emission technologies, supported by policy incentives.

At the 2023 meeting in Sapporo, Japan, G20 climate, energy and environment ministers recognised the importance of demand-side energy transitions, including by advancing sustainable consumption choices and behaviours. They noted the importance of supporting individuals to make more sustainable consumption

choices through the provision of price signals, information, regulations, and appropriate guidance to industry. They established a [“G7 platform for net-zero and well-being in life.”](#) Through this platform, G7 plans to share best practices on low-emissions services, products and policies that can advance demand-side actions and accelerate innovative public-private partnerships that incentivise sustainable consumer choices aligned with climate objectives.

This was expanded in the [“G20 High Level Principles on Lifestyles for Sustainable Development”](#) adopted at the G20 development ministerial meeting in Varanasi, India, in June 2023. The principles reiterate the importance of behavioural change in achieving development, environmental, and climate goals. This can be accomplished by promoting environmentally friendly consumer choices and behaviour through government policies leveraging behavioural science approaches, such as nudges and incentives, to encourage individual actions for sustainable lifestyles.

# Consumer choices, behaviour, and the role of governments in energy transitions

## The role of consumers

Over the past 20 years, GDP in the G20 has almost doubled, while energy consumption increased by one-third. Energy has been at the heart of economic development in the G20. This growth in energy demand has contributed to increasing prosperity; but it has also led to increases in greenhouse gas emissions and air pollution.

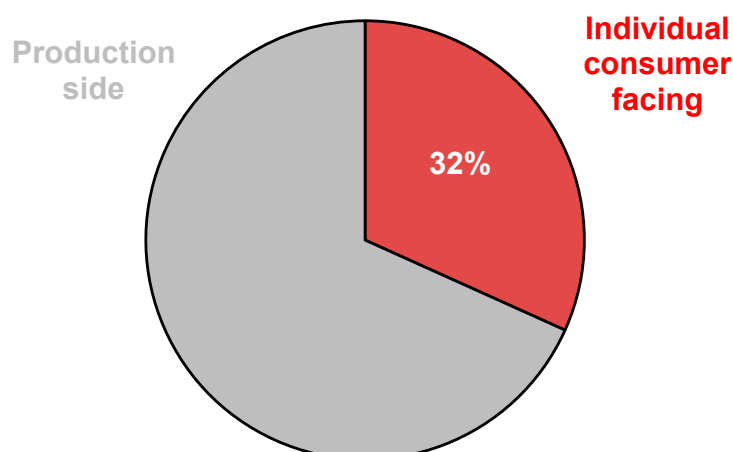
Almost all G20 member countries have set out goals to reach net zero emissions by or around mid-century in policy documents or oral pledges, and almost half of its members have voted into law targets aiming to reach net zero emissions by or around mid-century. Achieving these pledges requires a profound transformation of the energy systems that underpin the economies of G20 members – conducted in a way that is cost-effective and socially acceptable. This pathway requires immediate and large-scale deployment of all available clean energy technologies, as well as a shift in how energy is used.

Without such structural changes in the way energy is produced and consumed, the G20's energy demand is set to grow by 12% until the end of the decade. For example, demand for passenger aviation would be around 50% higher in 2030 than in the pre-pandemic year of 2019 in the G20. But there is enormous potential for clean energy technologies and resource efficiency across the G20 to temper the growth in energy demand across all sectors, while promoting continued improvements in prosperity.

Consumer choices and awareness lies at the heart of the transition to low-emissions energy systems. The IEA estimates that today, a third of all emissions in the G20 are consumer facing, meaning they are directly affected by households and their energy-related decisions. This includes emissions from residential buildings and different modes of passenger transport. Households have less direct control over the remainder of the emissions, as they stem from more upstream sectors such as iron and steel, cement, freight transport, and fuel transformation. However, some of these production-related emissions can be indirectly affected by consumer choices, as they are often associated with the final production of the goods and services that households purchase.



## Share of CO<sub>2</sub> emissions in G20 member states that are individual consumer facing, 2021



IEA. CC BY 4.0.

The LiFE initiative builds upon this role that consumer choice and behaviour play in shaping the energy system. Its measures address multiple challenges to decarbonisation at the same time:

- accelerating clean and efficient technology uptake, stimulating green economic growth
- incentivising a more efficient and sustainable pattern of energy consumption
- reducing locked-in emissions from carbon-intensive assets for which stock turnover happens slowly
- lowering demand, addressing hard-to-abate sectors where technological options to reduce emissions are scarce or expensive, such as aviation
- lessening the required scale-up of new sources of clean energy, including renewables and bioenergy.

## The role of sustainable consumption choices and behavioural change in driving energy transitions

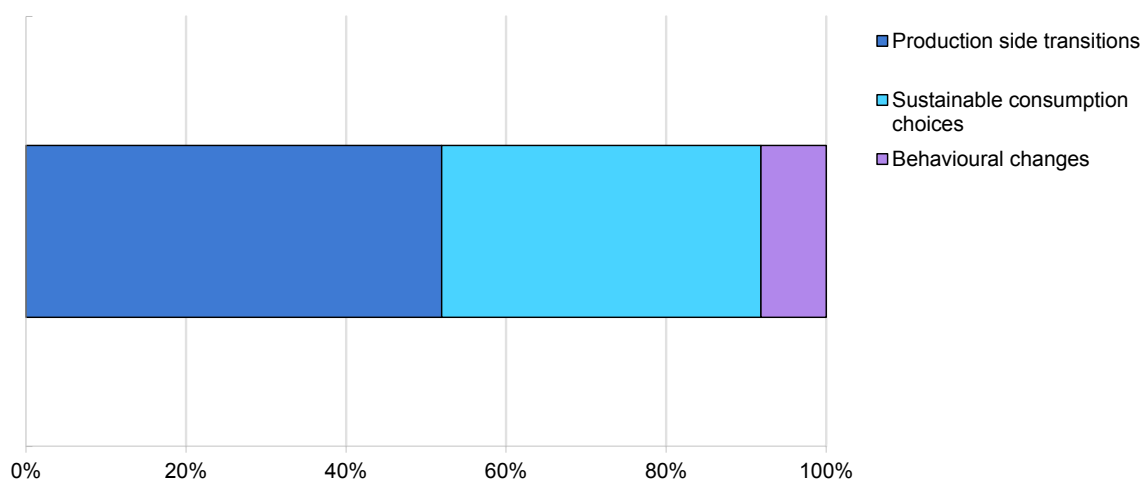
A sustainable energy future cannot be achieved without the active and engaged participation of citizens. Recently, the global energy crisis has led governments across the world to call on citizens to change their energy-consuming habits. A [recent survey](#) of the European Commission shows that more than 70% of EU citizens took measures to reduce their energy consumption as a response to the energy crisis, for example by using public subsidies for energy efficiency measures and/or by changing their use of transport.

Limiting global warming to 1.5 °C requires a massive scale-up of low-emissions technologies, supported by policy and investment. Some of these low-emissions

technologies require little direct engagement from citizens, such as the transformation of electricity generation or steel production. However, the IEA estimates that such “supply-side” transformations contribute only around half of the emissions reductions to 2050 required to limit warming to 1.5 °C. Moreover, given the scale and speed of the change required, even these supply side technologies will require citizen buy-in, as is evident in the challenge posed by local opposition to electricity transmission expansion.

Alongside these supply-side solutions, the other half of the emissions reductions on the pathway to net zero require the active engagement of citizens. This active engagement can take the form of the decision to purchase low-emissions equipment or appliances (sustainable consumption choices), and/or in the way they are used in daily life (behavioural changes).

### Share of cumulative global emissions reductions for net zero energy emissions by category, by 2050



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At the point of purchase, the IEA classifies the citizen engagement as **sustainable consumption choices**. Systematic preferences to buy low-emissions technologies and equipment can include choosing electric vehicles (EV); purchasing highly efficient appliances; switching to cleaner and more efficient tools for cooking; or refurbishing a home with improved insulation or solar water heaters.

Beyond the choice of energy technologies, citizen engagement can also happen through **behavioural changes** that reduce energy demand through adjustments in everyday life. These active and ongoing changes in energy use by consumers ensure that equipment is used efficiently and reduce wasteful or excessive energy consumption. Examples include driving a car in an eco-friendly manner, reducing car use in favour of active or public transport, adjusting temperature settings in buildings, or flying less.

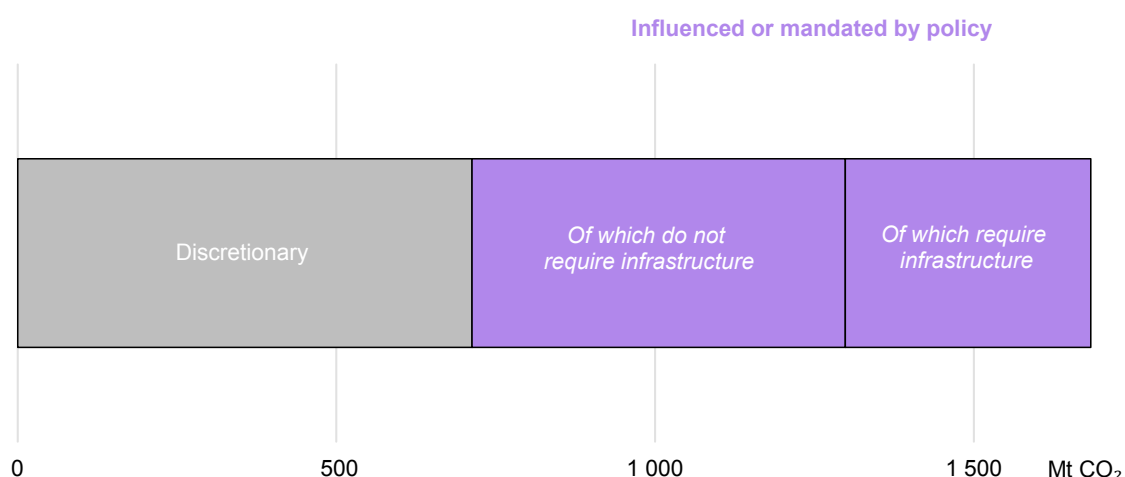
While both sustainable consumption choices and behavioural changes are influenced by individual preferences, they are also heavily impacted by the broader context of economic incentives, infrastructure, and information that surrounds individuals. Recognising the barriers to sustainable consumption choices and behavioural changes, policy makers can put in place policies that make it easier for people to modify the way they use energy. LiFE-aligned policies can play an important role in making sustainable consumption choices and behavioural changes more attractive and affordable.

