

Fast-tracking Net Zero by Building Climate and Economic Resilience

A Summary for Policymakers



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Preface

In the last ten years, we have made progress on the climate transition but it has not been fast enough. When the Paris Agreement was adopted in 2015, the world was on a path towards a rise in global temperatures by up to 4.8°C by the end of the century. Today, thanks to strengthened policies and growing international commitment, that trajectory has improved, with current estimates pointing to an increase in average global temperature of 2.6°C to 3.1°C by 2100. This is meaningful progress – but it remains well above the 1.5°C degree target set in Paris.

To close the gap between ambition and implementation, we must accelerate our efforts and ensure effective implementation. Yet, the OECD has estimated that in the last three years action to strengthen climate change policies has slowed down, with policy stringency only increasing by 1-2% annually in 2022 and 2023 compared with 10% on average in the previous decade.

This report summarises key insights from the second phase of the OECD's Horizontal Project "Building Climate and Economic Resilience: Net Zero+". The report offers governments insights and recommendations to support national and international efforts to meet the climate challenge, including on the design of coherent policy packages, innovative governance, accelerated innovation, citizen engagement, and financing aligned with the goals of the Paris Agreement. Governments will also need to invest in people – through education, skills and robust social protection frameworks. As shown in the report, a people-centred approach can help rebuild trust in governments' ability to deliver on climate goals, manage the labour market impacts of the transition and empower individuals to engage proactively in climate action.

The report reaffirms that it is still possible to achieve net zero, and demonstrates that climate action, when grounded in sound policy design, can drive economic opportunity and strengthen societal resilience. It draws on the Organisation's multidisciplinary expertise to offer a practical roadmap to accelerate climate action – helping to meet the climate challenge with the urgency, scale and co-ordination it demands.



Mathias Cormann
OECD Secretary-General

Foreword

The OECD horizontal project *Building Climate and Economic Resilience (Net Zero+)* draws on the Organisation's substantial body of climate policy research to identify policy solutions to support governments in their net-zero transitions. The project's first phase (2021-2022) culminated in a report synthesising work spanning 17 OECD policy committees, making a central contribution to organisationwide efforts to support climate policy action.

Phase II of the project (2023-2024) continued to provide insights and recommendations on emerging climate policy issues, with particular emphasis on how to deliver the immediate and drastic emissions reductions needed this decade to keep the Paris Agreement's temperature targets within reach, while also improving resilience to climate impacts and other disruptions. These issues are explored throughout the **Net Zero+ Policy Papers Series**, which draws on the work of over 20 OECD policy committees and bodies. The series was launched by the framing paper "Closing in on net zero" and comprises the following additional papers:

- Green industrial policies for the net-zero transition
- Climate change adaptation: Policies for a resilient future
- Aligning finance with climate goals
- Harnessing trade and environmental policies to accelerate the green transition
- The carbon footprint of everything
- Scaling up finance and investments for climate change adaptation
- A place-based approach to climate action and resilience
- Unlocking the potential of demand-side climate mitigation strategies
- Packaging and sequencing policies for more effective climate action
- Engaging and empowering citizens for the net-zero transition
- Leveraging positive tipping points in the race to net zero
- Governing for the green transition
- Targeting methane emissions to mitigate the risk of climate overshoot
- Ensuring a just transition to net-zero emissions
- The ocean economy and climate change nexus: The case of Portugal

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The authors are very grateful to all the colleagues and experts who authored and contributed to the 15 policy papers that make up the *Net Zero+ Policy Papers Series*,

including from the OECD Centre for Entrepreneurship, SMEs, Regions and Cities; Centre for Skills; Centre for Tax Policy and Administration; Centre on Well-Being, Inclusion, Sustainability and Equal Opportunity; Development Centre; Development Co-operation Directorate; Directorate for Education and Skills; Directorate for Employment, Labour and Social Affairs; Directorate for Financial and Enterprise Affairs; Directorate for Science, Technology and Innovation; Economics Department; Environment Directorate; General Secretariat; Public Governance Directorate; Statistics and Data Directorate; Trade and Agriculture Directorate; the International Energy Agency; Ecological Economics; the University of Exeter and S-Curve Economics. The team is also grateful for the invaluable insight and guidance provided by members of the Net Zero+ High-level External Advisory Panel.



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Executive Summary

Climate action has never been more urgent. The year 2024 was the hottest on record and the first to exceed 1.5°C of warming on average. It is now increasingly likely that global average temperatures will overshoot the Paris Agreement's 1.5°C temperature goal. The scale of recent events linked to climate change impacts, from floods in Spain in late 2024 to wildfires in Los Angeles in early 2025, is a reminder of the risks that climate change poses to human and economic security.

Achieving net-zero emissions is still possible, however. Even if 1.5°C is exceeded temporarily, minimising overshoot is crucial to limiting the risk of crossing climate system tipping points and lessening the severity of climate change impacts (OECD, 2024_[1]). Emissions must fall drastically by 2030 to remain consistent with Paris Agreement objectives. The next five years are critical to speeding and scaling up innovation and investment.

Countries have set net-zero targets and Nationally Determined Contributions (NDCs) under the Paris Agreement outlining medium-term targets, but even if implemented in full, collectively these still fall short of what is needed (OECD, 2024_[2]). Policy mixes are beginning to take effect, with significant emissions reductions achieved in some countries, but even scaling up the most effective policy mixes currently in place to all sectors globally would not be enough (Stechemesser et al., 2024_[3]). Closing the ambition and implementation gaps requires the transformation of industries, economies, societies, and individual behaviours at an unprecedented scale and pace.

Supporting the transition to net zero requires aligning finance with climate policy goals. In 2022, new investments in clean energy reached USD 1.7 trillion – more than the USD 1.5 trillion invested in fossil fuels – but amounting to only a small share of total investments (total gross fixed capital was USD 26.4 trillion in 2022) (OECD, 2024_[4]).

Ambitious climate action is compatible with economic growth. The next round of NDCs is an opportunity to step up efforts to reach national climate objectives and build climate resilience. In the short term, strengthened NDCs – if implemented through well-designed policies and supported by adequate finance and investment – can accelerate the development of efficient energy systems, create quality jobs, and spread economic co-benefits such as improved energy access, enhanced energy security, and better health outcomes. These advantages

balance out the costs of implementing more stringent climate policies, with no dampening but a slight boost to global GDP compared with current policy trajectories in the short to medium term (OECD, 2025_[5]). Over the long term, through 2050 and beyond, the escalating costs of climate change due to insufficient mitigation action reinforce the economic case for greater ambition and swift implementation today.

Over the long term, through 2050 and beyond, the escalating costs of climate change due to insufficient mitigation action reinforce the economic case for greater ambition and swift implementation today.

The race to seize the economic benefits of the net-zero transition is well underway. The global market for six main green energy technologies – solar PV, wind, electric vehicles (EVs), batteries, electrolyzers and heat pumps – exceeded USD 700 billion in 2023 and, in today's policy landscape, is set to nearly triple by 2035, reaching

a value close to that of the global crude oil market in recent years (IEA, 2024_[6]). Governments at all levels are implementing strategies to harness the economic opportunities associated with this market growth with the aim of achieving multiple objectives, including rapidly accelerating climate action, increasing economic and energy security and supply chain resilience, and promoting economic growth. Industrial policies targeted at environmental outcomes (or “green” industrial policies) could help to push the technology frontier and rapidly accelerate climate action, but poorly designed measures may undermine incentives for innovation and competition, leading to loss of public support for the globally integrated markets needed to ensure all can benefit from the green transition. Development co-operation and increased finance from all sources, in line with the Paris Agreement’s New Collective Quantified Goal, are essential to ensure that developing economies are not left behind.

Accelerating climate action requires public support, which means empowering and bringing citizens on board. The benefits and costs of the net-zero transition must be shared fairly, both to ensure equity and build support for the policy measures needed to drive progress. Low trust in government, particularly with respect to complex policy issues such as climate change, makes this challenging, but a growing number of governments are adopting innovative approaches to engage citizens and promote sustainable behaviours. The transition must be just, or risks being significantly slower or not happening at all.

The ***Net Zero+ Policy Papers Series***, representing Phase II of the [OECD Horizontal Project on Climate and Economic Resilience](#), synthesises contributions from over 20 OECD committees and bodies to provide recommendations and insights for governments to meet their objectives of a rapid and resilient transition to net zero while enhancing economic and societal resilience to climate change impacts. The key messages below are drawn from the 15 policy papers in this series, listed in the foreword to this summary.

KEY MESSAGES

Meeting net-zero objectives is still possible

- **“Green” industrial policies can help activate positive tipping points** to advance the development and adoption of new technologies and accelerate emissions reductions, but entail risks and require careful policy design.
- **Well-designed policy packages** that take into account policy interactions and sequencing can create the necessary conditions for rapid progress.
- **Decisive action on methane emissions** can act as a handbrake on global warming, buying precious time.
- By encouraging energy efficiency, promoting behavioural change, and shifting consumption patterns, **demand-side policies have significant mitigation potential**, but have been relatively underutilised to date.
- **Governments themselves will need to reform**, for example through innovative institutional arrangements, aligning public budgets, backing place-based climate action, and developing agile regulatory environments to be able to implement policies at the scale and pace needed.

The net-zero transition needs to bring workers and citizens on board

- **Building and maintaining public support** for climate policies (and trust in government more broadly) depends on an effective **government-citizen interface** and genuine commitment to ensuring a just transition that leaves no workers, households, regions, or countries behind.
- **Harnessing the foundational importance of education** can empower people to take and shape climate action and to acquire the skills needed for the emerging net-zero economy.

Trade, finance and investment can accelerate climate action

- Open markets and trade play an important role in accelerating climate action, including through **trade in environmental goods and services and enabling the circular economy**. Yet growing use of **government support** as part of “**green**” **industrial policy** risks undermining well-functioning global markets and increasing trade tensions. Efforts are also needed to address government support that encourages more emissions-intensive production.
- **Aligning finance and investment** from all sources with climate goals will rely on a wide range of policies across the real economy and financial sector.

Climate adaptation efforts and investments need to be intensified

- More efforts are needed to **build resilience to climate impacts**. This requires an iterative, **place-based approach** to **climate adaptation policymaking**, investing in resilient infrastructure, and adopting nature-based solutions.
- **Scaling up adaptation finance** remains challenging and relies on clear investment frameworks as part of national adaptation plans, integrating resilience within green budgeting, improving transparency, and leveraging insurance and risk transfer mechanisms.

Bridging knowledge gaps can improve the effectiveness of climate policies

- These gaps include the need to better understand the **effectiveness of specific climate policy packages** for mitigation and adaptation, improved tracking of **alignment of finance** with climate goals, identifying and communicating the **carbon footprint of individual products**, and **more data** to determine climate and transition impacts and risks in developing countries.



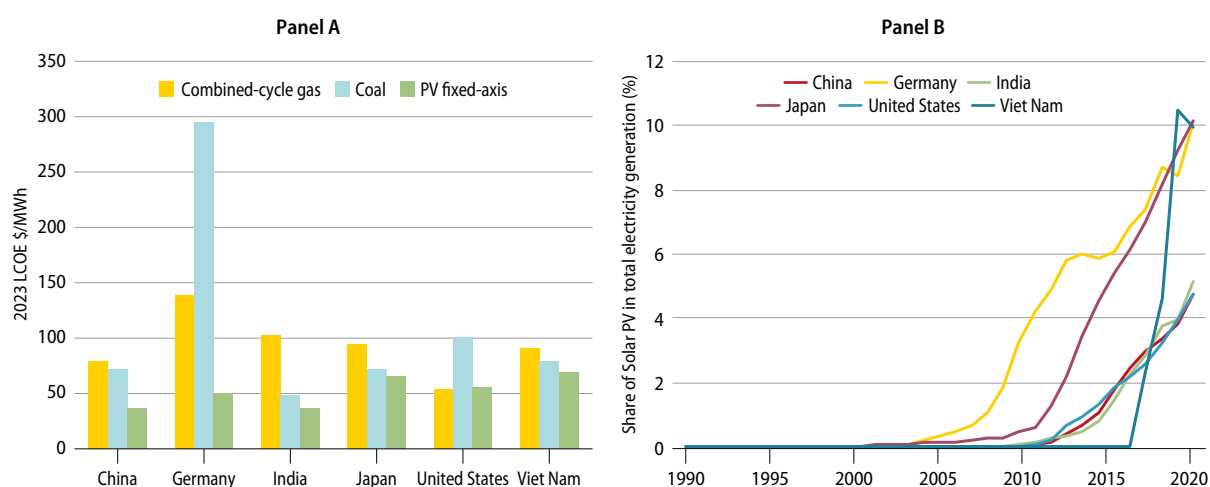
1. Meeting net-zero objectives is still possible

Many of the technologies needed to accelerate greenhouse gas (GHG) emissions reductions already exist and are being rapidly deployed, driven by unprecedented cost declines over the past decade (Figure 1). The levelised cost of electricity (LCOE) from solar and wind is already lower than that of coal and gas in multiple markets. Global deployment of many clean energy technologies accelerated quickly between 2015 and 2022, with solar photovoltaic (PV) capacity and stationary battery storage increasing by more than 400% and 2,500% respectively. Sales of electric vehicles grew by nearly 2,000% during the same period, and sales of residential heat pumps rose by 225% (OECD, 2024^[11]). Similarly, clean hydrogen costs could decrease by as much as 60% by 2030, subject to market uptake, electrolyser costs and the availability of low-cost renewable energy. These trends suggest that the pace and scale of change needed to reach net zero is within reach, but not guaranteed.

Policy has been integral to driving developments to date, and governments have a wide array of tools at their disposal to further accelerate progress. Unleashing the potential for “green” industrial policy to accelerate emissions reductions through the triggering of technological tipping points may be necessary, but entails risks and requires careful policy design. Well-designed policy packages and a commitment to implementing cost-effective solutions wherever available (e.g. targeting methane emissions) are essential to accelerating emissions reductions.