## The role of policy in sustainable consumption choices and behavioural change

The first IEA [report on LiFE](#) estimated that more than 2 billion tonnes (Gt) of CO<sub>2</sub> could be reduced by the adoption of LiFE-aligned measures at the global level. Of this, almost 1.7 billion tonnes would be achieved in G20 countries.

Around 60% of the emissions savings by LiFE-aligned measures in G20 in 2030 could be directly influenced or mandated by policies. Governments can for instance introduce low-emissions zones in cities or support consumer investments in clean energy technologies such as efficient air conditioners, heat pumps, solar water heaters or solar PV panels. The more discretionary behavioural changes and consumption choices can be encouraged by awareness campaigns. Less than a quarter of all CO<sub>2</sub> emissions savings in G20 would require infrastructure support.

**Reductions in annual CO<sub>2</sub> emissions in G20 from LiFE-aligned measures by type of measure, 2030**



IEA. CC BY 4.0.

Despite the significant potential of sustainable consumption choices and behavioural change, the importance of incentivising the active engagement of citizens in energy transitions has not received adequate attention to date. But that is changing – as the

following section shows. As policy interest in this field grows, it is important to conceptualise the role of different kinds of policy interventions.

There is a growing focus on how behavioural insights and social science can help shape such policies effectively. There are many real-world examples of policies at both national and regional levels that inform, incentivise or sometimes mandate behavioural changes and sustainable consumption choices. Taking different approaches, these policy options all aim to create an enabling environment for people to take and sustain environmentally conscious choices. The table below provides a taxonomy of policy interventions.

| Policy intervention type | Barrier to be overcome  |
|--------------------------|---|
| Awareness raising        | Consumers often lack broad awareness of environmental issues, for example about the relative benefits of electric vehicles versus internal combustion engine vehicles.  |
| Information raising      | Consumers lack the precise information necessary to take informed decisions, and do not have the time or capacity to find information.  |
| Status quo nudging       | Individuals often default to status quo decisions due to lack of time or inclination not to change defaults.  |
| Financial measures       | Individuals face challenges in investing in clean energy technologies due to a lack of access to capital or lack financial incentives to change their behaviour.  |
| Mandatory standards      | Regulatory standards can drive market transformation faster and more comprehensively. If phased in over time and where necessary accompanied by other support measures, mandatory standards can achieve market transformation in a non-disruptive manner. |
| Public investments       | For options that rely on the provision of public goods (infrastructure and innovation notably) public investment can be necessary.  |

In the following section, we develop this taxonomy further and provide examples of policies under each category.

# LiFE policy toolkit

Enabling people to adopt sustainable consumption choices and habits requires dedicated and sustained policy interventions. There is a growing focus on how behavioural insights and social science can help shape such policies effectively. The following section outlines the six major policy options available to policy makers, selected based on evidence for their effectiveness, and provides best-practice examples. Taking different approaches, these policy options all aim to create an enabling environment for people to take and sustain environmentally conscious choices.

## Awareness raising

Well-designed awareness campaigns motivate people to reduce their energy use and help to shape environmental consumer choices and habits. The past experience of many countries, especially in response to supply crises, shows that behavioural campaigns can achieve substantial impacts. For instance, after an earthquake hit off its north-eastern coast in March 2022, Japan launched a campaign encouraging businesses, utilities and citizens to drastically cut energy demand. Within a day, electricity demand savings [reached 6.5%](#) in the Kanto region. In New Zealand, a government-led information campaign during an electricity shortfall in 2008 resulted in national electricity savings ranging from [3.6% and 6.9%](#).

Public education campaigns have also become an increasingly popular policy tool across many countries in recent years. [Argentina](#), for example, recently launched the “Let’s take care of resources, let’s take care of our country” campaign, providing multiple tips to save energy in households. In [India](#), “the Go Electric” campaign creates awareness about the benefits of switching to electric vehicles and enhances acceptability.

Awareness raising requires strategies of effective communication to reach the desired outcome. The choice of message, the tone, how the campaign is designed and the transmission channels, can all fundamentally influence effectiveness. The IEA has [identified four key concepts](#) that are crucial. Different messages work with different audiences, so for an awareness campaign to be effective, policy makers must understand how they can design campaigns that target users in tailored and relatable ways for higher impact. Getting the message right is crucial. The narrative for campaigns related to energy consumption can typically focus around saving money, protecting the environment, or being part of a social movement for the general good. India tapped into the potential for children to positively influence adults’ behaviour in the ‘Save energy, make country’ campaign. When the situation is urgent, a crisis message can evoke an immediate response such as the stronger tone in a [Japanese](#) campaign to avoid power cuts.

### **Case study: Germany’s “80 million together for the energy transition” campaign**

Together with a broad alliance of associations, the German Federal Ministry for Economics and Climate is calling on people to save energy in its campaign [“80 Millionen gemeinsam für Energiewechsel”](#) (“80 million together for the energy transition”). The campaign was launched in June 2022 and targets industry, small and medium-sized enterprises, municipalities, environmental associations as well as individual consumers.

To hit the right tone, the German “80 million together for the energy transition” campaign uses a narrative that emphasises the multiple co-benefits of saving energy that resonate with the German population: the aspiration for more energy independence, and the urgent need for financial savings in light of high fossil fuel prices and helping the environment. At the same time, it centres its messages around “togetherness”. This sense of community is further stressed by impactful visuals to attract attention and increase shareability via social media. The campaign’s imagery features people and refers to the population of the country, making it more relatable.

After getting the message right, getting the message across is essential. Policy makers must understand how different energy users obtain information and which sources of information are used and deemed trustworthy. The German campaign tries to achieve maximum outreach by combining several communication strategies: on public screens in cities, at main train stations, on online portals on the Internet with high reach and on social media networks. The central platform features many concrete tips, interactive guides, explanatory films, and practical examples.

To be implemented after having been noticed, an awareness campaign needs to be actionable. “80 million together for the energy transition” makes sure that those receiving the messages are able to understand what they are being suggested to do, and how to easily do it. The information on the measures to be taken to save energy are clear, such as turning down the thermostat by one degree or keeping the doors between rooms closed. This is accompanied by a telephone hotline, events, and consulting services.

The campaign was designed to be more than an information campaign - it also carries the idea of competition into the country as to who is now advancing the energy transition in the fastest, most sustainable and thus most exemplary way.

## Information accessibility

While campaigns focus on raising the broad level of awareness, information accessibility relates to the provision of specific information at the point of purchase or use. Consumers often lack the knowledge necessary to make well-informed decisions on how they consume energy or what products they chose to buy and use. This can lead to choices and behaviours that are not energy or cost-efficient. Policies providing access to information are a low-cost, effective, and non-coercive way to encourage more environmentally friendly lifestyle choices while respecting the autonomy of individual decisions.

Standardised labels that inform about energy, emissions- or other environmental impacts support consumers in identifying sustainable product alternatives and are particularly well suited to influence purchasing choices of residential appliances. These labels can also clarify that the premium in the upfront cost of the highly efficient appliances is often compensated by the financial benefit brought by lower energy bills. The [EU energy label](#) for a wide range of household appliances is recognised by 93% of EU consumers and almost 80% consider the label when buying appliances. This puts pressure on manufacturers to improve the performance of their products to increase their competitiveness. The IEA estimates that the EU energy label scheme avoided more than 310 Mt CO<sub>2</sub>, or 11% of the EU's energy-related emissions in 2019. Energy efficiency labels for residential buildings can be a tool for comparison of home prices and energy savings, and thus bring about consumer-driven transition of the housing sector. In India, it is estimated that the implementation of the residential sector labelling programme launched in 2019 could result in energy savings of [up to 40% over traditional houses](#).

Information accessibility can be enhanced by increased digitalisation of energy services. An effective way to incentivise energy savings through information is daily or seasonal consumption feedback. Consumption feedback often requires installation of smart devices such as smart thermostats, or well-designed in-car feedback systems for vehicles for optimal results. [France](#) rolled out smart electricity meters “Linky” country-wide since 2021 enabling households to access daily consumption data, receive alerts in case of overconsumption and to compare yearly consumption profiles with other households. In parallel, dedicated French websites with information on [electricity](#) and [gas](#) grid congestion alerts offer accessible data to all people without the need to install additional equipment. Data shows that in the US, real-time feedback to customers can result in up to [15% energy savings](#). In the UK, households with smart meters and in-home displays, providing real-time consumption information, ended up using [1.5% less natural gas and 2.3% less electricity](#) in 2011, compared with homes with conventional meters. In other cases, information can be provided without the need to purchase or install new equipment. This can be done through dedicated websites providing information about peak electricity or gas demand periods.

Feedback mechanisms relying on social norms and comparisons used in home energy reports (HERs) have been [shown](#) to reduce residential electricity consumption by 2.2% and natural gas consumption by up to 1.6%. HERs translate complex and sometimes obscure aspects of energy consumption information and tariffs into user-friendly language and visuals offering personalised energy efficiency tips. The success and learnings from HERs in the US have enabled the launch of similar pilot programmes in cooperation with utility companies across other nations such as [India](#) and Japan, which recorded [2% energy savings](#) across 300 000 participating households compared to those not receiving HERs. Countries such as the [United Kingdom, Australia, and Ireland](#) have mandated including in-home displays during their smart meter implementation.

### **Case study: Beat the Peak electricity alert initiative in Yukon, Canada**

Experience with high electricity demand during the heating season in Yukon, Canada motivated the Northern Energy Innovation research team at Yukon University to launch a small-scale pilot project in the state's capital Whitehorse in partnership with the local and territory's government and the Yukon Energy Corporation aimed at reducing electricity consumption during winter peak demand periods through direct engagement with consumers.