Demand-side policies could reduce GHG emissions in key end-use sectors (buildings, land transport, and food) by 40-70% globally by 2050 (Creutzig et al., 2023^[7]). Yet, despite their enormous mitigation potential, demand-side policies remain relatively underutilised. Achieving climate objectives will require incorporating demand-side measures into climate strategies to complement supply-side policies as part of a coherent and holistic policy mix. This includes policies that drive behavioural change, supported by key infrastructure and technology.

FIGURE 1. A: Levelised cost of electricity (LCOE) for solar photovoltaic (PV) vs. coal and gas, and B: share of solar PV in total electricity generation in China, Germany, India, Japan, United States and Viet Nam



Source: (Our World in Data, 2024^[8]; BloombergNEF, 2023^[9]).

Finally, accelerating the net-zero transition will also require governments to reform themselves – e.g. by balancing competing priorities; planning strategically across political cycles; aligning action across sectors, departments, agencies and levels of government; and remaining agile amid rapidly changing circumstances.

Industrial policy can unleash positive tipping points, but careful design is needed

The scale and speed of the transition needed to limit global warming to 1.5°C means that triggering positive tipping points¹ – where a small change past a threshold triggers a self-propelling shift to a new system state – may play a crucial role in rapidly accelerating greenhouse gas emissions reductions. In the context of clean energy technologies, positive tipping dynamics are driven by reinforcing feedback effects such as economies of scale or learning-by-doing. By reinforcing technological development, these feedbacks can lead to self-propelling and accelerating progress: the more a given technology is produced, the better and less expensive it becomes, which further increases demand, leading to more production, and so on.

Given the interconnectedness of systems, positive tipping dynamics can also cascade across technologies. For example, crossing a tipping point in the transport sector through the development of battery electric vehicles can reverberate within renewable energy systems, as increased battery storage capacity helps overcome grid stability issues, which in turn can drive progress in electrifying heavy transport.

Recent positive trends in the development and deployment of key clean energy technologies indicate that these dynamics may already be playing out. Government support has been critical to driving progress so far (OECD, 2025_[10]). According to the OECD's Manufacturing Groups and Industrial Corporation (MAGIC) database, production of solar cells and modules was the most subsidised manufacturing sector from 2005-2022, with producers receiving 3% of firm revenue in government support on average. Though less heavily subsidised than solar, producers of wind turbines have also received up to 1% of firm revenue in subsidies on average. Market expansion of these technologies was critical for achieving economies of scale and leveraging learning-by-doing effects, and producer subsidies – together with demand-side measures such as feed in tariffs or contracts for difference – have arguably played a role by lowering the price of renewable energy equipment. This is particularly evident in the development of solar PV, costs of which have declined by 80-90% each decade since 1960, with prices falling 20% for every doubling of installed capacity (Nijse et al., 2023_[11]).

The pivotal role of government support in driving the development and deployment of clean energy technologies highlights the potential for “green” industrial policy to leverage positive tipping point dynamics. Concerns about energy and economic security, supply chain resilience, and, increasingly, economic growth, jobs and competitiveness, are fuelling a resurgence of industrial policies across OECD countries. Although industrial policy encompasses a broader mix of instruments, government support and subsidies remain central. Until recently, solar and wind manufacturers in China were by far the largest recipients of government support, but measures introduced in OECD countries have begun to match this scale. More broadly, OECD governments budgeted an average of 2% of one year's GDP to low-carbon technologies as part of their COVID-19 stimulus measures (Aulie et al., 2023_[12]).

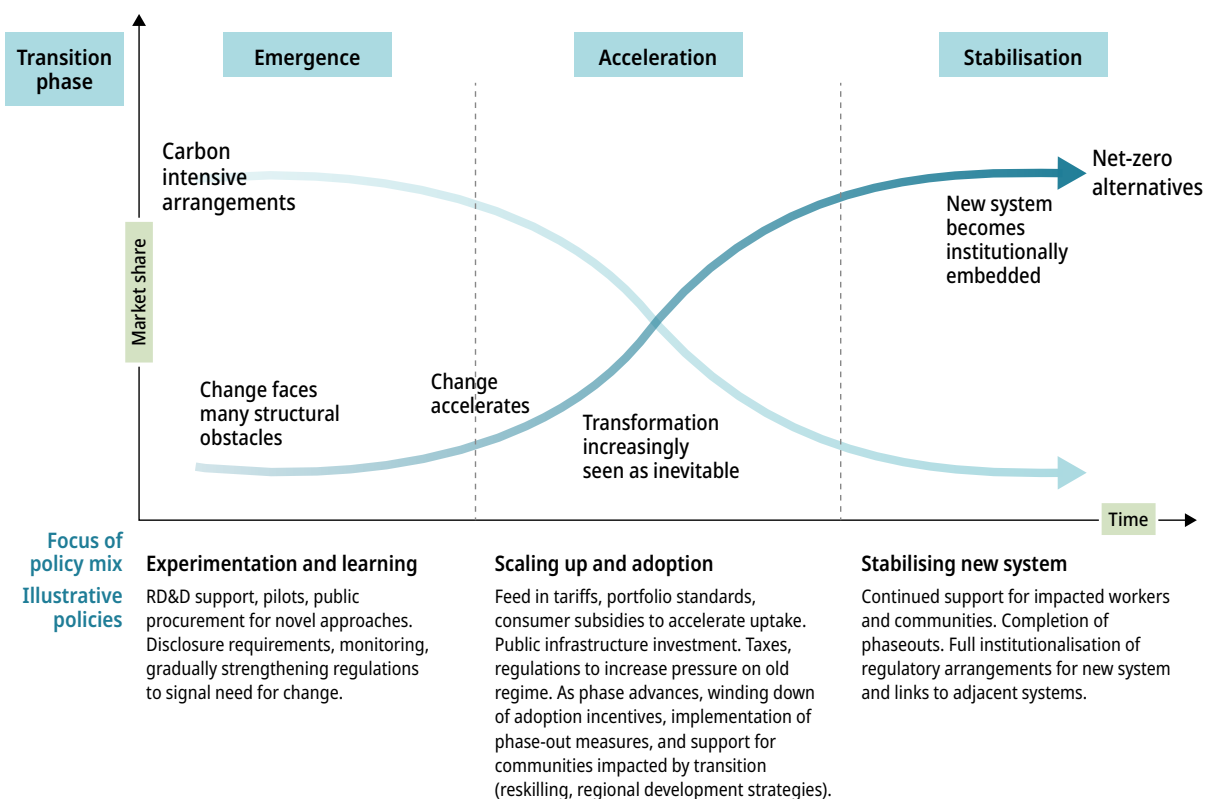
1. Tipping points are mostly associated with harmful systemic change in the natural world – e.g. the collapse of ice sheets, coral reefs or rain forests – that threaten climate and ecological stability. However, tipping point dynamics can also be used to describe positive change in the natural world (e.g. ecosystem restoration) and positive or negative change in human or social systems.

Generous government support packages could significantly accelerate progress towards net zero, but they are not without important risks. Such support can result in overcapacity and artificially low prices propped up by fiscally expensive subsidies, potentially crowding out more innovative or less emissions-intensive suppliers and limiting broader global participation in the production of green goods. There are indications that this is already playing out in solar, wind and battery technologies, calling into question whether their observed cost reductions can truly be labelled as self-propelling.

“Green” industrial policies are also often characterised by trade restrictions, such as local content requirements, which can lead to global fragmentation of open markets and concentration of production capacity in only a few countries. This raises concerns around supply chain resilience, market dominance (affecting innovation and prices over time) and energy security. While international competition to seize the economic opportunities associated with market growth for clean energy technologies can spur innovation and drive progress, open and competitive markets remain crucial to ensure supply chain resilience, cost efficiency, innovation and the global diffusion of technologies.

Managing these risks and unleashing the potential for “green” industrial policy to accelerate emissions reductions will require careful policy design. Not all technologies exhibit the same potential for positive tipping points, and amongst those that do, some technologies may be closer to tipping or easier to tip than

FIGURE 2. Adjusting policy mixes to transition phases



Note: Individual policies can extend across multiple phases, but the centre of gravity of the policy mix evolves with the transition phase – e.g. support for negatively affected communities begins in mid-acceleration but continues into stabilisation, or phase-out is signalled as acceleration takes off but is fully implemented in stabilisation.

Source: Reproduced from (Meadowcroft and Rosenbloom, 2023^[13]).

others. In general, high levels of modularity and standardisation are more susceptible to the reinforcing feedbacks that characterise tipping dynamics. Which combination of policies is most effective at driving progress is specific to each jurisdiction, sector and technology. Policy combinations will also likely evolve throughout the transition (Figure 2), and sequencing can help ensure that they remain appropriate.

Similarly, not all industrial policies are equally effective or have the same impacts and trade-offs. To mitigate the distortionary risks of government support, establishing clear timelines for policy phase-out, designing measures that promote competition, and implementing strong mechanisms for monitoring, evaluation and reporting of fiscal costs is crucial. However, although well-designed industrial policy is a powerful lever for accelerating the adoption of maturing technologies, government support is of little help

Crossing positive tipping points relies on creating the enabling conditions for rapid technology adoption including through investment in infrastructure.

if market size is too small for firms to achieve scale. Crossing positive tipping points relies on creating the enabling conditions for rapid technology adoption, including through investment in infrastructure (e.g. grids, charging infrastructure or hydrogen shipping terminals and pipelines); establishing a conducive regulatory environment (e.g. agile and risk-based permitting and clear and predictable policy developments); and a willingness to share risks to encourage investment.

Policy interactions and sequencing are critical for designing effective policy packages

The potential of “green” industrial policy also needs to be seen within the context of broader policy packages. Well-designed policy packages are crucial to establishing the enabling conditions needed to leverage positive tipping dynamics, for example through setting appropriate standards or scaling up government investment and procurement. Governments have a wide array of policy tools at their disposal, but designing the most effective policy packages will be context dependent, and understanding interactions between policies and their sequencing is critical.

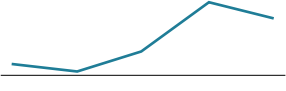
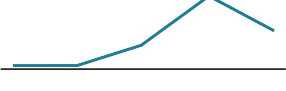
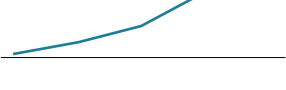
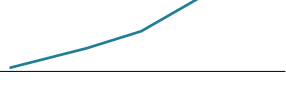
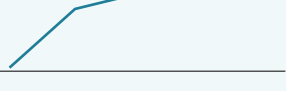
Climate policy instruments can be divided into five categories: economic, regulatory, government investment and consumption, information and voluntary instruments. Policy adoption and stringency across all these categories has increased over the past ten years, but important gaps remain, particularly in areas such as investment in research and development, infrastructure, and reform of environmentally harmful subsidies (Figure 3).

Complementary measures that take advantage of synergies and minimise trade-offs can lead to packages that are more than the sum of their parts. Emerging evidence from the OECD Climate Actions and Policies Measurement Framework (CAPMF)² on the effectiveness of policies implemented to date suggests that, in most cases, combinations of policies are more effective at reducing emissions than individual instruments (Figure 4) (Stechemesser et al., 2024^[3]). However, policy interactions also bring the risk of trade-offs, for example if two policies target the same emissions base. Policy sequencing is equally important, with some policies working well in sequence but not in parallel. These interactions play out differently across sectors and jurisdictions, highlighting the need for more evidence on what works and what doesn’t to inform policy package design.

2. <https://www.oecd.org/en/data/dashboards/climate-action-dashboard/actions-opportunities.html>.

FIGURE 3. Climate policy instruments and their progress in incentivising emission reduction

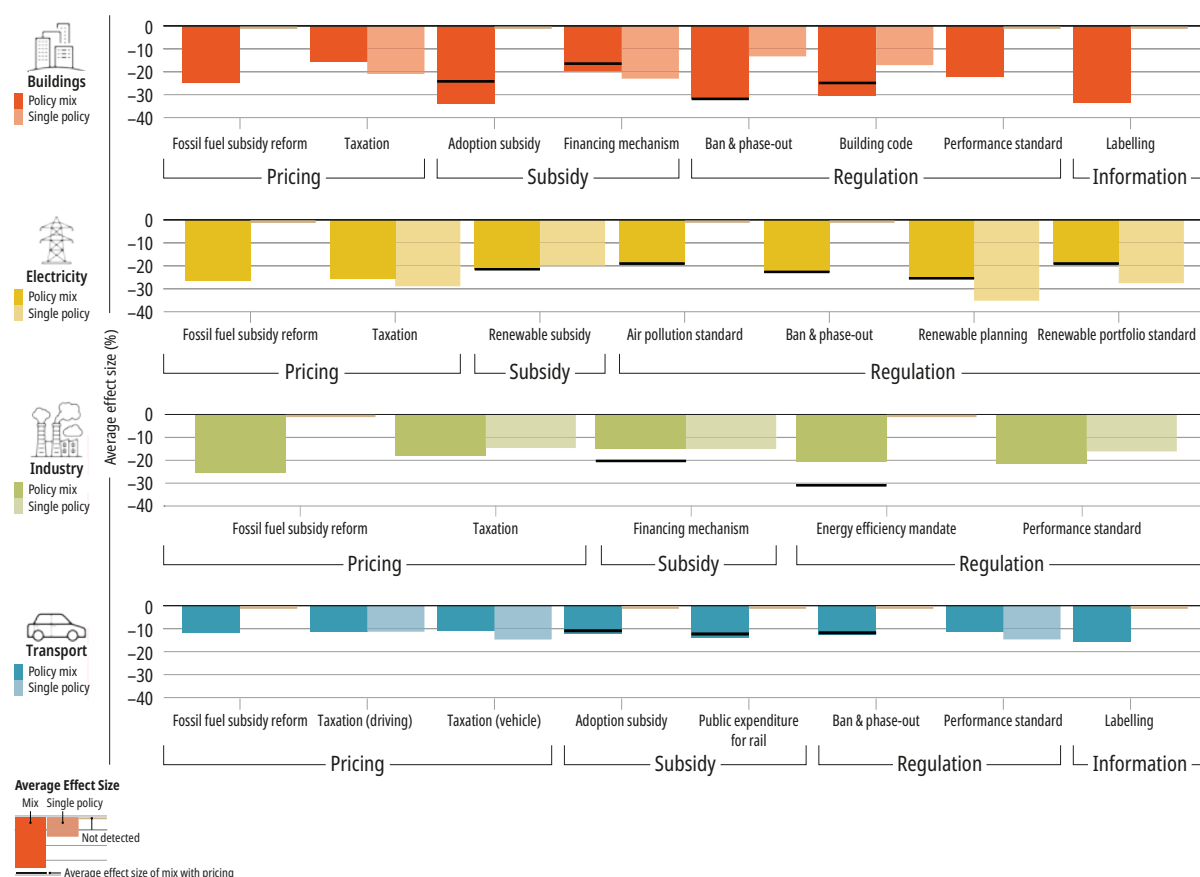
2010-2022 data

Instrument category	Instrument type	Stringency (2010-2022)	Key messages
Economic	Subsidies		Subsidies have been integral to supporting the rapid progress made on renewable energy. While publicly supported, high fiscal costs, rapidly evolving market dynamics and the potential for economic distortions such as technological lock-in and windfall profits require careful policy design and continuous evaluation.
	Taxes		Fuel excise taxes in the buildings and transport sector are growing but explicit carbon price levels remain low overall. While higher prices would set powerful incentives, taxes remain unpopular and difficult to implement.
	Trading systems		ETS are growing in popularity and emissions coverage, particularly in the industry and electricity sectors, but remain administratively complex.
Regulatory	Performance standards		Performance standards are widely used, particularly for appliances and electric motors, but their use could be scaled up to other sectors, particularly transport.
	Technology standards		Bans and phase-outs have become increasingly publicly supported but their emissions coverage could be improved, notably for fossil fuel extraction, heating systems and internal combustion engines.
Government investment & consumption			Public investment is critical to support innovation and infrastructure development. However, current investment trends show too much focus on technologies already close to market, and infrastructure is often identified as a major gap to scaling up technology deployment.
Information			Information instruments such as labelling are instrumental in raising awareness and influencing behaviours.