The [Beat the Peak](#) project launched in the 2022 heating season sends peak alerts through an SMS notification system before, during and after selected peak electricity demand events to homeowners who voluntarily register. These alerts provide them with information on individual actions they can take to reduce their electricity consumption during specific times of the day. The project's website also provides suggestions for energy savings behaviours across different aspects of daily life from cooking to social activities.

The goal is to prevent the use of emission-intensive diesel generators for additional power generation in Yukon, which has an isolated power network and therefore struggles to cover electricity demand during winter peak periods. The notification system gained [351 registrations](#) and had the most user registrations and highest engagement during the coldest days of the year. The overall impact on energy savings will be further monitored during the upcoming heating seasons.

## **Status quo nudging**

Sometimes, however, even being fully informed is not enough. When changing behaviour requires an effort, even if it brings subsequent benefits, we tend to prefer to take no action. This "status quo bias" manifests itself as an attachment to, and persistence of, existing technology choices and behavioural patterns even if there are better alternatives and incentives to change. This deeply ingrained behavioural



pattern towards the incumbent technology or habit hampers the adoption of a new technology or habit. Behavioural science has [shown](#) that the status quo bias tends to be even stronger the more options are given in a choice set. Policy makers can use this status quo bias to nudge energy consumers towards choosing the most environmentally friendly solution as a default choice.

Experience with green electricity tariffs as the default option shows that consumers have the tendency [to keep them](#). A large-scale field study of electricity subscriptions in [Switzerland](#) found that setting a ‘green’ electricity package as a standard subscription increased the share of customers using exclusively renewable electricity from less than 5% to over 80%. This shift remained stable over several years, despite the possibility to opt out and take a ‘classic’ energy bundle instead. Similarly, in [Germany](#) the supply of a green basic tariff as a pre-set choice in certain regions was strongly associated with higher demand for green energy tariffs: a green default led to an increase of almost 20% percentage points in green electricity consumption. In the [United States](#), an experiment investigating the uptake of energy-saving (and money-saving) dynamic “time of use” (TOU) tariffs found that 20% of participants accepted time-varying tariffs through an opt-in, and 90% through an opt-out default setting.

Similarly, opt-out defaults can help reduce heating temperatures, as was the case in an [experiment](#) with OECD-employees; can help reduce the power usage of [computers](#); or increase the choice of energy-efficient lamps and lighting, as shown in the [United States](#). Government policy that requires environmental default settings can therefore nudge purchasing decisions and incite a durable change in consumer behaviour through creating a habit-forming environment. Setting energy-saving defaults is an effective way to rely on consumers taking the path of least resistance whilst preserving the freedom of choice.

### **Case study: AC@24 Campaign in India**

Being a sub-tropical country, India has a significant cooling challenge. Currently, 6% of Indian households have air conditioners (ACs). By 2030, the installed capacity of ACs in India will increase [more than three-fold](#). This growth in the number of ACs poses a serious challenge to mitigating the energy consumption and emissions stemming from AC use, as well as straining the electricity system by contributing to peak demand in the summer months.

In Indian climatic conditions the optimum AC temperature setting lies between [24 and 26 degrees Celsius](#) (°C), depending on the climate zone. However, recent [surveys](#) have indicated almost 70% of Indian households run their ACs at a temperature setting below 23 °C.

In 2020, the Indian Bureau of Energy Efficiency (BEE) therefore mandated a 24 °C default cooling temperature setting for all new ACs as part of its [AC@24](#)

campaign. Under the new energy performance standards for ACs, all brands and types of star-labelled ACs that are manufactured, commercially purchased, or sold in India shall have a default setting of 24 °C. Consumers then have the flexibility to change or adjust the set-point temperature as they wish.

However, many stay at the default, leading to significant energy savings. The BEE estimates that the adoption of the recommended AC set-point temperature settings by 50% of consumers would result in yearly savings of about [10 TWh of electricity](#) consumption, which is equivalent to 8% of India's current electricity consumption for space cooling.

Beyond mandating an environmental default setting for new ACs, BEE has also issued a voluntary advice to commercial establishments in India, including airports, hotels, shopping malls, and offices, to run ACs at the recommended temperature setting of 24 °C and has been raising awareness across the population through the 'AC@24' digital campaign on social media.

## Financial measures

Financial incentives and price signals can have a huge influence on consumer behaviour and help promote cleaner alternatives. One example is residential heating, where consumers are discouraged by the high upfront cost of energy-efficient solutions. In the context of the current energy crisis, heat pumps have been supported by financial incentives in [over 30 countries](#) that account for more than 70% of global heating demand in buildings. This extraordinary government support contributed to a [11% rise in global heat pump sales](#) in 2022. Beyond the uptake of heat pumps, in the buildings sector financial incentives can encourage building renovations, the purchase of efficient appliances, and their sustainable usage. In [Saudi Arabia](#), for example, the “High Efficiency AC Initiative” offers citizens immediate discounts of 900 riyals per air conditioner in order to increase the uptake of efficient air conditioners.

In the transport sector, public subsidies for electric vehicles and declining technology costs have brought about a boom of electric mobility across the G20. In [Australia](#), for example, 410 million AUD is being spent in the framework of the “Electric Car Discount” (2022) to create tax incentives. In [Indonesia](#), subsidies of around 470 USD per vehicle are provided to encourage sales of electric two-wheelers. Urban road pricing schemes have been widely adopted. Congestion charges are implemented in London, Milan, and Singapore and encourage commuters to transition to public transport. Originally implemented to tackle congestion or noise and air pollution, they are an effective instrument to help decarbonise road transport. Making private use of ICEs in cities relatively more expensive encourages a switch to other, cleaner transport modes. In [London](#), an Ultra Low Emission Zone (ULEZ) applies to all vehicles which do not meet the strict emissions standards. The impacts

are clear: 20 years after its first introduction, London's congestion charges limited traffic entering the zone by 18% during the weekday hours when the congestion charge applied; reduced congestion by 30%; boosted bus travel in central London by 33%, and enabled 10% of journeys to switch to walking, cycling and public transport. Cumulatively since 2019 it is estimated the ULEZ has led to a reduction of around [800 000 tonnes](#) of CO<sub>2</sub> emissions.

At the policy design stage, understanding the socio-economic and cultural backgrounds of different energy users can help determine those who would respond positively to financial assistance for the purchase of energy-efficient equipment, allowing for more targeted policy interventions. This saves governments from spending on population segments that do not need incentives.

Bringing all existing energy efficiency programmes and relevant subsidies under one roof, can help consumers navigate financial advantages of climate friendly solutions. [Ireland's](#) Reduce Your Use campaign offers a clear list of existing grants, incentives and tax rebates. Similarly, the [UK's](#) Simple Energy Advice brings together all relevant assistance schemes.

### **Case study: South Korea's rewards for active and public transportation**

South Korea has one of the most advanced and widely used public transportation systems in the world. Alongside the KTX high-speed train network, five Korean cities operate modern subway systems and all cities, large and small, have extensive bus routes.

In the recent years, policy makers in South Korea have combined different innovative financial incentives to not only make this public transport system attractive to the population, but also to encourage active transportation like walking and cycling. In 2018, the [MTC Card](#) was introduced, a combination of a public transport commuter pass and a mileage system. Using a mobile application, the transportation costs are reduced proportional to the mileage a person has walked or cycled in order to use public transportation. This applies if using public transportation at least 15 times per month, and saves up to 30% of monthly transportation cost, discouraging the use of personal vehicles and encouraging the development of a sustainable transportation system. The "gamified" character of this financial incentive leverages behavioural insights for maximum effectiveness.

In addition, many South Koreans benefit from significant tax deductions, the more they use public transportation. For the second half of 2022, the South Korean government has temporarily increased the tax deduction rate for public transportation card usage from 40% to 80% to promote the use of public transportation further.

## Mandatory standards

Regulation can contribute to rapid market transformation, and is important also to set rules for measurement and performance. Mandatory standards and labels cover more than [80% of global energy consumption of major appliances](#) for space cooling, refrigeration and lighting, but less than half of electric motors and vehicles. Minimum energy performance standards (MEPS) are a well-established tool across the G20 to set mandatory levels of energy efficiency that appliances and equipment must reach before they can be put on the market, thus shaping consumer choices towards the most environmentally friendly option. MEPS can be tightened over time to follow technical advancements and bring optimal results. Globally, [over 100 countries](#) have now implemented MEPS, with another 20 countries developing them, covering the most common cooling, refrigeration, lightning, display and transport technologies and wet appliances.

The US state of California adopted an ambitious set of building standards for [EV chargers](#) and [solar PV systems](#) installations on new housing, thereby driving vehicle electrification and solar deployment all over the state. The US Department of Energy estimates that similar building codes on a national level could avoid about [900 Mt CO<sub>2</sub>](#) over a thirty-year period. [India](#) mandates the use of solar water heaters in several categories of public and private buildings since 2007. Spain and Italy have both [set limits](#) on the use of air conditioning in schools and public buildings.

In the transport sector, the French ban on domestic [short-haul flights](#) that can be replaced by an alternative rail itinerary of less than 2.5 hours is a significant example of a mandate driving behavioural change. Low emission mobility zones in cities, prohibiting access to the most polluting vehicles, are an effective measure to reduce traffic and air pollution in congested areas. [Mexico City](#) adopted a sticker system branding cars based on their age to limit circulation on certain days. For instance, vehicles older than 15 years can drive only one working day per week while the newest vehicles have no limitations. In Italy several of cities with low emission zones such as [Milan](#) also adopted a tolling system to enforce the rule.

### Case study: Prohibition to rent energy-inefficient housing in France

In rental housing, tenants bear the energy costs related to heating, cooking and lighting in the apartments or houses where they live but cannot influence the energy efficiency of the property. On the other hand, landlords lack the motivation to undertake often costly retrofits because they do not directly benefit from energy savings.