Note: Policy stringency is defined as the degree to which climate actions and policies incentivise or enable GHG emissions mitigation at home or abroad. For each policy variable, a stringency level between 0 and 10 is assigned as follows: 0 is assigned if a policy or action is not in place. All other levels are assigned according to the in-sample distribution across all years and countries so that the percentiles constitute the thresholds between the levels. More precisely, a level of 10 is assigned if the value of the policy variable is at or above the 90th percentile after excluding all observations where the policy variable is not in place. Details about methodology to calculate policy stringency can be found in (CAPMF, 2024^[14]; Nachtigall et al., 2024^[15]). The subsidies category includes only environmentally beneficial subsidies, not fossil fuel subsidies nor other environmentally harmful subsidies.

Source: Adapted from (CAPMF, 2024^[14]).

FIGURE 4. Successful mitigation policies and policy mixes across sectors



Note: The figure reports the results of a large ex-post study identifying instances where large GHG emissions reductions were achieved in different sectors and matches these to associated policy mixes. For non-price-based policies, the thick black line indicates the average effect size of mixing a given policy instrument and pricing (through taxation or reduced fossil fuel subsidies).

Source: (Stechemesser et al., 2024_[3]).

Reducing methane emissions is a cost-effective way to buy time

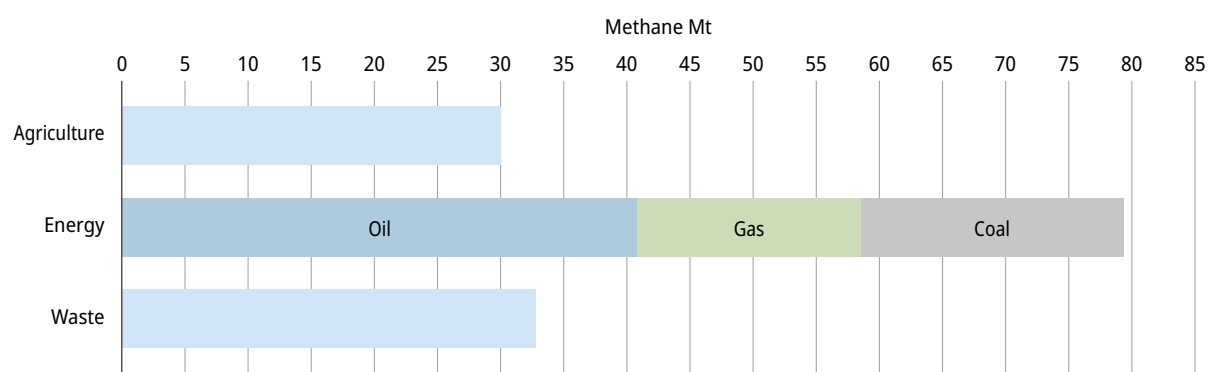
A rapid reduction in methane emissions can be likened to pulling the handbrake on global warming, at least temporarily, buying precious time in the race to net zero. Methane is much more effective at trapping heat in the short term – 80-83 times more potent than CO₂ over a 20-year period³ – but remains in the atmosphere for only about 10-12 years (IPCC, 2023_[16]). Thus, methane's contribution to global warming is primarily a function of recent emissions, meaning that reductions would have a more immediate effect on global average temperature rise. A 30% reduction in global methane emissions by 2030 (from 2020 levels) could cut around 0.2°C of warming by 2050 – and is thus essential to limiting overshoot beyond 1.5°C (UNEP, 2021_[17]).

Cost-effective technologies already exist to reduce methane emissions across the energy, waste and agriculture sectors, which together account for virtually all current human-caused methane emissions (Figure 5). Recognising this, over 150 countries adopted the Global Methane Pledge (GMP) at COP26 in 2021

3. The global warming potential (or GWP) of methane varies according to the source of emissions and timeframe considered. The GWP for fossil CH₄ is estimated to be 82.5 and 29.8 over a 20- and 100-year period respectively. The GWP for non-fossil CH₄ is 79.7 and 27.0 over a 20- and 100-year period respectively (IPCC, 2023_[16]).

and agreed to collectively cut global methane emissions by at least 30% from 2020 levels by 2030. However, direct mitigation policies have only been introduced in a few countries so far.

FIGURE 5. Methane abatement potential to 2030



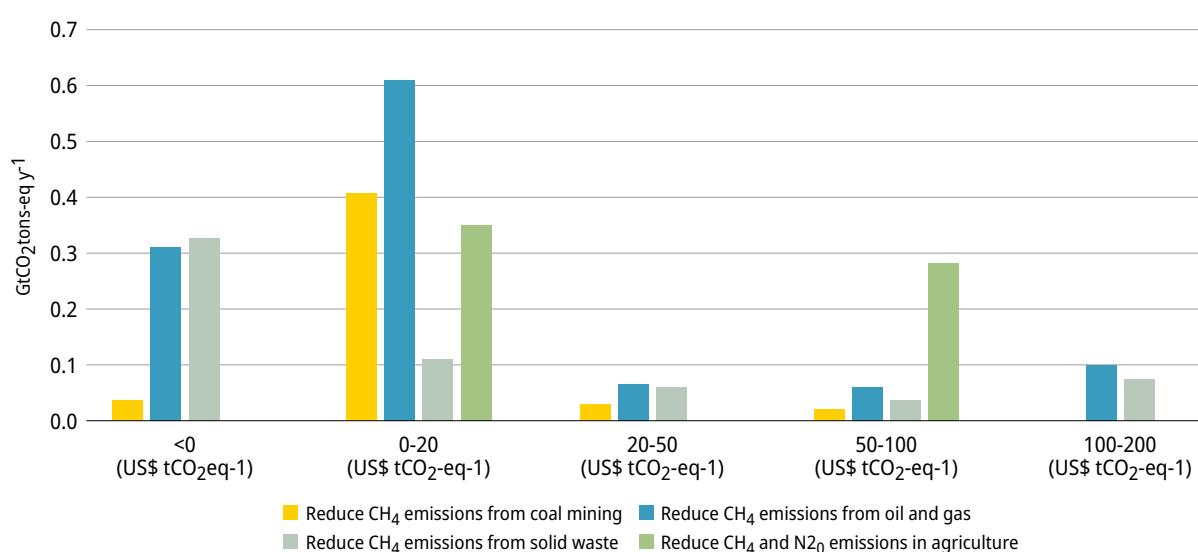
Notes: IEA estimates. The figure represents the abatement potential of methane emissions (CH₄ tonnes) by 2030. Agriculture and waste emissions are from (UNEP, 2021_[17]) and oil, gas and coal emissions from (IEA, 2024_[18]).

Source: (IEA, 2024_[19]).

The energy sector accounts for 36% of total methane emissions globally and has the highest abatement potential due to the availability of several cost-effective solutions (Figure 6). To stay on track for limiting global warming to 1.5°C, methane emissions from fossil fuel emissions would need to be cut by 75% by 2030, the bulk of which could be achieved through technological and operational improvements (IEA, 2024_[20]; IEA, 2024_[19]). These emissions reductions would cost an estimated USD 170 billion, less than 5% of revenue of the oil and gas industry in 2023 (IEA, 2024_[19]).

Regulation is central to reducing methane emissions in the energy sector. Already today, there is a large difference in the methane emissions intensity of oil and gas operations across countries and companies

FIGURE 6. Net lifetime cost of selected methane emission mitigation options



Source: (IPCC, 2023_[16]).

largely due to variations in regulatory frameworks. For example, if all countries matched Norway's current methane emissions intensity, emissions would fall by 90% (IEA, 2022_[21]). Stricter performance and technology standards, robust leak detection and repair requirements, and limits on routine flaring and venting can incentivise the uptake of cost-effective technologies. However, to be effective, such regulatory changes need to be backed up by rigorous measurement, monitoring, reporting and enforcement mechanisms.

Methane emissions from agriculture – primarily from livestock and rice cultivation – account for 43% of total methane emissions and increased by around 13% globally between 1990 and 2022. While methane emissions from agriculture are more difficult to control due to their biological nature and large number of emitting agents, only a 20-25% reduction by 2030 relative to 2020 is needed to align with a 1.5°C warming pathway (United Nations Environment Programme and Climate and Clean Air Coalition, 2021_[22]). This is feasible,

Methane emissions from agriculture – primarily from livestock and rice cultivation – account for 43% of total methane emissions and increased by around 13% globally between 1990 and 2022.

with many technologies and practices already available to accelerate methane emissions reductions from agriculture. For example, livestock emissions can be mitigated through enhanced feed management, methane inhibiting feed-additives, improved long-term livestock management efficiency and breeding, and advanced manure management practices. Methane reduction in rice cultivation can be achieved by adopting advanced rice varieties and intermittent irrigation management techniques.

Policies can mandate or incentivise the adoption of such practices, for example through regulating manure storage and use or providing incentives for intermittent irrigation of rice. A few countries, including Denmark and New Zealand, have announced or are considering plans to include agriculture within carbon pricing schemes. Supporting agricultural research and development is essential to identify ways to reduce enteric fermentation emissions and improve manure management. Policymakers should consider how policies targeting agricultural methane emissions interact with other environmental and social goals, including efforts to cut other GHGs in the sector. Reorienting government support for agriculture is also needed, for example by further decoupling payments from production and reorienting them towards targeted innovation efforts and suitable agri-environmental practices.

Methane emissions from the waste sector – stemming primarily from food and other organic waste such as paper, cardboard, and wood – account for 21% of total anthropogenic methane emissions. Reducing food loss and improving waste management are critical to reducing methane emissions and can have significant co-benefits, resulting in cost savings, reduced hunger, and lower pollution. Globally, around 24% of the world's food supply is squandered or lost. Decreasing consumer food waste by 20-25% could yield savings of USD 120-300 billion annually (Goodwin, 2023_[23]).

Households, particularly in high-income countries, are major contributors to food waste. As such, demand-side policies such as awareness campaigns, labelling or landfill charges could make a large contribution to reducing methane emissions from waste, alongside regulatory reform and investment in infrastructure. Collaboration across the supply chain is crucial to reduce food loss and waste, but better waste management can also significantly reduce emissions from landfills and unmanaged sites. Emerging satellite data, if confirmed, indicates that significant low-cost mitigation opportunities exist in landfill management.

Demand-side action can speed up the transition

Climate change is a significant concern for the public, but not the top one. According to the 2022 OECD Environmental Policies and Individual Behaviour Change (EPIC) survey, 35% of respondents identify climate change or other environmental issues as a key concern – ranking behind personal safety (42%) and economic concerns (41%). Nonetheless, households show willingness to adopt some sustainable behaviours. For instance, 76% of households are willing to pay a premium for more sustainable packaging options, while across the nine OECD countries surveyed, households are willing to pay a premium of 19% for electricity that generates 10% lower greenhouse gas emissions. Improving household access to charging infrastructure for battery electric vehicles (BEVs) at key locations could double their rate of adoption.

Governments can support and encourage sustainable choices by considering the main factors that influence end-user decisions: affordability, availability, and convenience. For instance, promoting energy conservation through support for investment in energy efficiency can drive demand-side change by leveraging affordability concerns. Investing in infrastructure can shift transport towards greener options by improving the availability and convenience of low-carbon alternatives.

Additionally, governments can incorporate behavioural science insights to improve the design of demand-side policies, better evaluate and measure their impact, and develop effective communication strategies to encourage behavioural change. Utilising behavioural tools such as green defaults, social influences and choice architecture can increase public engagement and contribute to motivating more sustainable behaviours.

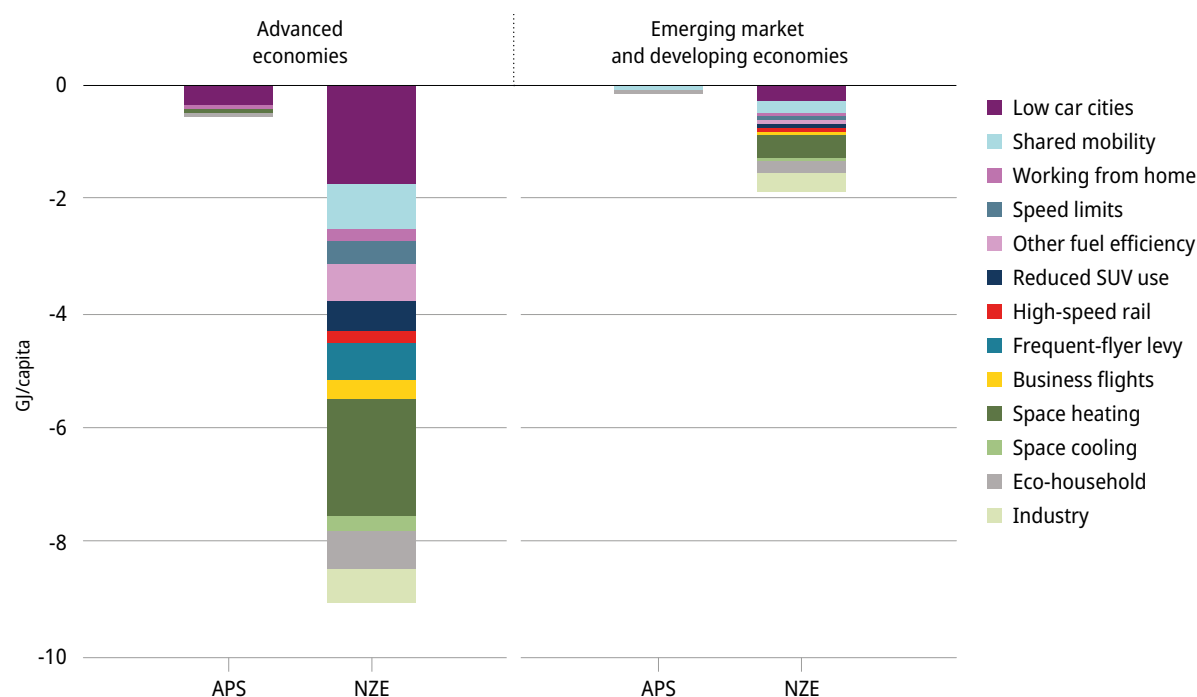
Scaling up demand-side action will also rely on overcoming informational barriers faced by consumers. Consumers often lack access to clear, accurate and easy-to-understand information that could enhance their ability to consider the climate and environmental impacts of their decisions. For instance, growing concerns have been raised about greenwashing. Studies have indicated that nearly 40% of e-commerce websites may use tactics that could be perceived as misleading (ICPEN, 2021^[24]), and one-third of consumers report difficulty distinguishing between genuine “green” claims and false or unverified ones (BEUC, 2023^[25]). Empowering consumers to make informed, sustainable decisions requires improving provision of information on their options. For instance, more and better information on carbon footprints can facilitate better decisions, driving demand and growing the market for low-carbon products and services.

Impactful actions are available to governments across several key sectors. In the energy sector, behavioural change plays a critical role in decarbonisation. According to the IEA, reaching net zero by 2050 will require energy savings per capita from behavioural changes to increase more than 15 times compared to currently announced pledges (Figure 7). In the IEA’s Net-Zero Emissions by 2050 Scenario, these behavioural changes come mostly from developed countries, reflecting how demand-side action can be supportive of equitable outcomes at the international level. In the buildings sector, demand-side measures involve shifting to low-carbon technologies and improving energy efficiency (e.g. better insulation, low-carbon heating and cooling). To encourage such shifts, governments could consider implementing policy packages that combine financial incentives, information provision, regulation, and mandatory standards.

In the transport sector, transformative policies are needed to reduce dependency on cars, including road space reallocation to make active modes of transport more attractive, along with investment in public transit systems to enhance their accessibility and appeal. To incentivise the adoption of battery electric vehicles,

governments can offer consumer subsidies and improve infrastructure such as the availability of public charging stations.

FIGURE 7. Energy savings per capita from behavioural changes by measure and IEA scenario, 2035



Notes: NZE = Net-Zero Emissions by 2050 Scenario. APS = Announced Pledges Scenario. GJ = gigajoule. Eco-household measures include: line-drying clothes instead of using a dryer; reducing laundry temperatures; switching off lights in unoccupied rooms; unplugging appliances when not in use; and reducing water heating temperatures. See (IEA, 2022^[26]; IEA, 2021^[27]) for details of other measures.

Source: (IEA, 2023^[28]).

Regarding diets, increasing the affordability of plant-based proteins relative to meat is likely to be effective in reducing emissions, although achieving dietary shifts is complex, in part due to socio-cultural norms. Public communication emphasising the co-benefits of such shifts, including health-related advantages, can be a useful tool for policymakers.

Regarding waste, demand-side mitigation objectives include reducing waste generation and diverting more waste to recycling services. Providing recycling collection services and implementing waste charging schemes can help to achieve these goals. Both of these measures have also been associated with increased demand for sustainable consumption.

Reforming public governance to drive progress

Successful implementation of the policies needed to drive change will require governments themselves to reform. The pervasive and urgent nature of climate change means that governments will need to balance competing policy priorities and resources – managing synergies but also potentially difficult trade-offs between meeting climate targets and other objectives such as protecting biodiversity, ensuring economic growth and addressing social inequalities. Achieving net zero is a long-term goal that requires strategic planning across political cycles. At the same time, the pace of the transition must be swift and governments

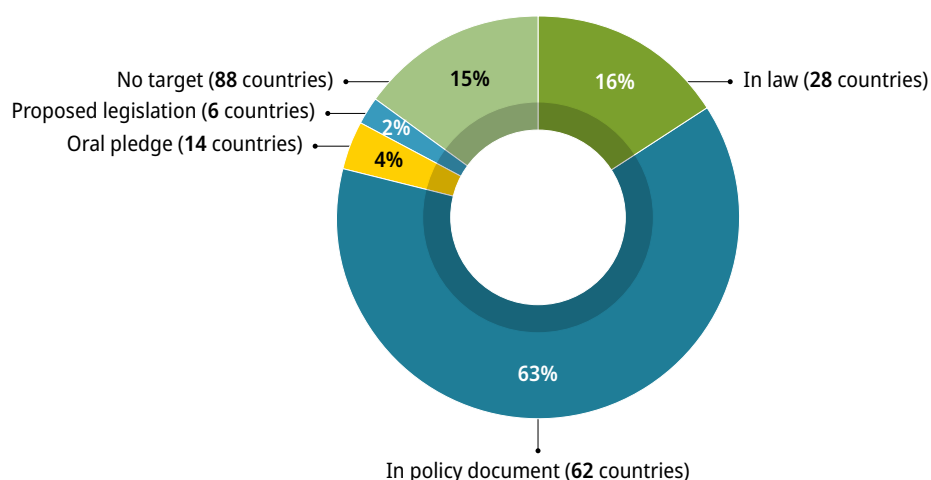
need to remain agile and adapt to changing circumstances. Achieving net zero is also an economy-wide endeavour, requiring effective co-ordination across sectors and policy domains. Finally, although the net-zero transition is necessarily policy-driven, successful climate action calls for a whole-of-society approach bringing together government, business and civil society efforts.

Governments can adjust their public governance arrangements to better facilitate climate policy implementation and accelerate action. This includes strengthening their *commitment* to long-term and well-co-ordinated climate policy, developing their *capabilities* to implement the necessary policy tools, and building consensus across society for ambitious climate action.

Strengthening governments' commitment to long-term and well-co-ordinated climate policy relies on setting clear strategies and goals with sufficient legal and political backing. While most countries have set net-zero pledges, only 27 countries and the EU, representing 16% of global GHG emissions, have codified these into national law (Figure 8) (OECD, 2024^[2]), and their collective action is insufficient to meet the 1.5°C goal. Aligning Nationally Determined Contributions with long-term net-zero and Paris Agreement temperature goals is essential, as is making them implementable and attractive to investors (OECD, 2025^[5]). For this, whole-of-government policy co-ordination is imperative, with centres of government (CoG) playing an integral role. However, fewer than half of OECD countries have reported climate action as a priority area for their CoG (OECD, 2023^[29]).

Coherence across policy domains is also critical, yet only 3 of 24 OECD countries (13%) have established mandates for mitigating or managing divergence among priorities in different sectors (OECD, 2023^[30]). At the same time, governments need to ensure that climate goals are cascaded to, and policies aligned with, subnational governments, which are responsible for around 63% of climate-related government expenditure and 69% of climate-related government investment. This suggests that governments could take a more innovative approach to co-ordinating climate action, for example through mission governance.

FIGURE 8. Global GHG emissions, by legal status of net-zero pledges



Note: Net-zero targets, climate neutrality, carbon neutrality and zero carbon are all considered net-zero pledges. The European Union commits to net zero by 2050 for the whole EU region. To avoid double counting, emissions for individual EU countries that have adopted net-zero commitments are not considered; these are covered by total EU emissions identified as "In law".

Source: IPAC Net Zero Tracker; OECD (2024), IPAC Dashboard, www.oecd.org/climate-action/ipac/dashboard.

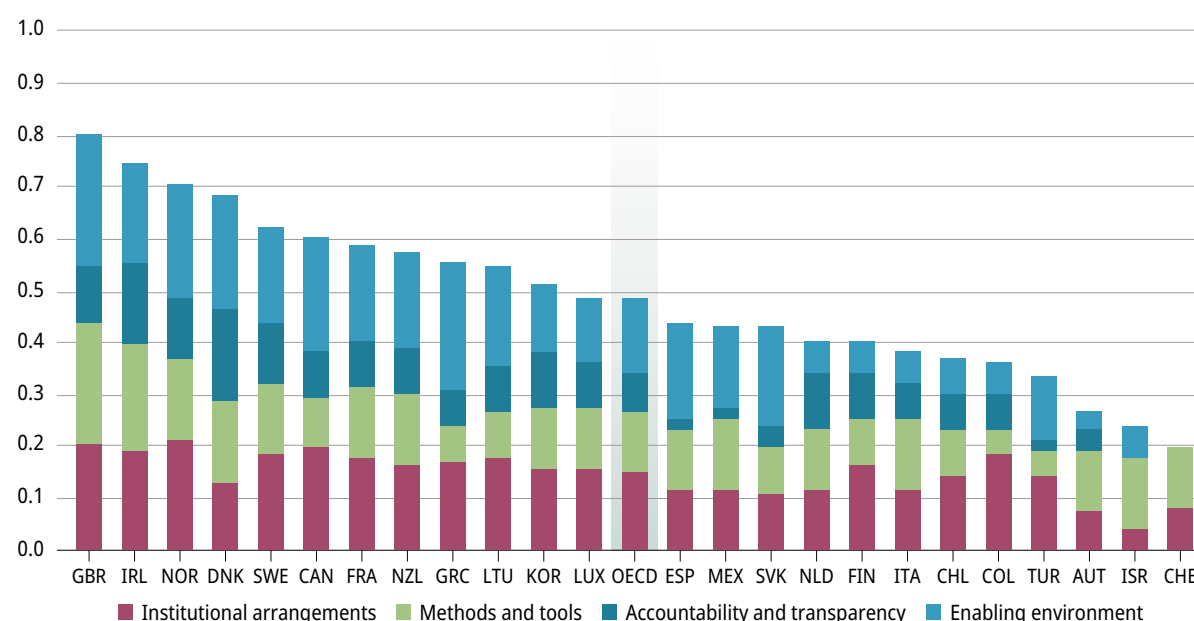
To build capacity to implement effective climate policies, governments will need to ensure that civil servants and policymakers at all levels have the necessary skills. These include scientific and technical knowledge about climate change and climate policy design, analytical and data skills to monitor and evaluate progress, and foresight and planning capabilities to span the wide breadth of climate policy and its interlinkages with other policy issues. Leadership skills are also needed to ensure that policies are ambitious and well-coordinated. As countries design and implement climate policy packages, regulatory impact assessments and ex-post review will be critical to maintain effectiveness and efficiency, avoid unnecessary burdens, and reflect changing circumstances. This also includes mandating economic regulators to factor in environmental objectives.

Public expenditure represents on average about 50% of GDP in OECD countries, making its alignment with climate goals imperative to scaling up the investments needed to reach net zero. Many OECD countries are increasingly implementing green budgeting practices (Figure 9) but need to move beyond tagging to assessing and measuring the impacts of budget proposals on emissions across all levels of government. The same is true of infrastructure planning and delivery: although 69% of OECD countries (20 out of 29 for which data is available) provide infrastructure guidelines for climate change adaptation, and 66% (19 countries) for climate change mitigation (OECD, 2023^[31]), countries could better integrate climate considerations into project prioritisation, appraisal, monitoring and reporting. Finally, public procurement represents 13% of GDP on average across the OECD (OECD, 2023^[31]) and most OECD countries have adopted green public procurement policies or frameworks. Still, procurement policy could better engage with markets and plan for future developments.

More could be done across the OECD to address the risk of particular interest groups unduly influencing or undermining climate policy. Only 45% of OECD countries have defined what constitutes lobbying in legislation

FIGURE 9. Implementation of green budgeting across policy areas

OECD Green Budgeting Index 2022



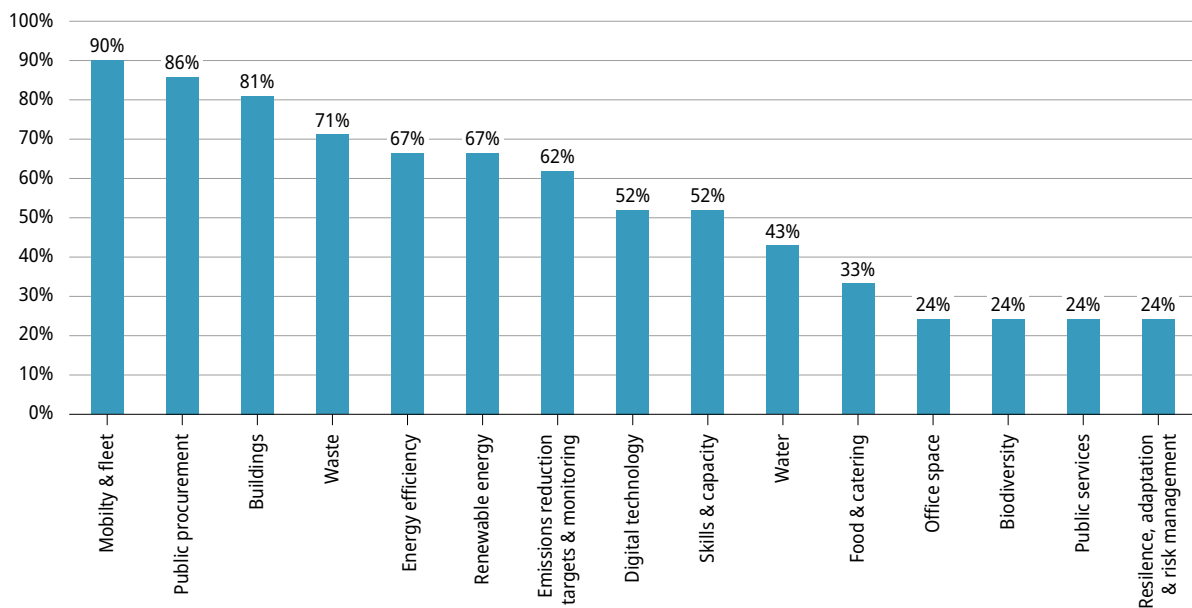
Note: Index ranges from 0 (not implementing) to 1 (high level of green budgeting practices). Data for Costa Rica and Slovenia are unavailable.