To overcome these split incentives, France introduced the Climate and Resilience law banning new rental contracts for private and social housing with final energy consumption higher than 450 kWh/m<sup>2</sup> [starting from January 2023](#) and prohibited increasing rent under both new and existing contracts for housing with [energy](#)

[performance diagnostic](#) levels of “F” and “G” (the lowest levels on a scale from A to G). The criteria for energy performance of rental housing will be successively made more stringent resulting in a prohibition to rent housing with energy performance below the level “D” by 2034. Housing not meeting the minimum required energy performance levels is not considered as “decent” and therefore cannot be rented even if expressly requested by a potential tenant. The law also establishes a refurbishment obligation for landlords renting those types of housing upon a tenant’s claim in court. The objectives of this measure are to protect renters from high energy bills, motivate more energy-efficient renovations and reduce emissions from the buildings sector.

In order to make the implementation of these measures more socially acceptable, landlords can use the technical support and financial incentives provided by the state to help cover the costs of housing renovations necessary to continue renting their property such as the renovation subsidy scheme [MaPrimeRénov'](#) or the tax reduction scheme [Loc'Avantages](#) reducing the tax on rental revenues up to 65%. The implementation of this innovative measure is yet to be assessed both in terms of impacts on renovation rates but also the availability of rental housing.

## Public investments

In some instances, incentives for choosing low-emissions technologies and changing daily habits must be combined with public investments. People will only drive less if they have convenient alternatives. The use of public transport and active mobility depends on the existence of metro lines, bus lanes and cycling infrastructure. Modal shifts to electric vehicles depend on EV charging points. Regional investment in high-speed rail provides alternatives to air and car travel. In emerging market and developing economies, public investment in electricity access, affordability and reliability plays an important role to ensure the uptake of clean energy sources among residential and commercial consumers.

The impacts on emissions savings can be significant. The Brightline West Project in the [United States](#), for example, which will connect Los Angeles to Las Vegas through a high-speed rail line by 2027, has been estimated to reduce 400 000 tonnes of CO<sub>2</sub> annually, equivalent to removing 3 million vehicles from the road. In a [study](#) on the impacts of bike networks in Bogotá, Colombia and Guangzhou, China, it was shown that the cycling infrastructure mitigates almost exactly the same amount of GHG emissions per year as emissions created by highway development when comparing dollar-for-dollar spending and led to a ten-fold emissions reduction per dollar spent on infrastructure compared to the development of metro rail systems. The study found that bicycle lanes like these in Colombia and China provide quantifiable economic benefits, paying for themselves in less than a year. They are a cost-effective way of reducing emissions compared to other approaches to decarbonising

transportation, as these networks create more economic value annually than they cost to build, given the transportation cost savings and the public health benefits of increased exercise.

Investments to promote sustainable consumption choices and behavioural changes are in progress globally. [Australia's](#) “Driving the Nation Fund” (2022), for example, is investing AUD 500 million to build a national EV charging network and hydrogen refuelling stations on highways. [China](#) plans to construct 26 000 stations for battery swapping by 2025, and [Italy](#) is investing EUR 741 million for the installation of 7 500 fast charging stations on the highway by 2025, 13 000 fast charging stations in urban centres, and 100 experimental charging stations with storage.

To promote the use of public transportation, [Saudi Arabia](#) has embarked on the ambitious [King Abdulaziz Public Transport Project](#) in 2023 investing USD 22.5 billion to construct 84 metro stations, six major metro lines, and over 800 buses across the city of Riyadh, planning to save around [400 000 litres of fuel](#) per day by reducing daily car trips by a quarter-million. To encourage active mobility, [France](#) is currently developing a new cycling fund with annual budget of EUR 250 million that aims to boost bike infrastructure and finance cycling lessons for 800 000 children. In [Brazil](#), 24 kilometres of protected cycling lanes have been constructed to date near public transport stations and key roads under the “Cycling Cities” initiative in Rio de Janeiro.

More and more G20 members are implementing large high-speed rail projects, including the [United States](#) with its Brightline West Project (connecting Los Angeles to Las Vegas) and its California High-Speed Rail Authority Project (connecting San Francisco to LA); [France](#), which plans to invest EUR 100 billion to in its railways by 2040. Most recently, [Türkiye](#) inaugurated 405 km of high-speed train line connecting Ankara and Sivas in 2023 as part of the goal to develop 2 228 km of new lines.

### **Case study: Bike lanes in Jakarta, Indonesia**

In Indonesia, the historic capital of Jakarta had implemented almost [300 kilometres](#) of new cycle lanes by the end of 2022, 73 kilometres of which are fully protected. This achievement surpasses Jakarta's initial 2022 target for new kilometres of cycle lanes by 50%.

Traditionally being a traffic choked city with enormous problems related to air pollution and commuting times, the City of Jakarta has worked closely with ITDP Indonesia and local partners to achieve the targeted 500 km of cycle lane network.

Jakarta's story is a good example of how effectively government-set incentives can shift behaviour, even when the demand for such changes was previously not there. Starting off from pop-up cycle lanes as a response to the Covid-19 pandemic, these lanes brought cyclists to the streets where they had never been before; in some cases, cyclist counts rose [by 1 000%](#) compared to pre-pandemic.

An online survey and field interview conducted after the implementation of pop-up cycle lanes suggest that many people are willing to cycle to commute, even longer distances, up to 11 km if the cycling infrastructure is built properly. In early 2021, the Provincial government committed to making the pop-up lanes permanent protected cycle lanes. The infrastructure investments into bike lanes are accompanied by coordinated campaigns and events, such as the city-led “bike share to work” campaign” to encourage bicycle use.

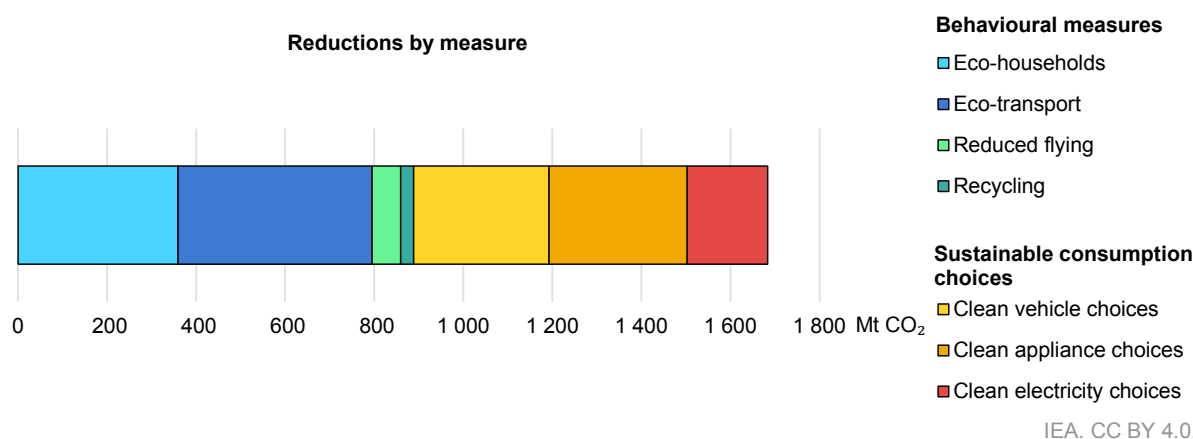
While some challenges still lie ahead for Jakarta to become a true Cycling-City, such as ensuring cyclists safety through laws and regulations, addressing high vehicles spends and continuing to make a higher share of bike lanes protected, the city has showcased how a traffic-heavy city with no previous cycling culture can take bold and successful steps towards lasting behavioural changes.

# Impacts of LiFE

## Energy and emissions

If adopted in G20, individual behavioural changes and sustainable consumer choices aligned with LiFE would reduce annual CO<sub>2</sub> emissions in G20 by almost 1.7 billion tonnes in 2030. This is a substantial share of the total emissions reductions from LiFE-aligned measures, which we estimated at around 2 billion tonnes at the world level in 2030 - representing about one-fifth of the emissions reductions needed by 2030 to put the world on a pathway towards net zero emissions. More than half of these emissions reductions are associated with behavioural changes while the rest comes from sustainable consumption choices.

### Reductions in annual CO<sub>2</sub> emissions in the G20 from Mission LiFE by measure, 2030



The largest share of emission reductions from behavioural changes in the G20 comes from the transport sector with 0.5 Gt, through increased use of public transport in cities, more eco-efficient driving practices, and reduced flying thanks to teleconferencing or modal shift to high-speed rail, for example. Another almost 0.4 Gt of emissions reductions are achieved in households by reducing indoor heating temperatures, increasing indoor cooling temperatures or turning off lights and appliances when not in use. A small portion of emissions reductions from behavioural change comes from industrial production for instance thanks to increased recycling.

Shifting consumer choices towards low-emissions options can contribute a further almost 0.8 Gt of emissions reductions. Over 0.3 Gt of these reductions come from households purchasing energy-efficient appliances and equipment and shifting to low-emitting technologies such as induction cooking and heat pumps. Household purchases of EVs result in further 0.3 Gt of emissions reductions, while the use of residential rooftop solar PV provides the remaining almost 0.2 Gt.



An essential component of reducing emissions from home appliances is improving access to clean cooking. In 2021, [2.4 billion people](#) worldwide had no access to clean cooking technologies. Efforts to promote electric or other low-emission cooking can contribute to advancing SDG7.1 and bring important health co-benefits, especially for women and children that are the most at risk (see section on air pollution).

In some sectors, such as aviation, attaining the level of reductions needed to achieve net zero emissions in the entire energy sector will be challenging. In these instances, LiFE-aligned measures can make the energy transition easier by reducing energy demand. For example, without behavioural change in aviation about 40% more sustainable aviation fuel would be needed globally in 2050 in a strong mitigation pathway. This would put further pressure on the already huge scaling up of low-emissions technologies needed in this scenario, such as renewable electricity, bioenergy, and low-emissions hydrogen production.

## Equity

Global energy consumption and the resulting emissions are highly unequal between and within countries. Globally, Russia is the region with the highest energy consumption per capita, followed by North America and the Middle East. On the other hand, Africa's and India's energy consumption are each just around one-third of the world average. But there are also large inequalities within countries. In advanced economies, the poorest 30% have per capita emissions below the global average, while the richest 10% have emissions seven-times the global average. In emerging market and developing countries, the richest 10% have per capita emissions above the poorest 80% of the population in advanced economies.

Household heat and electricity consumption, a portion of which is an essential energy service for all individuals, is more uniform across income groups. Meanwhile, energy related to personal transport sees particularly high disparities across major economies. Within transport, aviation-related emissions are especially [unequal](#).

On aggregate, there are more opportunities for LiFE-aligned measures to streamline energy demand and reduce emissions in advanced economies. Based on IEA modelling, the reductions in annual per capita CO<sub>2</sub> emissions from behavioural change in advanced economies by 2030 (relative to a 'business-as-usual' trajectory) are three- to four-times greater than in emerging market and developing economies.

In the IEA's strong mitigation scenario, a change in transportation habits, including the use of public transportation or carpooling, reduces passenger vehicle-kilometres by 22% in 2030 in advanced economies. In contrast, the impact of these actions in emerging market and developing economies is half of this in 2030 as per capita activity continues to expand from current levels by more than 35%. There is a similar split between the two groupings in the impact of changing cooling temperatures, as

proposed by Mission LiFE. This shows that LiFE-aligned measures tend to reduce global inequalities in per capita energy consumption.

## Air pollution and other benefits

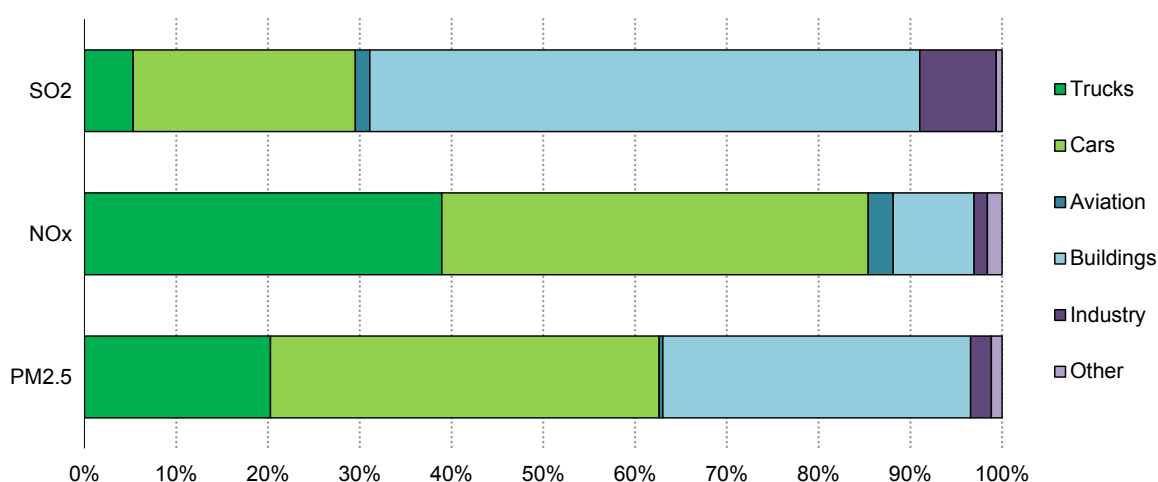
In 2021, air pollution caused around 7.8 million premature deaths worldwide, and cost about 6% of world GDP. Addressing household and ambient air pollution requires comprehensive policies to address all sources of air pollutants. Behavioural change cannot provide a silver bullet, but it can help.

Behavioural changes can help reduce different types of air pollution, depending on the sector. For example, around 60% of the reduction in sulfur dioxide (SO<sub>2</sub>) emissions from behavioural changes in a strong climate mitigation scenario by 2030 is associated with reduced emissions from space and water heating in buildings. In the same vein, behavioural changes associated with trucks and cars – such as driving at reduced speeds, increased cycling and walking, and reducing SUV use – account for almost 90% of behavioural-related reductions in harmful nitrogen oxides (NO<sub>x</sub>) emissions. Behavioural changes across all sectors can help cut emissions of fine particulate matter (PM<sub>2.5</sub>) – a pollutant particularly associated with respiratory diseases and premature deaths.

Depending on the region, we estimate that 5-15% of the total reductions in combustion-related pollutants in a strong climate mitigation scenario by 2030 come from behavioural changes. However, the resulting benefits to public health are likely to be more significant. This is because behavioural changes in buildings and transport, which are responsible for over 80% of total pollution reductions from behavioural changes, happen primarily in cities, where there are the highest levels of population density and thus exposure to air pollution.

In some places governments have brought about behavioural changes as a result of efforts to tackle air pollution. For example, with its expansion to cover the entire city by August 2023, London's Ultra Low Emission Zone (ULEZ) is anticipated to cut CO<sub>2</sub> emissions from road transport in the zone by 27 kt (about 1%), with a further reduction of 10% in harmful nitrogen oxides emissions and a 16% reduction in PM<sub>2.5</sub> emissions from vehicle exhausts.

## Reduction in air pollution from behavioural changes by sector, 2030



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LiFE-aligned measures can also deliver other co-benefits. Less polluting transport – such as EVs or public transport, can lead to health benefits by supporting more liveable cities with reduced noise and congestion, and improved road safety. Improved active health through walking or cycling and better dietary habits would also lower health expenditures and reduce the global epidemic of lifestyle-related diseases.

In the time of global energy and cost of living crisis, energy affordability is at the forefront of policy making agenda. LiFE-aligned measures could save consumers globally around USD 440 billion in 2030, according to the IEA’s modelling, which is almost 65% more than the total investments into clean energy in all [emerging markets and developing countries](#) excluding China.

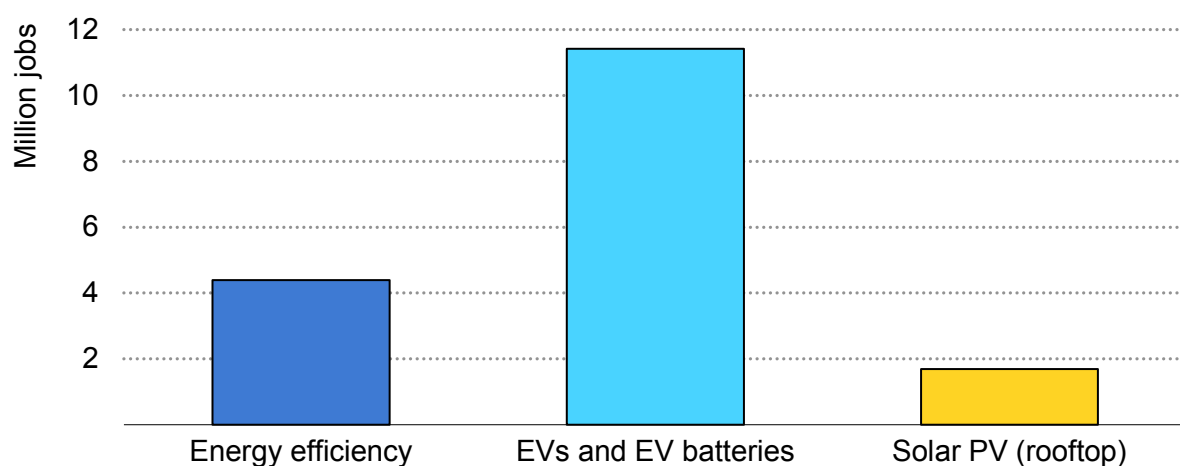
## Employment and economy

LiFE-aligned measures enable economic growth that maximises the synergies and minimises the trade-offs between climate ambition and G20 countries’ sustainable development agendas. As more and more people adopt behavioural changes and make sustainable consumption choices, the demand for clean energy technologies and energy efficiency will increase. To support this change towards a more sustainable economy, more clean energy jobs will be needed, creating career opportunities for former fossil fuel workers and new entrants alike.

Clean energy employment has been growing around 2% every year, with even higher increase expected in 2022. By 2030 almost [40 million](#) new jobs in clean energy are created by in the IEA’s strong mitigation scenario, further tilting the share of energy sector employment in favour of clean energy - from around half today to 80%. Around four-fifths of these new jobs will be created in G20 countries. The widespread shift

from internal combustion vehicles to EVs will require 11 million more workers than today to manufacture these vehicles and related components like batteries. Increasing number of rooftop solar installations in houses will generate almost 2 million new jobs. IEA analysis shows that around 11 million people were employed in energy efficiency in buildings and industry in 2019. In the residential sector, the number of qualified energy efficiency professionals will need to almost double to support individual decisions to retrofit homes and install efficient heating and cooling in residential buildings by 2030. For instance, almost 1.2 million additional workers specialised in heat pumps manufacturing, installation and maintenance will be needed to meet the growing demand for heat pumps. Upskilling and training new workers will be crucial to keep pace with the rapidly changing energy labour market and sustain the demand for low-carbon vehicles, efficient appliances and building renovations encouraged by Mission LiFE inspired policies globally.

### New jobs created by sustainable consumption choices and behaviour globally, 2030

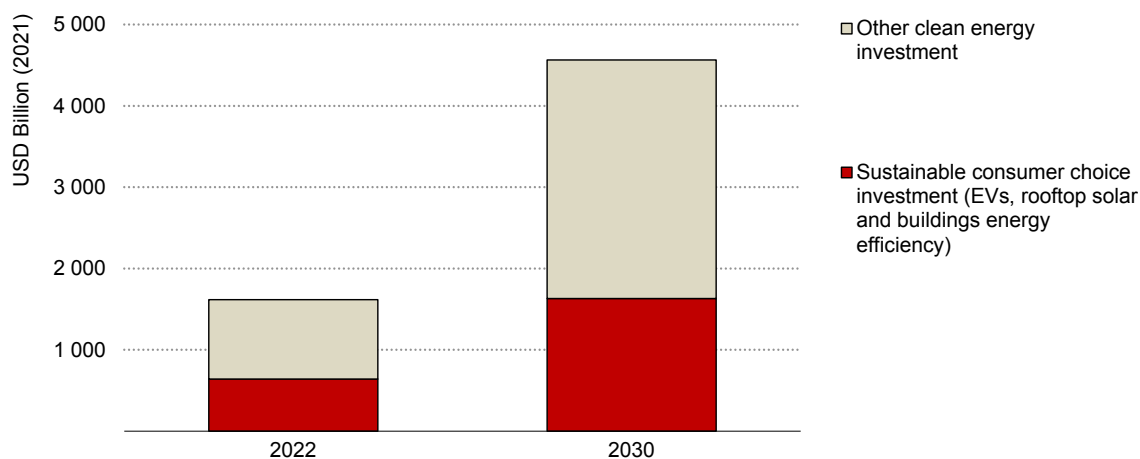


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LiFE-aligned investments by people and companies form a significant share of overall clean energy investments globally, and could be a major driver for new spending by 2030. Today, more than a third of total clean energy investments globally are attributed to activities or processes that result from sustainable consumption choices such as installing solar panels on residential buildings, purchasing electric vehicles or investing in energy-efficient upgrades of appliances and homes. These consumer-driven investments will need to triple by 2030 for it to be aligned to the Paris Agreement compliant pathway. Globally, on average USD 1.2 trillion will need to be spent annually until 2030 for consumer choice investments to limit global warming to 1.5 °C. Last year, USD 640 billion was spent in consumer-facing clean energy sectors, showing a substantial gap. Without a widespread adoption of sustainable consumption choices and policy support to enable it, consumers will make only a half of investments needed to pursue the net zero emissions pathway. Additional investments into urban infrastructure for non-motorised transport such as cycling or

walking, and public transport options such as light rail can unlock further emission reductions and enable a modal shift among people towards these low-emission options.