Source: (OECD, 2024^[32]).

(OECD, 2024^[33]). Access to justice can also ensure government accountability for climate commitments. The number of environmental courts and tribunals has risen significantly, from 350 in 2009 to 2,115 across at least 44 countries in 2021. Climate change litigation cases have also risen in recent years, with more than 2,600 cases recorded globally and a 20% increase in cases recorded from 2022-2023 (UNEP, 2021^[34]).

Finally, governments can lead by example by greening their own operations. Progress is being made across the OECD to green key parts of public administrations, notably mobility and public procurement (Figure 10).

FIGURE 10. Priority areas for greening public administration in OECD countries



Note: n=21 identified OECD member countries that work on the greening of their public administration.

Source: (OECD, Forthcoming^[35]).





2. The net-zero transition needs to bring workers and citizens on board

Climate action by governments can only be effective and resilient if it addresses citizens' needs and maintains public support. As such, climate strategies need to be built on effective citizen engagement and participation and responsive to the public's concerns and priorities.

A just transition is central to bringing the public onboard with climate action. While the net-zero transition offers significant opportunities, there are also potential costs which can lead to concerns among citizens. Failure to address these not only risks inequitable outcomes, but could also lead to public opposition, slowing or halting the transition. Carefully managing distributional outcomes such as job losses in GHG-intensive occupations, and leveraging the transition to improve socio-economic outcomes, is crucial.

According to the OECD Survey on Drivers of Trust in Public Institutions, while citizens' concerns about climate change and climate policies are significant, their trust in governments' ability to tackle the climate crisis remains low. Most respondents feel that governments favour private sector interests over those of citizens, and only 37% are confident that their government balances the needs of current and future generations (OECD, 2024^[36]). Overcoming concerns over the fairness and personal impact of climate action demands better citizen engagement. At the same time, citizen engagement is about more than just overcoming opposition to climate policy. Mobilising and empowering citizens can leverage their vast potential to drive innovative and effective policy action. A meaningful government-citizen interface can empower citizens to take action and help shape climate policy efforts to ensure that the net-zero transition leads to a future they helped create.

Education has a vital role in preparing workers for labour market shifts and supporting a just transition, and in building citizens' sense of agency. It can help citizens develop the knowledge, skills and attitudes needed to better understand the challenges of climate change, effectively engage with the policymaking process, and adopt sustainable behavioural changes in their own lives. As such, education empowers the public to actively participate in collective climate action and effect positive change.

Ensuring that the transition is just and equitable

Ensuring that the net-zero transition is just is paramount both from an equity perspective and to secure public acceptance of climate policies. Climate mitigation measures will significantly impact labour markets and households in ways that vary by region, gender and other socio-demographic markers; managing these effects is crucial to avoid exacerbating existing inequalities. The potential costs of climate action should be weighed against the costs of inaction – including climate change impacts on health, assets and livelihoods – which are likely to impact disadvantaged groups most heavily (OECD, 2024^[37]).

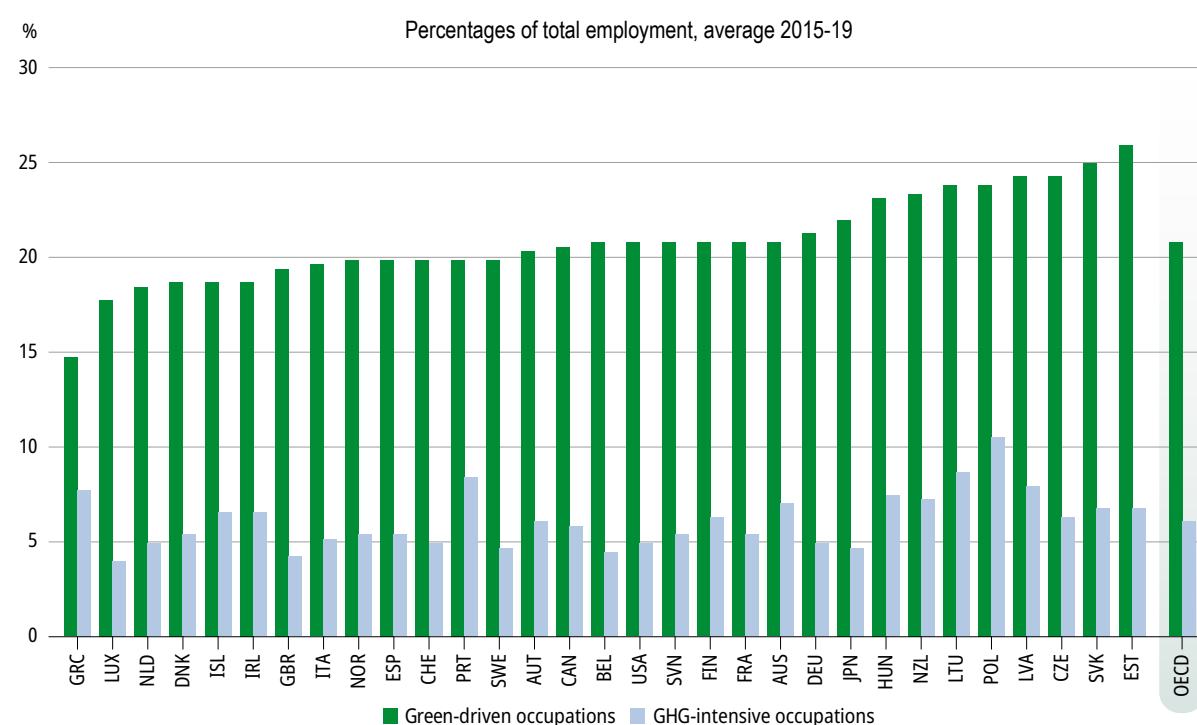
The net effect of the net-zero transition on aggregate employment is projected to be modest. Across the OECD, only 6% of workers are employed in GHG-intensive occupations, while around 20% are employed in green-driven occupations (Figure 11), suggesting that a relatively small proportion of workers will be directly impacted (OECD, 2024^[38]). Nevertheless, the risk of job displacement is highly concentrated in certain industries and regions. Workers in some of the most affected industries tend to be older, more likely to live in

rural areas, and employed in relatively high paying jobs compared to their educational attainment. Job losses in high-emissions industries are estimated to be 24% more costly than in low-emissions industries (OECD, 2024^[38]).

Regions facing considerable transformation challenges due to high employment in hard-to-decarbonise activities often already perform relatively poorly on several socio-economic indicators. These areas typically have GDP and wages below the national average, relatively low levels of educational attainment, and fewer resources to invest in renewable energy, infrastructure, and innovation (OECD, 2023^[39]). These characteristics compound transition-related challenges and risk widening socio-economic gaps between regions.

A just transition must also take into account the specific challenges that small and medium-sized enterprises (SMEs) and entrepreneurs face in the shift to a low-carbon economy. SMEs account for around 69% of employment in OECD countries on average and are vital to green innovation, but policy frameworks are often designed with larger firms in mind (OECD, 2023^[40]). Policymakers should ensure that policies address the specific barriers that SMEs face in the transition, including a lack of managerial and technical skills, limited access to (green) finance, and fewer resources to comply with reporting requirements compared to larger firms.

FIGURE 11. Shares of employment in green-driven and GHG-intensive occupations in OECD countries



Note: Data refer to the average for 2015-19, except for Canada (2017-19) and New Zealand (2018). Green-driven occupations comprise “green new and emerging occupations” (new occupations with unique tasks and worker requirements, e.g. solar photovoltaic installers, carbon trading analysts), “green-enhanced skills occupations” (existing occupations whose skill set is being altered because of the green transition, e.g. architects, farmers), and “green increased demand occupations” (existing jobs that will be in demand because they provide goods and services required by green activities, e.g. construction workers, drivers). GHG-intensive occupations are those occupations that are particularly concentrated in high-emissions industries.

Source: Estimates in (OECD, 2024^[38]) based on version 24.1 of the O*NET database and following country-specific sources: Australian Labour Force Survey; Canadian Labour Force Survey; Japanese Labour Force Survey; New Zealand: Household Labour Force Survey; United States: Current Population Survey. All other countries: EU Labour Force Survey.

In the energy sector, major employment shifts are already underway, encouraged by climate mitigation policies. Between 2019 and 2023, fossil fuel-related jobs fell by 1% while employment in clean energy rose by 15% (IEA, 2024^[41]). Stepping up climate ambition could lead to dramatic growth in energy employment. In both the IEA's Stated Policies Scenario (STEPS) and Net Zero Emissions by 2050 Scenario (NZE Scenario), job creation associated with clean energy technologies comfortably outweighs job losses in fossil fuel and related industries through to 2030 around the world. Energy employment in 2030 is substantially higher under the NZE Scenario (83 million workers) than under STEPS (74 million). Still, the benefits of clean energy employment growth are spread unevenly across countries: two-thirds of all clean energy job additions since 2019 have been in developed economies and in China (IEA, 2024^[41]).

Supporting workers in declining sectors and at-risk regions requires measures such as active labour market policies (e.g. job search assistance) and income support, potentially including targeted wage insurance schemes, along with place-based policies and policies supporting geographical mobility. Collective bargaining and social dialogue, when aimed at finding solutions for all parties, can provide essential input for designing effective measures to support workers, households and regions. Involving social partners and all stakeholders in long-term transition planning, including organisations representing employers and workers, public employment services and training institutions, can contribute to more informed policy responses (OECD, 2023^[42]).

Education and skills policies are also key. Analysis of labour market transitions in European countries has found education to be the most important individual-level driver of transitions from non-employment to green-task jobs (Causa et al., 2024^[43]). Moreover, the job quality advantage of green-driven occupations tends to be concentrated in high-skilled jobs, with low-skilled, green-driven jobs offering lower wages and job security than other low-skilled occupations (OECD, 2024^[38]). This underscores the need for responsive education and skills policies, complemented by labour market policies, to enhance the quality of green-driven jobs.

Education and skills policies need to provide learners with core sustainability competences and the technical and transversal skills needed for employment in the net-zero economy. However, education and training policies are not keeping up with the required pace of change. For instance, only 40% of adults in OECD countries participate in formal or non-formal learning for job-related purposes (OECD, 2021^[44]), and workers in high-emissions occupations tend to train significantly less than those in other occupations. In sectors such as energy, skilled labour shortages, particularly in job profiles typically linked to vocational education (e.g. installers and technicians), are already emerging as a major bottleneck to the low-carbon transition.

Key actions for policymakers to address these challenges include strengthening skills assessment and anticipation, including by facilitating broad stakeholder participation; enhancing green career guidance; and developing a coherent and inclusive skills delivery system through greater co-operation and alignment across vocational, higher and adult education, keeping regional contexts in mind (OECD, 2025^[45]). Overcoming barriers to participation in upskilling and reskilling programmes, particularly for vulnerable groups and women, is essential.

Beyond employment impacts, climate mitigation policies can have distributional impacts on household budgets. Policy design must ensure that measures such as carbon pricing do not weigh unduly on disadvantaged groups (e.g. low-income households). Targeted redistribution of revenues generated can enable governments to influence distributional outcomes while maintaining economic efficiency. Additional

targeted measures are needed to ensure that climate policy instruments such as standards, bans and subsidies are not regressive and that vulnerable populations can benefit from them.

Gender equality is essential for the pursuit of a just transition, yet remains relatively overlooked by countries. Only 17 out of 30 OECD country survey respondents consider gender aspects in environmental policymaking (OECD, 2021^[46]), and only 55 national climate action plans explicitly reference gender equality (UN Women, 2023^[47]). Additionally, only 55% of all climate-related official development assistance (ODA) from OECD Development Assistance Committee members integrates gender equality objectives (OECD, 2023^[48]).

Managed well, the net-zero transition presents opportunities to address gender inequalities in the labour market. At present, women account for only 28% of green-task jobs (OECD, 2023^[42]). Facilitating women's participation in growing green sectors requires tackling their underrepresentation in relevant training and education programmes, including in science, technology, engineering and mathematics (STEM) and vocational programmes. Targeted efforts are needed to overcome gender stereotypes and barriers to entry in these fields, expand inclusive training opportunities, and develop tailored scholarships. Governments can enhance support for women in green entrepreneurship by providing funding opportunities for women-led start-ups and by developing platforms for women entrepreneurs to access larger networks and markets.