### Investment resulting from sustainable consumption choices globally by 2030



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## Health, water, food and land use

The measures outlined in Mission LiFE are environmentally holistic and go beyond the conservation of energy, improving the efficiency of resource consumption from energy to food and water, creating a multitude of environmental benefits.

Water is a finite resource under pressure, with more and more regions in the world at risk for water scarcity. LiFE-aligned measures, such as promoting water metres in homes, the cultivation of less water-intensive crops or turning off running taps when not in active use, can temper the rapidly increasing demand for water. LiFE-measures thereby address both sides of the energy-water nexus: lessening the impact of water availability on the different processes of the energy sector and the energy sector's impact on water quality and quantity. On a global level, the energy sector is responsible for [10% of global water withdrawals](#), and on the other side of the energy-water equation, the amount of energy used in the water sector is almost equivalent to the entire energy demand of Australia. These inter-dependencies between energy and water are set to intensify in the coming years, and Mission LiFE has the potential to significantly lower the economic and environmental risks arising from the water sector.

Sustainable consumption choices can play a significant role in reducing GHG emissions originating from outside the energy sector (about 25% of all emissions today), which are mainly associated with agriculture and land use. Globally, it is estimated that around 50% more food is produced than eaten, meaning that there is a large potential to reduce emissions from agricultural production simply by cutting

food waste. Dietary choices are important too: for example, reducing meat consumption can help to slow CO<sub>2</sub> emissions associated with clearing forests for pasture or animal crops. A shift to healthy and sustainable diets and a halving of food waste would reduce GHG emissions by around 700 million tonnes of carbon-dioxide equivalent (Mt CO<sub>2</sub>-eq) annually.

Today the world consumes about 70 exajoules (EJ) of bioenergy, equivalent to the entire energy consumption of the United States from all sources. Around 30 EJ of this is in the form of wood for cooking in households that lack access to modern forms of energy. Around 10% of global demand for agricultural products is for bioenergy uses in the energy sector. There are therefore clear links between land-use, the energy sector and consumption patterns in both sectors. Strong climate mitigation scenarios see an increase in the demand for bioenergy, at the same time as the land-use sector needs to meet growing food demand and preserve bioenergy and sequestered carbon. Demand side actions to lower wasteful consumption of bioenergy resources, and substitute bioenergy use with other fuels such as electricity, can therefore have important co-benefits for food affordability, biodiversity protection, and carbon sequestration in landscapes. Conversely, demand side measures in the food system, including reducing food waste and dietary change, can lower land-use demand.

# Outlook and recommendations

## Outlook for policies

This paper provides a high-level review of policies aligned with LiFE that are being implemented in G20 countries (see the collection in the Annex) and gives key results of the IEA's modelling of the potential impacts of measures to promote sustainable consumption choices and behavioural change on energy demand, emissions, and related co-benefits. This section takes a step back and provides an outlook for policies in the light of what has been achieved in the last several years and the findings of the IEA's modelling.

Demand-side measures are starting to receive more policy attention, amid growing understanding that net zero targets cannot be achieved with policies focusing only on energy production. This paper has found around 120 policies in G20 countries that align with the objectives of LiFE but given the high-level nature of the inventory compiled here the number is almost certainly higher. This is important, given the role that the decarbonisation of energy consumption will need to play in achieving climate targets. As noted above, the IPCC has estimated that by 2050, demand-side measures can reduce global GHG emissions in end-use sectors by 40-70%.

In the transport sector, significant progress has been made on shaping consumer choices towards the uptake of electric vehicles (EVs). In 2022, EVs accounted for around [15% of global car sales](#), up from less than 5% in 2020. The IEA now projects that as a result of rapidly growing EV penetration, global oil demand for road transport will peak already around the middle of this decade. However, there remain significant opportunities to promote modal shift away from road and aviation towards rail, facilitated by public investment in infrastructure. Likewise, interventions to promote active mobility (walking and cycling) and more efficient use of today's internal combustion engine vehicles have a large potential to reduce emissions and energy demand in the near-term. Globally, these measures could reduce CO<sub>2</sub> emissions from road in 2030 by more than 10%. In the aviation sector, commercial interest in the procurement of sustainable aviation fuels has grown substantially. However, demand side measures can also help the sector to meet its ICAO goal of net zero by 2050, and reduce the size of the scale-up of sustainable aviation fuels needed. Investments in high-speed rail in high traffic corridors and incentives to rationalise frequent flying can be considered.

In the buildings sector, standards and labelling policies for appliances have been widely rolled out in many countries over recent decades. These policies, and technological innovation, have had a significant impact on improving the energy efficiency of household and service sector appliances. A good example is India's Ujala scheme to support the diffusion of cost-effective LED lights, which has contributed to an extremely fast market transformation. Building codes for new

buildings are also widely deployed across many countries, although full implementation remains a challenge in some markets. However, additional attention can be paid to policies that support consumers to use energy more efficiently in buildings. For example, following India's example and setting a default temperature of 24 °C for air conditioners, while leaving consumers the choice to adjust temperatures as desired, can close 50% of the gap in space cooling energy demand between a business-as-usual scenario and a strong mitigation scenario consistent with limiting warming to 1.5 °C.

In the industry sector, progress has been made on expanding the pipeline of demonstration projects for key large-scale technologies such as hydrogen direct reduced iron for steelmaking. Cost pressures mean that energy intensive industries are already quite energy efficient globally, although there is always space for improvement. However, policies aiming to mitigate the throughput of energy intensive materials across the economy are also an important part of net zero strategies. These include incentives and smarter product design for increased recycling, product light-weighting and product life extensions.

Overall, measures to promote sustainable consumer choices and behavioural change can play an important role in sustainable energy transitions, complementary to policies aiming to reduce emissions from energy supply. Technology innovation related to digitalisation and information technology can also be an [enabler](#) of measures aligned with LiFE, although care needs to be taken with privacy concerns and public acceptance (see below). The increasing attention paid to demand side measures highlighted in this paper is welcome; however, the above discussion shows that there is more potential that can be tapped from policies aimed at informing, nudging and incentivising more sustainable consumer choices and behavioural change.

## Public acceptance

All efforts to promote more sustainable consumption and lifestyle choices must fulfil one crucial condition to succeed: public acceptance. The details of the measures introduced and the way they are handled are important: some measures might be unpopular unless handled in a transparent manner and perceived as being fair and just. If citizens perceive the scheme's impacts as socially unfair, acceptance collapses. In contrast, changes which are perceived as fair and just, particularly those which involve curbing excessive energy use, may be particularly well supported. [Citizen assemblies](#), for example, have revealed widespread support for taxes and quotas to be applied to frequent and long-distance flyers.

The onus rests on governments to explain in a transparent manner not only how re-assessing one's own consumption choices is essential to meet climate goals, but also to emphasise the many co-benefits, including improved health and well-being, cleaner air, less traffic congestion, cheaper fuel bills and fewer road traffic injuries,



as assessed in London after the introduction of Low Traffic Neighbourhoods. Policy makers can also enhance public support for behavioural interventions through so-called green earmarking - tying the use of additional revenues generated through a new behaviour policy to emissions-reducing activities. In some cases, government legislation may need to lead the way on the basis that public support would strengthen as the co-benefits of the changes become apparent. For example, before congestion charging was introduced [in Stockholm](#), it was supported by around 40% of the public. Five years after its introduction, support had increased to about 70%.

It is evident in any case that not everyone will be able or willing to implement all of the actions proposed by LiFE all of the time. Cultural preferences, affordability and personal welfare would all play a part in determining where, and to what extent, they could be implemented.

## Six key principles of LiFE

LiFE aims to bring individual and community behaviour at the forefront of the international climate debate and seeks to enable people to make environmentally conscious choices a part of their lifestyles, enabled by the enhanced availability of environmentally sustainable technologies.

- **Different countries face different circumstances:** Cultural traditions and policy-making priorities vary in different countries due to different climates, urbanisation rates and existing infrastructure. Some countries will prefer to focus on how consumers can drive technological and market transformation through their consumption choices; others may focus more on behavioural change. There is no one-size-fits-all approach to promoting behavioural change and sustainable consumption. LiFE can provide a guidance, but countries will need to choose their own priorities.
- **LiFE builds upon existing policy approaches:** There is momentum for LiFE related policies: all G20 countries are already taking measures related to LiFE. Many focus on energy efficiency in buildings, the adoption of EVs, the use of public transport, the deployment of rooftop solar PV, or reducing excess energy consumption for heating. To address the global energy crisis, many governments are increasingly putting in place policies and campaigns focused on energy savings. The objective of LiFE is therefore not to duplicate these policies but to ensure a more active and impactful engagement of consumers and citizens.
- **Governments lead the way for enabling LiFE-aligned choices:** Individuals are the building blocks of society. How they behave and choose to consume is shaped by norms, policies and the incentives and infrastructure around them. LiFE should have an active focus on how policies can enable consumer choice and behavioural change.
- **LiFE benefits from an international dialogue:** LiFE is central to people locally but international cooperation offers an opportunity for countries to share best practices and success stories, and to ensure linkages between different policy areas.

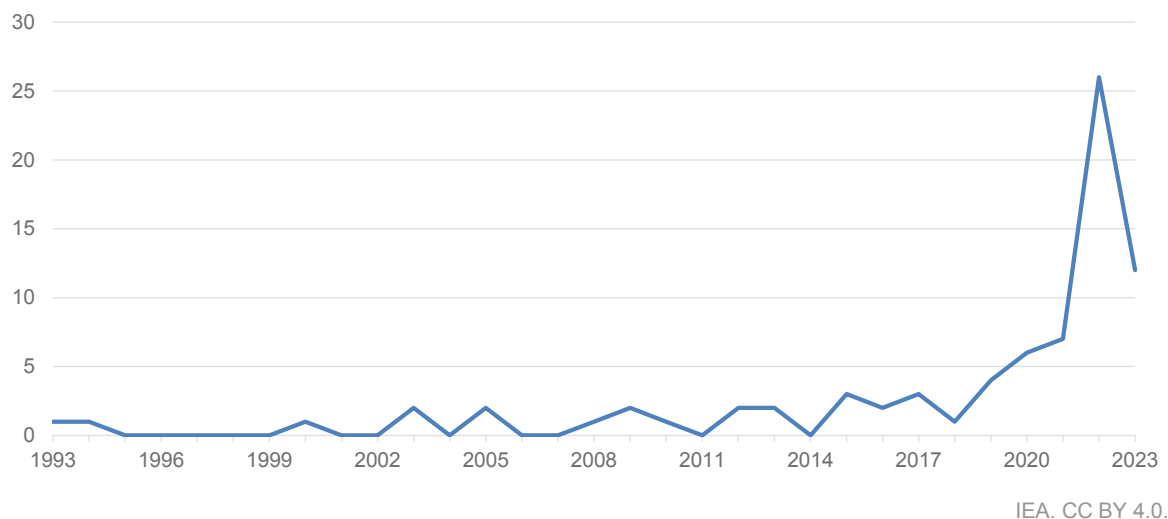
- **LiFE is compatible with economic development:** A strong political stimulus provides the conditions to grow a green economy by supporting the technological transition and investments in key areas. LiFE is promoting interlinkages between the development and environment agendas. A climate resilient development is at the heart of this effort, supporting countries to industrialise and alleviate poverty while decarbonising.
- **LiFE has a positive impact on the environment:** Many LiFE actions are energy-related, including choosing to use public or active transport, adopting energy-efficient appliances, installing rooftop solar panels, and practising fuel-efficient driving. But LiFE goes beyond energy. 'LiFE actions' in daily life also help to conserve water, reduce waste and plastic use, promote healthy lifestyles, and develop sustainable food systems.

# Annex: A high-level inventory of LiFE-aligned policies in the G20

Changes in technology choice and consumption behaviour can and do happen. From diet to smoking to throw-away plastic packaging, past experience shows that people’s attitudes and consumption habits are not set in stone. The assumption that people’s lifestyles and patterns of consumption will continue unaltered in a scenario of net zero emissions is arguably unrealistic, and risks ignoring the potential for individuals, via their choices and habits, to help steer the energy system onto a sustainable path.

Our high-level policy inventory confirms that although LiFE-aligned policies have been increasingly adopted in the G20 since the 1990s, the current momentum for bringing citizens on board as active participants of the energy transition is unprecedented. Since 2021, the number of Mission LiFE-aligned policies more than doubled in the G20. The biggest surge in policy-making activity happened last year, and many planned policies indicate that this trend will likely continue this year.

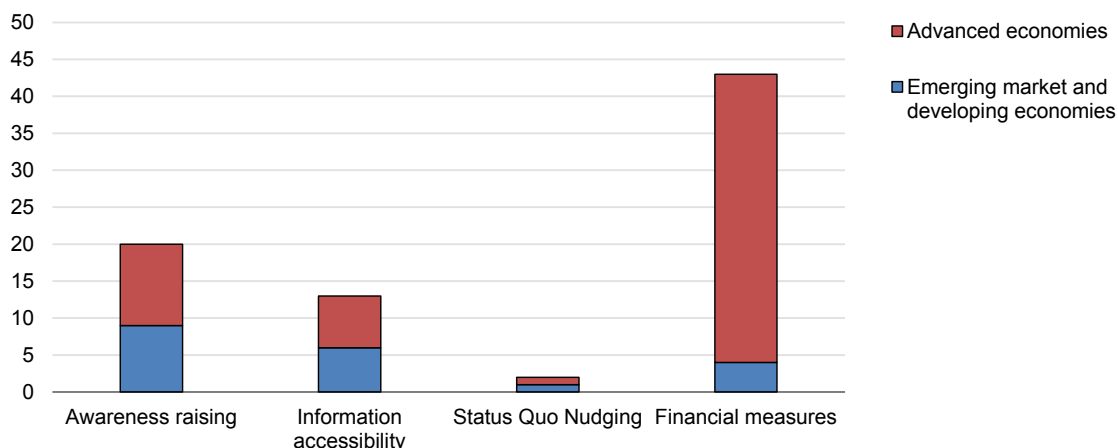
**Number of LiFE-aligned policies in the G20 by year of adoption**



LiFE-aligned policies have been adopted in all G20 countries. However, if we exclude mandatory standards that have more prescriptive nature and public investments, there are differences between regions with regards to the types of policies that are preferred. Policies aiming at raising awareness and improving information accessibility are equally spread across advanced economies and emerging market and developing economies within the G20. On the other hand,

financial measures are almost ten times more common among advanced economy G20 members. Status quo nudges are currently lagging behind other policy types in almost all G20 countries, but existing examples have an equal regional representation.

### Number of selected LiFE-aligned policies in the G20 by region



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The following table presents key examples from the current policy landscape that enable sustainable consumption choices and behavioural changes in the G20. The table is non-exhaustive and serves as an overview of the most prominent, well-established or innovative policies across all six policy categories in the G20.

|                           | Awareness raising   | Information accessibility  | Status quo nudging                                  | Financial measures   | Mandatory standards  | Public investments  |   |
|---------------------------|---|--|---|--|--|---|---|
| <b>Behavioural change</b> | <p><a href="#">Argentina</a> (2022): “Let’s take care of resources, let’s take care of our country” campaign</p> <p><a href="#">France</a> (2022): “Chaque geste compte” campaign</p> <p><a href="#">France</a> (2022): “Les gestes utiles, utiles pour tous” campaign of EDF</p> <p><a href="#">Germany</a> (2022): “80 million together for the energy transition” campaign</p> <p><a href="#">Indonesia</a> (2022): Energy Saving Ambassador Programme</p> <p><a href="#">Indonesia</a> (2017): Cut 10% campaign</p> | <p><a href="#">Canada</a> (2022): Beat the Peak pilot campaign in Yukon</p> <p><a href="#">France</a> (2022): Ecowatt website offering real-time information about grid congestion</p> <p><a href="#">France</a> (2022): Ecogaz website offering real-time information about grid congestion</p> <p><a href="#">France</a> (2015): Smart electricity meters programme (Linky)</p> <p><a href="#">India</a> (2009): Smart Meter National Programme</p> <p><a href="#">Japan</a> (2017): Home energy reports</p> | <p><a href="#">India</a> (2019): AC@24 campaign</p> | <p><a href="#">EU</a> (2012): EU ETS update to include aviation emissions</p> <p><a href="#">EU</a> (2021): Carbon content-related fuel taxation for aviation</p> <p><a href="#">Germany</a> (2022 temporary): 9-Euro Germany-Ticket (now 49 Euros)</p> <p><a href="#">France</a> (2022): Forfait mobilité durable – subsidy for sustainable commuting</p> <p><a href="#">France</a> (2023): Bonus for carpooling</p> <p><a href="#">France</a> (under development): Heavy taxation of private jets</p> <p><a href="#">France</a> (2022): Increased telework compensation</p> <p><a href="#">Italy</a> (2022): Transport Bonus for public transport subscriptions</p> <p><a href="#">Korea</a> (2018): MTC Card incentives for public transport, cycling and walking</p> | <p><a href="#">EU</a> (2012): EU ETS update to include aviation emissions</p> <p><a href="#">EU</a> (2021): Carbon content-related fuel taxation for aviation</p> <p><a href="#">Germany</a> (2022 temporary): 9-Euro Germany-Ticket (now 49 Euros)</p> <p><a href="#">France</a> (2022): Forfait mobilité durable – subsidy for sustainable commuting</p> <p><a href="#">France</a> (2023): Bonus for carpooling</p> <p><a href="#">France</a> (under development): Heavy taxation of private jets</p> <p><a href="#">France</a> (2022): Increased telework compensation</p> <p><a href="#">Italy</a> (2022): Transport Bonus for public transport subscriptions</p> <p><a href="#">Korea</a> (2018): MTC Card incentives for public transport, cycling and walking</p> | <p><a href="#">United Kingdom</a> (2023): Ultra Low Emissions zone in London</p> <p><a href="#">EU</a> (2008): Low- or zero-emissions-zones and driving bans</p> <p><a href="#">France</a> (2021): Urban speed limits of 30 km/h in many cities</p> <p><a href="#">France</a> (2023): Ban of short-haul domestic flights</p> <p><a href="#">Korea</a> (2019): Green traffic area in Seoul</p> <p><a href="#">Mexico</a> (2014): “Hoy no circula” programme restricting access to older vehicles in Mexico City</p> <p><a href="#">Italy</a> (2019): Low emissions zone with payment in Milan</p> <p><a href="#">Italy</a> (2022): Mandatory limitation of heating temperature to 19 °C and cooling temperature to 25 °C in public buildings (temporary)</p> | <p><a href="#">France</a> (2023-2040): Rail infrastructure investments</p> <p><a href="#">France</a> (under development): Cycling fund for bike infrastructure</p> <p><a href="#">Germany</a> (2021-2030): National Cycling Plan</p> <p><a href="#">India</a> (2021): Expansion of metro rail network</p> <p><a href="#">Saudi Arabia</a> (2023): King Abdulaziz Public Transport Project</p> <p><a href="#">United States</a> (2023): Sidewalk conditions nationwide under the Low Carbon City Act</p> <p><a href="#">United States</a> (2021): Public Transit Capital Investment Grants for transit modernisation</p> <p><a href="#">United States</a> (2026-2029): Brightline West and California High-Speed Rail Authority projects</p> |