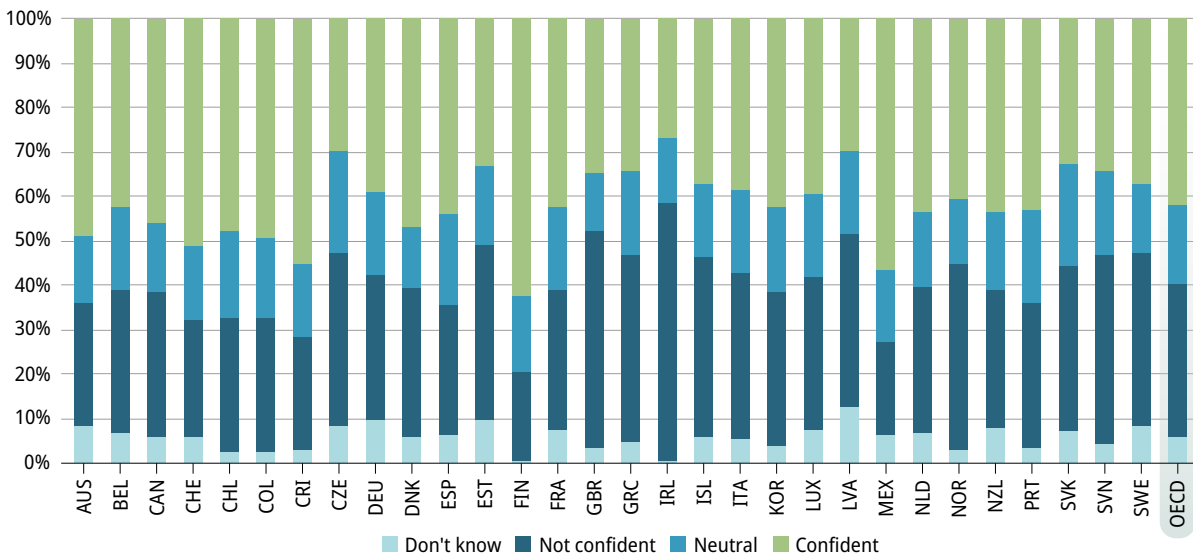
Adopting a place-based approach – where policies are targeted or tailored to the needs of specific places – can ensure that climate policies reflect local contexts, needs and opportunities. Place-based policies can support vulnerable regions in transitioning away from emissions-intensive industries and maximising local green job creation. National governments should be attentive to the spatial implications of climate policies and support subnational governments in addressing obstacles to local climate action such as limited access to finance, capacity constraints, and insufficient co-ordination mechanisms across levels of government.

A just transition at the global level needs to recognise countries' unequal starting points. In transitioning their economies, developing countries need to address challenges such as limited institutional capacity and access to finance. High levels of informal employment and low levels of social protection coverage increase workers' vulnerability and complicate assessments of the labour market impacts of the transition. Informal employment represents approximately 89% of total employment in low-income countries, compared to only 16% in high-income countries (OECD, 2023^[49]). Integrating climate action with development objectives can help to achieve more favourable socio-economic outcomes. Growing numbers of green-driven jobs can be leveraged to drive more formal employment, bolstered by support for labour representation and collective bargaining (OECD, 2024^[50]). Developed countries have an important role to play in this effort by aligning ODA with Paris Agreement goals and building fruitful partnerships with developing countries.

The government-citizen interface as a cornerstone of climate action

Mobilising the collective voice of citizens is integral to building trust in government decision-making and bolstering support for climate policy. Empowering citizens within policymaking processes can also lead to the design of more effective policies that fit citizens' needs. According to the OECD Trust Survey, only 30% of respondents feel that their political system gives them a voice, and fewer than half feel that communication around policies is adequate, especially regarding how policies will affect them (OECD, 2024^[36]). This is compounded by more than half of survey respondents feeling governments do not make decisions based on the best available evidence (OECD, 2024^[36]). Reversing these trends requires a stronger government-citizen

FIGURE 12. Citizens' trust in government's ability to reduce GHG emissions



Note: The figure presents within-country distributions of responses to the question “On a scale of 0 to 10, how confident are you that [country] will succeed in reducing greenhouse gas emissions in the next ten years?”. The “confident” proportion is the aggregation of responses from 6 to 10 on the scale; “neutral” is equal to a response of 5; “not confident” is the aggregation of responses from 0–4; and “Don’t know” was a separate answer choice. “OECD” presents the unweighted average of responses across countries. The data are based on the OECD Survey on Drivers of Trust in Public Institutions (Trust Survey), carried out in October and November 2023 in 30 OECD countries.

Source: (OECD, 2024^[36]).

interface that: 1) provides access to transparent and open information; 2) builds trust through clear and responsive public communication; 3) empowers and mobilises citizens through people-centred policymaking based on meaningful citizen participation; and 4) sustains change through behaviourally informed citizen engagement.

Climate change poses unique challenges for the government-citizen interface. Its pervasive nature requires a whole-of-government approach to citizen engagement co-ordinated across multiple policy domains. As the benefits of climate action are often long-term and diffuse, finding ways to make them relevant for citizens with other immediate economic concerns is an immense task for which governments need creative solutions. This is particularly the case as citizens’ perceptions of climate policies, their effectiveness and fairness may not always be accurate. The government-citizen interface must remain agile and accountable to avoid being regarded as mere box-ticking or overly burdensome.

Governments have started making progress on these challenges. Across the OECD, open access to climate-related data – such as mobility, meteorological, geospatial, earth observation, and environmental data – is becoming more common, though some countries lag behind. Further progress requires a commitment to better data availability and access, including through crowdsourcing and clear legal frameworks to define which data is relevant and should be openly accessible.

Public communication is essential for successful climate policy, which is often technical and difficult for the public at large to grasp, compounded by the vast ecosystem of diverse voices and actors communicating on this issue and advocating a range of perspectives. Public communicators are increasingly tailoring their messaging to audience values and collaborating with “multipliers” – individuals, organisations, businesses,

and media figures who can reach wider and more diverse groups and may elicit higher trust among groups less likely to trust national government. Public communication is also being increasingly mainstreamed across the policy cycle. Nevertheless, public discourse on climate change continues to be rife with mis- and dis-information. Tackling this not only requires strong and accurate public communication, but also efforts to build societal resilience, for example through educating and empowering citizens to think critically.

Citizen engagement makes a real difference. Almost 70% of OECD Trust Survey respondents who feel that they have a say in government action report moderate or high levels of trust in government, versus 22% who feel they do not have a say (OECD, 2024^[36]). Engaging citizens in the policymaking process not only gives them agency and ownership over policy outcomes, building trust and public support, but can also increase policy effectiveness by incorporating citizens' experiences, concerns and interests, and tapping into their capacity for innovation and action.

Countries are recognising the importance of citizen engagement, with environmental issues accounting for 17% of the over 700 examples of citizen assemblies recorded in the OECD Deliberative Democracy Database (OECD, 2023^[51]). Still, governments can do more to empower citizens by providing opportunities and resources to collaborate across the policy cycle and all levels of government. This means participation that is accessible, takes citizens' needs into consideration, and is accountable, providing transparent feedback on how citizens' voices were, or were not, incorporated into final policy decisions.

Effective citizen participation also requires a targeted approach – not all policy issues require the same level of engagement. Citizens are more likely to engage with policy processes that have an immediate and tangible effect, for example cycling infrastructure – but climate change requires policies that have a longer time horizon and are national, regional or even global in scale. A place-based approach to citizen engagement can generate better buy-in, but governments also need to develop ways to engage citizens on broader climate policy strategies and frameworks.

An effective government-citizen interface relies on an understanding of citizens' attitudes, values and behaviours. Across the entire policy cycle, environment ranks among the top three issues where behavioural science is most frequently applied, for example to assess public knowledge of climate change, gauge support for reforms and track sustainable behaviours. These insights can be used to better understand challenges such as mis- or dis-information, and to monitor policy outcomes. Behavioural science is also crucial to better understand how citizens experience the government-citizen interface, identifying barriers to more inclusive and empowering forms of citizen engagement.

Education is essential to build citizens' sense of agency

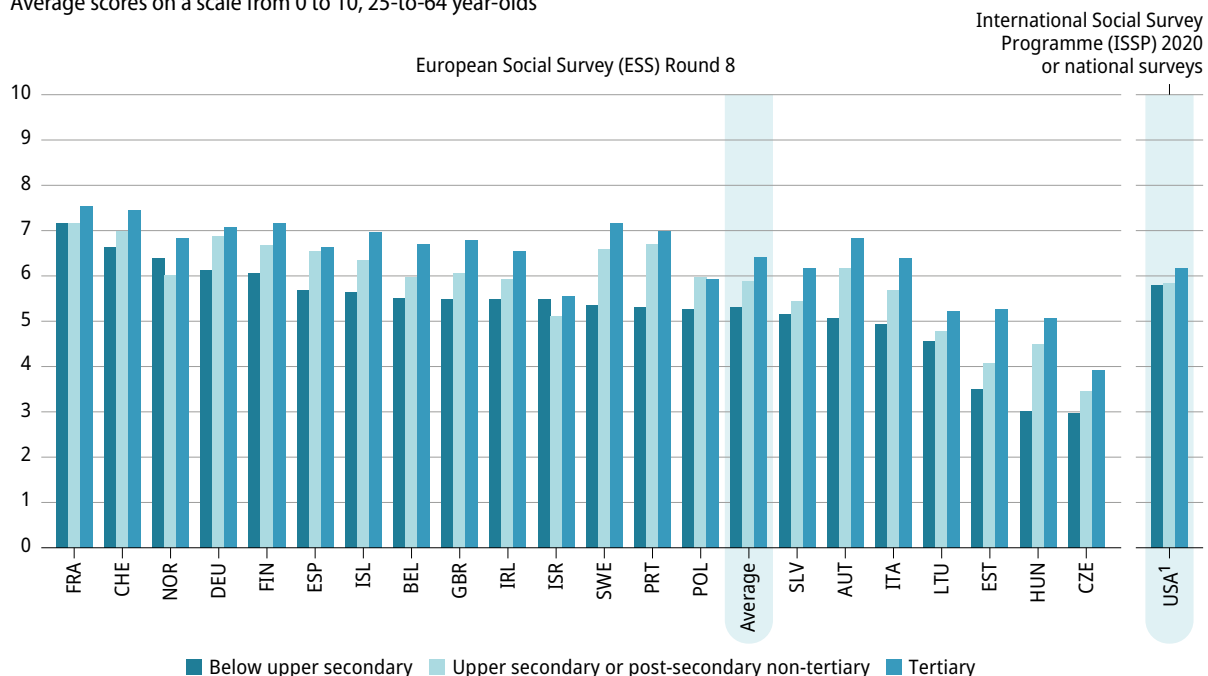
In addition to supporting labour market transitions, education plays an important role in empowering citizens and encouraging sustainable socio-behavioural change. Many people do not feel that they have the personal agency to influence change. Agency reflects not only individuals' intent, values, preferences and capacities, but also the influence of the social and material environment around them. Education can empower learners to use their agency in support of climate objectives by equipping them with the foundational knowledge, skills and attitudes needed to understand their environment and recognise their role within it. This is fundamental for encouraging and enabling people to take informed action, including through consumption and lifestyle choices and civic and political engagement.

In the OECD Programme for International Student Assessment (PISA) 2018, almost 80% of students aged 15 years across OECD countries reported being aware of or very familiar with climate change and global warming. However, the data showed significant socio-economic variation: on average, the share of students displaying awareness of climate change and global warming among socio-economically advantaged students was 20 percentage points higher than among disadvantaged students (OECD, 2022^[52]). PISA results also revealed that, on average, fewer than 50% of students across countries and economies were able to correctly answer sustainability items. Performance was better among socio-economically advantaged than disadvantaged students in each of the 20 environmental sustainability items covered (OECD, 2022^[52]). Importantly, while evidence suggests that most students across the OECD are aware of the climate challenge, are taught about it in school, and are motivated to contribute to solving it, only just over half reported feeling personally capable of taking action (OECD, 2025^[45]).

In the Earth for All Survey 2024, 71% of adults across G20 countries believe that the world must take immediate action within the next decade to reduce emissions from key sectors (Earth4All, 2024^[53]). However, the degree to which individuals feel a personal responsibility for taking action is more varied. Survey evidence finds that on a scale from 0 (no sense of responsibility) to 10 (strongest sense of responsibility), the average score for 25–64-year-olds across OECD countries surveyed is 5.9 (Figure 13) (OECD, 2024^[54]). Crucially, individuals with higher levels of educational attainment are more likely to report a strong sense of personal responsibility for contributing to climate action.

FIGURE 13. Self-reported scores on adults' sense of personal responsibility towards reducing climate change, by educational attainment (ESS, 2016 and ISSP, 2020)

Average scores on a scale from 0 to 10, 25-to-64 year-olds



Note: Scores range from 0 to 10, with 0 indicating a complete lack of responsibility towards reducing climate change.

1. Year of reference differs from 2016. Survey question also differs from that used in ESS.

Countries are ranked in descending order of the mean score among adults with below upper secondary educational attainment.

See Table A6.3 (OECD, 2024^[54]) for data. For more information see (OECD, 2024^[55]).

Source: (OECD, 2024^[54]).

To bridge the gap between awareness, attitudes and action, education systems need to provide all individuals with solid foundational sustainability competencies, including strong literacy and numeracy, media and digital literacy, critical thinking, creativity and collaboration skills. This requires adapting curricula, qualifications and learning programmes, supported by broad stakeholder collaboration. Educator upskilling can be supported by mainstreaming sustainability into initial teacher education and continuing professional learning opportunities across schools, vocational and higher education in order to break down silos and spread innovative and interdisciplinary teaching approaches. Policymakers can also consider scaling up inclusive place-based and collaborative practices including whole-institution approaches and local partnerships. Beyond formal education, information campaigns and consumer education, along with science communication supported by formal education providers such as higher education institutions, can promote engagement with climate change.



3. Trade, finance and investment can accelerate climate action

Open markets, trade, finance and investment are vital enablers of the net-zero transition. Accelerating global emissions reductions will rely on technology diffusion and trade in environmental goods and services. Open markets increase competition and innovation and so are critical to driving progress. International co-operation remains critical. However, recent trade tensions and a shifting geopolitical landscape pose significant risks to accelerated action. Finance and investment are equally fundamental to scaling-up climate action: according to the IEA, in order to reach net-zero emissions, global annual clean energy investment needs to rise by almost USD 5 trillion by 2030, more than double the average over the past five years (IEA, 2023^[56]). There is no shortage of capital to meet this need, but current investment flows are not well-aligned with climate goals (IPCC, 2022^[57]; OECD, 2024^[4]).

Aligning trade and environmental policies

Numerous synergies between trade and environmental policies exist. Promoting trade in environmental goods and services can boost the diffusion of environmental technologies. However, defining and classifying environmental goods and services remains difficult, with countries often taking diverging approaches, complicating negotiations on trade liberalisation.

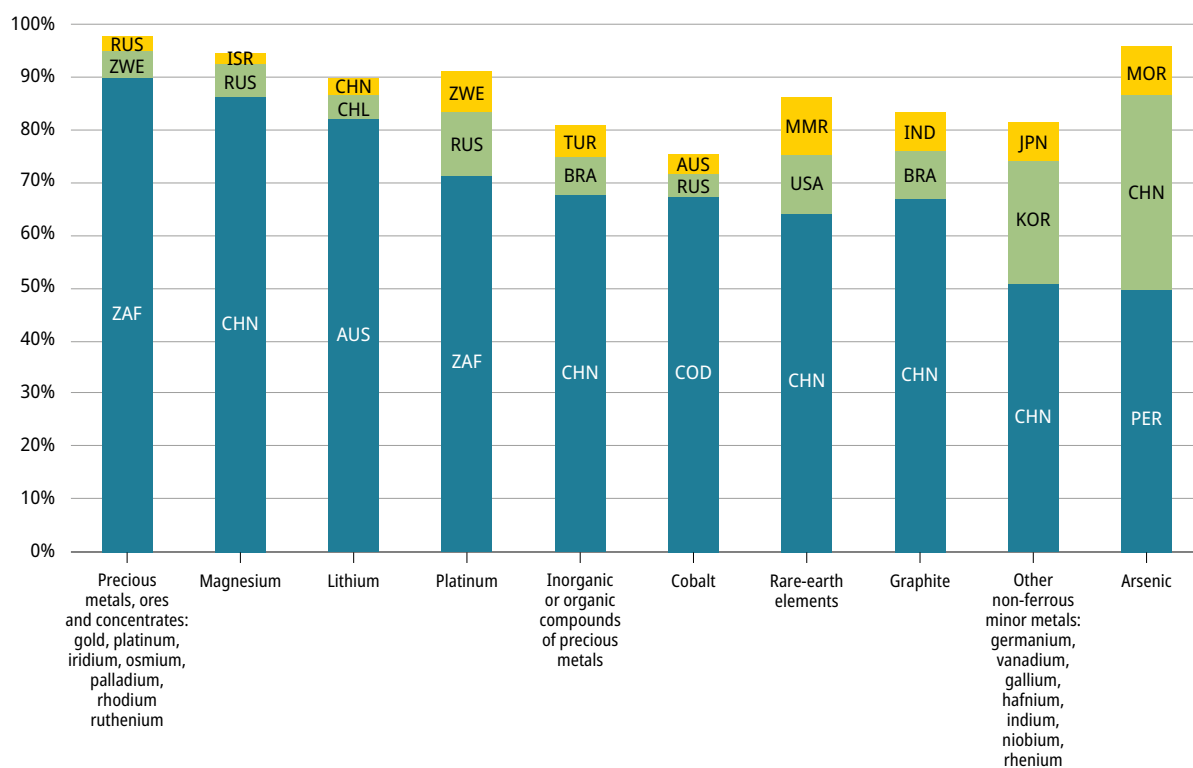
Access to critical raw materials is critical to the energy transition, but their extraction and processing can be polluting and remain concentrated in only a few countries (Figure 14). Trade in critical raw materials requires international co-operation and efforts to diversify supply chains (Box 1).

BOX 1. Energy security and the net-zero transition

Energy security poses a “trilemma” for policymakers: the need to rapidly reduce energy sector emissions while ensuring the security and reliability of energy supply and minimising the cost to consumers. Climate action can ultimately boost energy security through reducing reliance on fossil fuel imports, but supply chain risks in the medium term are of critical importance. Many key green energy technologies are mineral- and metal-intensive, and despite notable expansions in extraction and processing capabilities over the past decade, the market remains tight (Figure 14). In manufacturing, global capacity for key green energy technologies is also geographically concentrated. The Australian Strategic Policy Institute (ASPI) estimates that China leads globally in 37 out of 44 technologies essential for the energy

transition. However, the supply of critical materials and clean energy technologies is only necessary for maintenance or increasing low-carbon power production. Unlike power plants based on fossil fuels, power production can be maintained in the event of short-term disruptions to clean energy supply chains. Furthermore, improving recycling of these materials and adoption of circular economy practices can help reduce import dependence. Importantly, resilience along the supply chain is an essential but insufficient condition to ensure energy security in the transition, which also relies on building and maintaining the necessary enabling conditions such as grid capacity due to progressive electrification of the economy

Source: (IEA, 2023^[59]) (IRENA, 2023^[60]) in (OECD, 2024^[61]).

FIGURE 14. Top 3 producers of the top 10 most production-concentrated critical raw materials

Note: Shares in global production, in percentage. AUS – Australia; BRA – Brazil; CHN – China; CHL – Chile; COD – Democratic Republic of Congo; IND – India; ISR – Israel; KOR – Republic of Korea; JPN – Japan; MAR – Morocco; MMR – Myanmar; MOZ – Mozambique; PER – Peru; PRT – Portugal; TUR – Türkiye; RUS – Russian Federation; ZAF – South Africa; ZWE – Zimbabwe. Shares in global production based on gross weight of production.

Source: (Kowalski and Legendre, 2023_[58]).



Trade also plays a central role in transitioning to a circular economy by enabling global supply chains of secondary (recycled) raw materials and products. It facilitates trade in end-of-life products such as waste, scrap, second-hand items, or goods for repair or refurbishment, as well as services that facilitate circular economy practices such as recycling or repair. Without more ambitious circular economy policies, the amount of material resources needed to sustain the global economy is projected to nearly double from 92 gigatonnes in 2017 to 167 gigatonnes in 2060 (OECD, 2019^[62]). Additionally, trade can create more sustainable and resilient food systems, for example by encouraging the adoption of more sustainable practices to meet export markets standards.

However, the cross-border implications of many environmental issues create challenges for leveraging the trade-environmental policy synergies discussed above. Diversity across jurisdictions in approaches and stringency in climate policies can lead to negative spillover effects, such as carbon leakage and concentration of polluting industries in regions with less stringent regulations. The use of trade-related climate policies, such as requiring imported goods to meet certain environmental standards, can lead to an increasingly complex regulatory landscape that risks marginalising low-income countries and small producers in the global market.

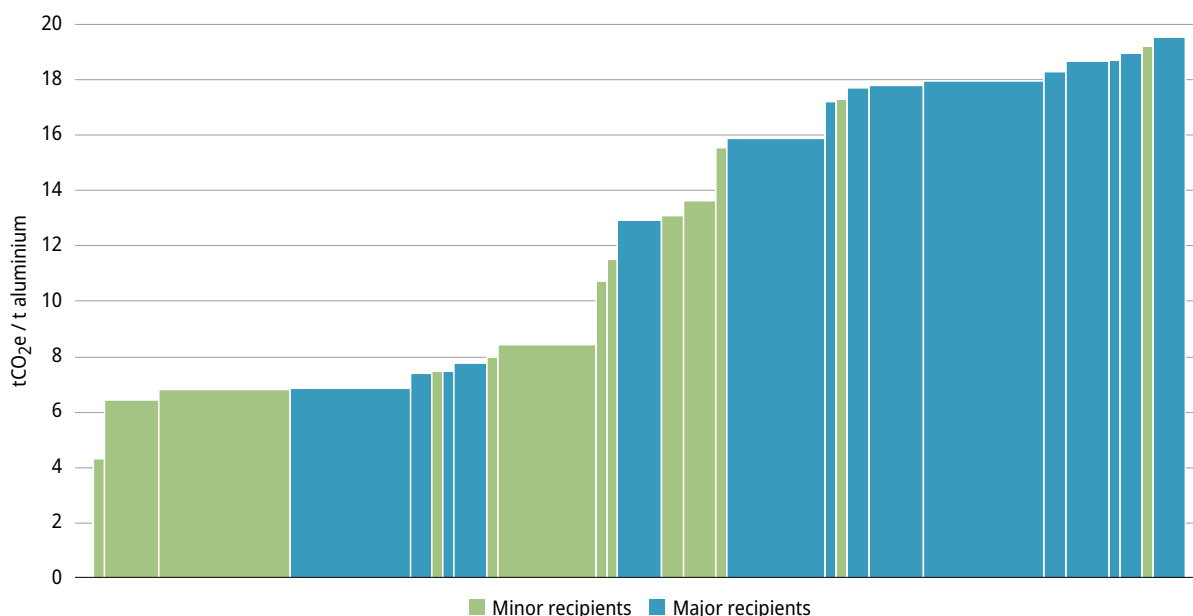
The increasing prevalence and scope of government support schemes as part of the shift towards “green” industrial policy can also have market-distorting effects. Producer support can create unfair competition, push more efficient or innovative suppliers out of the market, create incentives to lock-in existing technologies and lead to market concentration and risks inciting retaliatory efforts to shore-in production activities for key technologies by other large market players. Trade-related measures such as local content requirements or tariffs on foreign imports of key technologies can raise the costs of the net-zero transition. A subsidy race for clean energy technologies also risks leaving behind economies that lack the fiscal capacity to support domestic production.

Government support for other technologies can also impact environmental outcomes. For example, government support for aluminium and steelmaking activities has contributed to increased emissions by incentivising the expansion of production capacity, notably in more emissions-intensive locations, and by benefitting the most carbon-intensive firms, who consequently took over market share at the expense of lower-emitting competitors (Figure 15) (Garsous, Smith and Bourny, 2023^[63]).

Addressing these challenges requires robust international co-operation, for example on harmonising environmental standards and trade regulations, enhancing transparency and data sharing, designing measures with awareness of their potential trade distortions and risks, as well as building capacity and leveraging existing international frameworks. This also includes ensuring that trade agreements work to achieve environmental policy objectives, for example as in the Agreement on Climate Change, Trade and Sustainability (ACCTS), launched in 2019.⁴

Advancing measurement of the carbon footprints of individual products could be instrumental in allowing governments to better harness trade as a positive lever in driving climate action. For example, better information on carbon footprints will improve risk assessment of carbon leakage, as policy responses to deal with leakage risk require such information for implementing border adjustment charges on emissions embedded in imports.

4. The Agreement on Climate Change, Trade and Sustainability (ACCTS) is an international agreement aimed at achieving environmental policy objectives through legally binding trade rules. Signed by Costa Rica, Iceland, New Zealand, and Switzerland, ACCTS tackles fossil fuel subsidies, promotes trade in environmental goods and services, and establishes innovative eco-labelling standards.

FIGURE 15. Emissions intensity of firms in the aluminium industry, major vs minor recipients of government support

Note: Emissions intensity (emissions-to-production ratio) calculated for 31 firms included in the government support dataset from (OECD, 2021_[64]) based on data from the CRU emissions analysis tool. Average annual government support received between 2006 and 2021 is calculated for each firm. The median of obtained values is then used as a threshold to separate major and minor recipients of government support – i.e. major recipients of government support are the half sample of firms with the largest average annual government support. The width of the columns represents the production of each firm.

Source: (Garsous, Smith and Bourny, 2023_[63]).

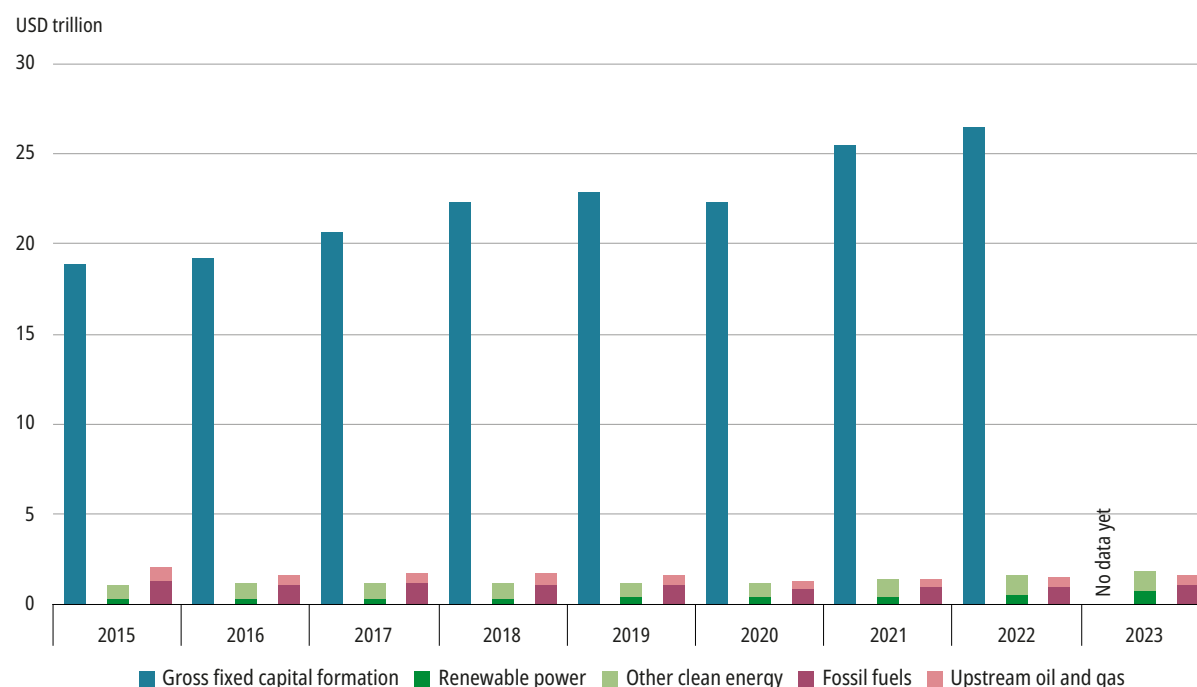
Current emissions data are often insufficiently accurate, timely and granular, and fragmented reporting standards and calculation methods make obtaining comparable data challenging. However, several initiatives are underway to tackle these challenges, including the OECD's Inclusive Forum on Carbon Mitigation Approaches (IFCMA) (OECD, 2024_[65]) and complementary work on improving measurement of the carbon footprint of agri-food products (OECD, 2025_[66]). Additionally, international co-operation is critical to facilitate technology transfer and mobilise finance for developing countries to support development, access, local production and deployment of green technologies, thereby driving progress towards meeting climate and sustainable development goals.