|                                | Awareness raising  | Information accessibility | Status quo nudging | Financial measures   | Mandatory standards | Public investments   |
|--------------------------------|--|---------------------------|--------------------|--|---------------------|--|
| Behavioural change (continued) | <p><a href="#">Japan</a> (2005): “Warm Biz” campaign</p> <p><a href="#">Japan</a> (2005): “Cool Biz” campaign</p> <p><a href="#">Brazil</a> (2022): Green June campaign</p> <p><a href="#">Japan</a> (2003): 10 Eco-driving recommendations to reduce fuel consumption</p> <p><a href="#">India</a> (2021): Mission Lifestyle for Environment</p> <p><a href="#">Italy</a> (2022): “Italia in classe A” campaign</p> <p><a href="#">Korea</a> (2023): “Save 1kWh a Day” campaign</p> |                           |                    | <p><a href="#">Korea</a> (2022): High deduction of taxable income of public transportation expenses</p> <p><a href="#">United Kingdom</a> (2003): Congestion charges in London</p> <p><a href="#">United States</a> (2021): Emergency Load Reduction Program in California</p> |                     | <p><a href="#">Brazil</a> (2023): Cycling lanes as part of Low emissions zone in Rio de Janeiro</p> <p><a href="#">Indonesia</a> (2004): Bus Rapid Transit Systems</p> |

|  | Awareness raising   | Information accessibility  | Status quo nudging  | Financial measures   | Mandatory standards  | Public investments  |
|--|---|--|---|--|--|---|
| <b>Sustainable consumption choices</b> | <p><a href="#">Canada</a> (2022): Zero Emissions Vehicle Awareness Project</p> <p><a href="#">India</a> (2021): “Go Electric” campaign</p> <p><a href="#">India</a> (2021): E-mobility awareness web portal e-AMRIT</p> <p><a href="#">Japan</a> (2015): Cool Choice Campaign</p> <p><a href="#">United States</a> (2017): Energy Star national campaigns</p> <p><a href="#">China</a> (2022): Campaign for Electric Car Sales in rural China</p> <p><a href="#">China</a> (2010): EV subsidy program</p> | <p><a href="#">Australia</a> (1993): Nation-wide House Energy Rating Scheme</p> <p><a href="#">EU</a> (1994): The EU energy label</p> <p><a href="#">Argentina</a> (2000): Energy labelling scheme for household appliances</p> <p><a href="#">India</a> (2019): Star Labelling Programme for Residential Buildings</p> <p><a href="#">South Africa</a> (2008): Labelling scheme indicating emissions standards of new passenger vehicles</p> <p><a href="#">Argentina</a> (2019): Energy efficiency labelling for housing in Santa Fe</p> <p><a href="#">Russia</a> (2012): Energy efficiency labelling scheme of residential buildings</p> | <p><a href="#">Germany</a>: Green electricity default-tariffs in some regions</p> | <p><a href="#">Australia</a> (2022): Electric car discount</p> <p><a href="#">China</a> (2020): Subsidies for battery-swap models</p> <p><a href="#">France</a> (2020): MaPrimeRénov’ subsidies for replacement of oil boilers and energy-efficient renovations</p> <p><a href="#">France</a> (2022): Conversion bonus for the acquisition of E-bicycles</p> <p><a href="#">France</a> (2020): Prime à la conversion - subsidies for EVs or H<sub>2</sub> vehicles</p> <p><a href="#">France</a> (2023): Zero-interest loans for clean vehicle acquisition in some urban areas</p> <p><a href="#">France</a> (2023): Tax credit for EV charging points installation</p> <p><a href="#">Germany</a> (2022): Germany Federal Subsidy for Efficient Buildings</p> | <p><a href="#">China</a> (2022): Green requirements for majority of new building space</p> <p><a href="#">China</a> (2020): Restrictions on production, sale and use of some plastic products</p> <p><a href="#">EU</a> (2023): Ban of ICE car sales after 2035</p> <p><a href="#">France</a> (2023): Prohibition to rent energy-inefficient apartments</p> <p><a href="#">India</a> (2022): Vehicle Scrappage Policy</p> <p><a href="#">India</a> (2007): Mandating the use of solar water heaters in Bengaluru</p> <p><a href="#">United Kingdom</a> (2022): Ban of fossil-fuel boilers in new homes from 2025</p> <p><a href="#">France</a> (2022): Ban on fossil-fuel boilers in new homes from 2022</p> <p><a href="#">Germany</a> (under development): Ban on fossil-fuel boilers installations from 2024</p> <p><a href="#">Canada</a> (2022): Zero carbon building standard for new buildings from 2025 in the City of Victoria</p> <p><a href="#">Canada</a> (2021): Ban on installing and repairing oil boilers in new</p> | <p><a href="#">Australia</a> (2022): Driving the Nation Fund for a national EV charging network</p> <p><a href="#">United States</a> (2022): National EV Infrastructure Formula Program</p> <p><a href="#">United States</a> (2021): American Jobs Plan investments in rail services</p> <p><a href="#">Italy</a> (2023-2025): Installation of EV charging infrastructure</p> |

|   | Awareness raising | Information accessibility | Status quo nudging | Financial measures   | Mandatory standards  | Public investments |
|---|-------------------|---------------------------|--------------------|--|--|--------------------|
| Sustainable consumption choices (continued) |                   |                           |                    | <p><a href="#">Germany</a> (2020): Scrappage bonus for replacing oil heating</p> <p><a href="#">Germany</a> (2016): Government Programme for Electric Mobility</p> <p><a href="#">Germany</a> (2021): Higher parking fees for SUVs in some cities</p> <p><a href="#">India</a> (2015): Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme</p> <p><a href="#">Indonesia</a> (2023): Subsidy programme for electric two-wheelers</p> <p><a href="#">Italy</a> (2022): Alto Bonus for the purchase of low-emitting cars</p> <p><a href="#">Italy</a> (2023): Superbonus 90% for tax deduction of energy-efficient renovations</p> <p><a href="#">Japan</a> (2023): Eco-home Support Program for acquisition and renovation of energy-efficient homes</p> | <p>and existing residential buildings in Quebec</p> <p><a href="#">United States</a> (2019): Ambitious building codes in California</p> <p><a href="#">Brazil</a> (since 2016): Ban of inefficient light bulbs</p> <p><a href="#">South Africa</a> (since 2016): Ban on inefficient incandescent light bulbs</p> <p><a href="#">Russia</a> (under development): Ban of certain plastic products</p> <p><a href="#">Argentina</a> (2014): MEPS for air conditioners</p> <p><a href="#">Mexico</a> (2018): MEPS for refrigerators and freezers</p> <p><a href="#">Türkiye</a> (2022): Mandatory energy efficiency standards in buildings including 5% renewable energy use from 2023</p> <p><a href="#">Indonesia</a> (2021): Assessment of Green Building Performance with mandatory energy efficiency requirements for large residential buildings</p> |                    |



|   | Awareness raising | Information accessibility | Status quo nudging | Financial measures   | Mandatory standards | Public investments |
|---|-------------------|---------------------------|--------------------|--|---------------------|--------------------|
| Sustainable consumption choices (continued) |                   |                           |                    | <p><a href="#">Japan</a> (2009): Eco-car tax reduction for low-emissions vehicles</p> <p><a href="#">Japan</a> (2020): Plastic bag charge policy</p> <p><a href="#">Korea</a> (2023): EV subsidy</p> <p><a href="#">Korea</a> (2013): Early vehicle scrap subsidy</p> <p><a href="#">Korea</a> (2021): Rebate on highly energy efficiency electric appliances for low-income households</p> <p><a href="#">Saudi Arabia</a> (2019): High Efficiency AC Initiative</p> <p><a href="#">United Kingdom</a> (2022): Help to Heat schemes</p> <p><a href="#">United Kingdom</a> (2022): Boiler Upgrade Scheme - Grants for replacement of oil and gas boilers</p> <p><a href="#">United Kingdom</a> (2022): VAT exemption for installation of energy saving materials</p> |                     |                    |

|   | Awareness raising | Information accessibility | Status quo nudging | Financial measures   | Mandatory standards | Public investments |
|---|-------------------|---------------------------|--------------------|--|---------------------|--------------------|
| Sustainable consumption choices (continued) |                   |                           |                    | <p><a href="#">United Kingdom</a> (2023):<br/>Scrappage bonus for polluting cars in London</p> <p><a href="#">United Kingdom</a> (2013):<br/>Ultra Low Emission Discount for low-emitting cars in London</p> <p><a href="#">United States</a> (2022):<br/>Tax credits for EVs</p> <p><a href="#">United States</a> (2022):<br/>Direct consumer rebates for heat pumps and other energy-efficient appliances</p> <p><a href="#">United States</a> (2023):<br/>Tax credit for improvements in home energy efficiency</p> <p><a href="#">United States</a> (2023):<br/>IRA Clean Vehicle Credit</p> |                     |                    |

Notes: China's EV subsidy programme has since been adapted with annual caps for eligible vehicles. Recognising the increasing cost-competitiveness of EVs, the subsidy has been phased down in the form of a base subsidy amount reduction of 10%, 20% and 30% each year from 2020 to 2022. China launched a latest EV subsidy programme in March 2023, covering the sales of 200 000 electric motorcycles and 35 900 EVs/IRA = Inflation Reduction Act/EU ban on ICE car sales is exempting combustion engines that use climate-neutral fuel only (E-fuels)/Ultra Low Emission Discount for low-emitting cars in London running out later in August 2023/Final vote on the fossil-fuel boiler ban in Germany is expected in 2023.

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