Aligning finance and investment with climate goals

Mobilising and redirecting investment and finance at scale remains one of the most intractable barriers to accelerating climate action. While many of the technologies necessary to meet the Paris Agreement goals are already available, finance is still not flowing at the pace and scale needed to keep global warming to a maximum of 1.5°C, or to adapt and build resilience to the impacts of climate change.

Available evidence across real economy investments and layers of the finance sector remains limited, but consistently points to a low level of alignment of financial flows and stocks with climate mitigation goals (OECD, 2024_[4]). In 2022, new investments in clean energy reached USD 1.7 trillion – surpassing the USD 1.5 trillion invested in fossil fuels – but this represents only a small share of total investments, with total fixed capital totalling USD 26.4 trillion in the same year (Figure 16).

FIGURE 16. Estimates of global real-economy investments supporting or undermining climate mitigation



Note: 'Renewable power' relates to investments in power generation from renewables. 'Other clean energy' refers to investments in energy efficiency and other end uses, electricity networks, storage, nuclear power generation, and clean fuels. 'Fossil fuels' relates to investments in fossil fuel supply and power generation from coal, oil, and natural gas.

Source: (OECD, 2024^[4]).

Concerning financial assets, while considerable blind spots exist, low-carbon energy supply accounted for only 4% of global listed equity compared to 10% for fossil fuel supply. Banks also continue to heavily finance fossil fuel supply, allocating USD 1 trillion in 2022, compared to USD 0.7 trillion for low-carbon energy (OECD, 2024^[4]). There are no comparable estimates for investment in climate change resilience due to data and methodological gaps, but available evidence points to a high degree of exposure to various physical climate-related risks across multiple geographies and sectors (Noels et al., 2024^[67]).

Aligning finance with climate goals is hindered by three main structural challenges:

1. Weak signals, planning, and delivery in the real economy, which highlights the need for well-designed and coherent policy packages.
2. Misalignment of financial sector fundamentals, which calls for better integration and pricing of climate-related risks in financial markets. This includes supportive financial sector policies, as well as cultural mindset shifts, e.g. to improve climate education and financial literacy.
3. Inadequate mobilisation of climate finance for emerging markets and developing economies (EMDEs), which requires improving domestic enabling conditions, unlocking blended finance and other derisking instruments from multiple development banks (MDBs) and donors, and strengthening domestic financial markets.

Real-economy policies are fundamental levers to increase the climate alignment of finance, but the role of policies to address financial sector challenges cannot be ignored. This is increasingly being recognised, with financial sector policies integrating climate-related considerations such as transparency, and disclosure requirements having more than quadrupled since Paris Agreement in 2015 (OECD, 2024^[4]). By 2023, 70 countries had put in place climate-finance guidelines, including taxonomies.

Despite this progress, more evidence is needed to assess the effectiveness of financial sector policies in aligning financial flows with climate goals. The diverse and often fragmented nature of definitions and regulations remains a critical barrier to scaling up investment. Making reporting requirements interoperable and ensuring that they cover complementary metrics will be crucial to better understand the alignment of finance with climate objectives, and how to more effectively direct finance flows to climate-aligned activities.

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Mobilising finance and investment for climate action is particularly challenging in EMDEs, where investment must increase at least fourfold by 2030 (IPCC, 2023^[68]; Bhattacharya et al., 2023^[69]), from an estimated USD 600 billion in 2022 to USD 2.4 trillion per year by the end of the decade. Closing this gap can only be achieved with private finance from a range of commercial actors.

However, international public climate finance has yet to mobilise private finance for climate action at the scale, speed and urgency required. In 2022, in the context of the USD 100 billion goal, public funds from both bilateral and multilateral channels continued to make up the bulk (80%) of climate finance provided and mobilised by developed countries for climate action in developing countries (OECD, 2024^[70]). This significant growth has been accompanied by an increase in mobilisation of private finance after several years of stagnation, but concerted efforts are still needed (OECD, 2023^[71]).

The need to increase finance for climate action in developing countries is recognised by the decision reached at COP29 in 2024 on a New Collective Quantified Goal (NCQG) for climate finance, which includes two main quantitative elements: a goal to mobilise at least USD 300 billion per year by 2035 for developing country Parties for climate action, for which developed country Parties are to take the lead, and a broader call to scale up financing to developing country Parties for climate action from all public and private sources to at least USD 1.3 trillion per year by 2035. Such scale-up will require co-ordinated efforts across a broad range of actors, such as rapidly expanding the use of blended finance and private sector instruments for climate action, and addressing barriers in the international development architecture that could limit the deployment of such approaches. Additionally, conditions for investors in EMDEs need to be improved by strengthening national climate strategies and policy frameworks and addressing structural barriers to investment, for example through aligning international investment agreements with the Paris Agreement, and developing and deepening capital markets and financial systems.



4. Climate adaptation efforts and investments need to be intensified

The year 2024 was the hottest year on record and the first in which average temperatures surpassed 1.5°C above pre-industrial levels. The impacts of this are being felt globally with climate impacts mounting noticeably. Extreme weather events are becoming more intense and unpredictable, with drought, extreme precipitation, and floods increasing since the beginning of the century. The fire weather season has lengthened by 27% since 1979 (OECD, 2023^[72]), and exposure to extreme heat (above 35°C) has risen by 11.3% (OECD, 2023^[73]). Extreme weather events cause massive economic losses: in the United States, wildfires alone cost up to USD 285 billion annually (Thomas et al., 2017^[74]), while excess heat and droughts in Europe in 2022 cost approximately EUR 40 billion (European Environment Agency, 2023^[75]). Across OECD countries, each additional heat wave has been found to lower firms' labour productivity by 0.2% (Costa et al., 2024^[76]).

As the window to meet the Paris Agreement temperature goals continues to close, governments must take immediate action to tackle both the root causes and growing impacts of climate change. Recognising the urgency of setting clear adaptation targets to accelerate climate action, countries at COP28 in 2023 adopted targets to help assess progress toward the Global Goal on Adaptation. These targets provide a framework for evaluating the effectiveness of climate resilience efforts and guiding policy improvements. At the same time, investment remains well below what is needed to build resilience, and securing financing for adaptation continues to be a critical barrier to progress.

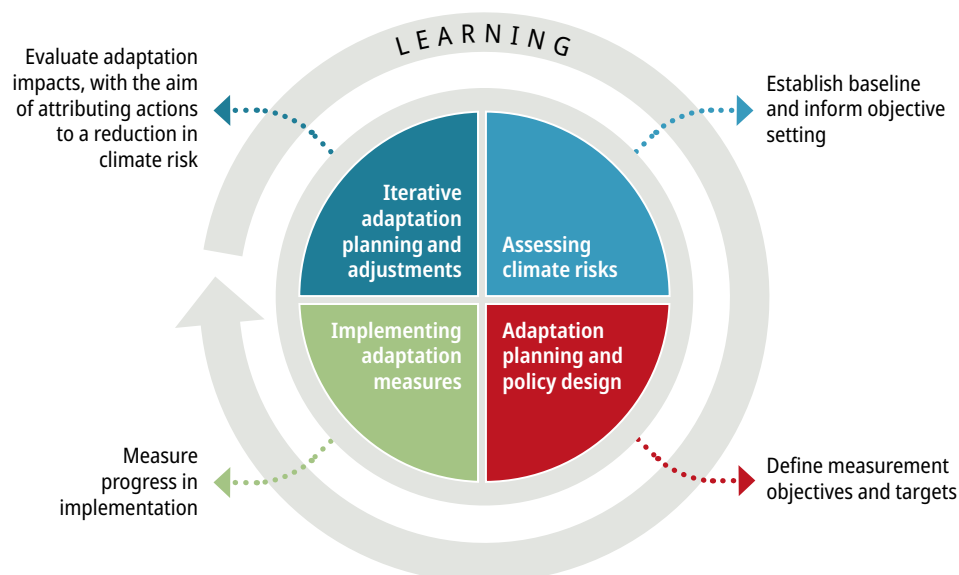
An iterative approach to climate change adaptation policymaking

Effective climate adaptation policymaking requires an adaptive, iterative approach that is continually adjusted to address evolving risks, ensuring that efforts to build resilience remain fit-for-purpose (Figure 17). A first step is conducting climate risk assessments (CRA) to identify vulnerabilities and exposure to climate impacts. This should be followed by policy planning and design, which includes developing National Adaptation Strategies (NAS) and National Adaptation Plans (NAP). Once policies are in place, implementation begins, integrating adaptation measures across sectors. The final step is measurement and evaluation, ensuring that policies are continuously refined based on their effectiveness. Regular updates to adaptation strategies and plans are crucial for maintaining resilience as climate conditions evolve.

Many countries are increasingly conducting climate risk assessments, but challenges persist in accurately evaluating exposure and vulnerabilities. These difficulties stem from data gaps and methodological constraints, which can hinder effective policy planning. Overcoming these issues requires improved data collection and the development of standardised assessment tools to ensure accurate and comprehensive risk evaluations.

Effective National Adaptation Strategies and Plans must include measurable and time-bound objectives based on CRAs. A whole-of-government approach is essential to co-ordinate adaptation efforts across different sectors and levels of government. Engaging a broad range of stakeholders, including local communities, businesses, and scientific experts, is vital for developing relevant and practical policies. Adequate funding and technical capacity are essential for ensuring successful implementation.

FIGURE 17. The adaptation policy cycle



Source: (OECD, 2024^[77]).

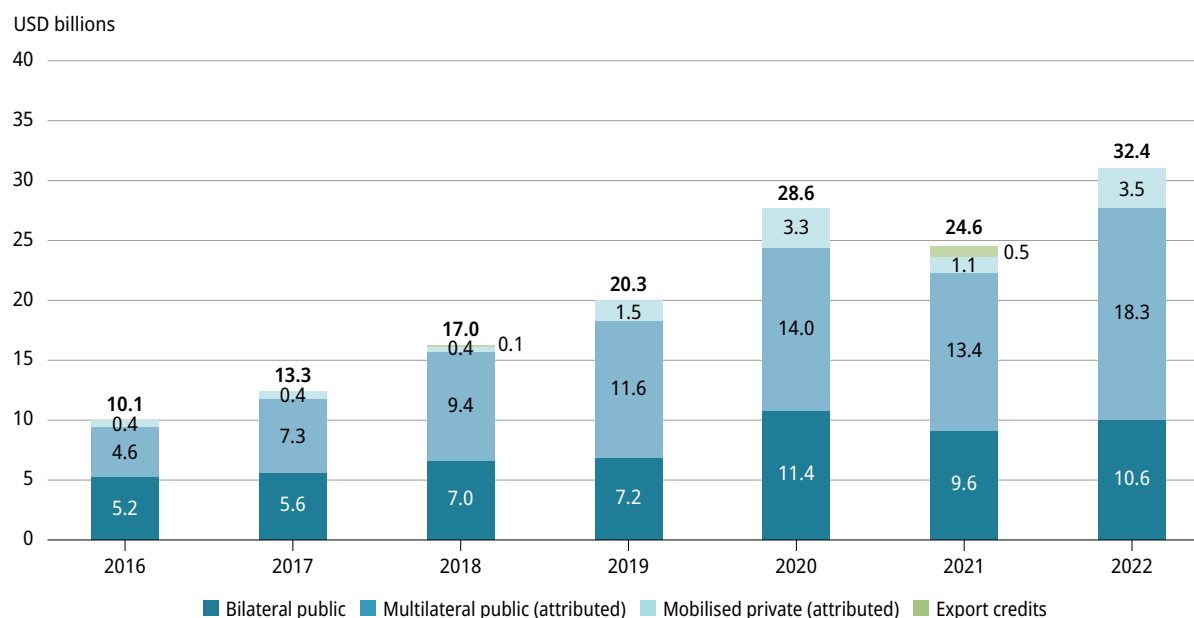
Governments should move beyond planning to urgently prioritising implementation. Advancing the implementation of adaptation measures requires a combination of policy tools including economic incentives, regulatory measures, public awareness campaigns, and direct investments in climate-resilient infrastructure, such as coastal protection systems (OECD, 2024^[78]).

A key challenge persists in measuring and evaluating adaptation efforts, with fewer than 40% of countries with NAP tracking their implementation (OECD, 2024^[77]). Strong legislation mandating performance assessments, the use of indicators to track progress, and enhanced data collection can improve accountability and effectiveness. Strengthening these evaluation mechanisms will ensure that adaptation measures remain responsive and impactful.

Regional disparities in exposure to climate risks call for tailored, place-based adaptation strategies. For instance, cities with more than 250,000 inhabitants are on average 3°C warmer than their surrounding areas due to the urban heat island effect, which causes more severe heatwaves in densely populated areas (OECD, 2023^[79]). Some urban centres are 5-7°C warmer than their surrounding areas. Subnational governments play a crucial role in implementing local climate policies and managing infrastructure investments, but resource constraints and technical skills gaps often hinder their efforts. Effective co-ordination between national and local governments, innovative financing mechanisms, and improved access to climate finance are essential to ensure that adaptation strategies work for all regions. By addressing these challenges, governments can enhance climate resilience and safeguard communities against the growing impacts of climate change.

Financing adaptation efforts

Global annual investment needs for adaptation are projected to be in the hundreds of billions of dollars, with developing countries alone requiring between USD 215 billion and USD 387 billion per year this decade (UNEP, 2023^[80]). Estimated adaptation investment flows, at USD 76 billion in 2022, fall short of projected

FIGURE 18. Adaptation finance for developing countries provided and mobilised in 2016-2022 per component

Note: The sum of components may not equal totals due to rounding.

Source: (OECD, 2024_[82]).

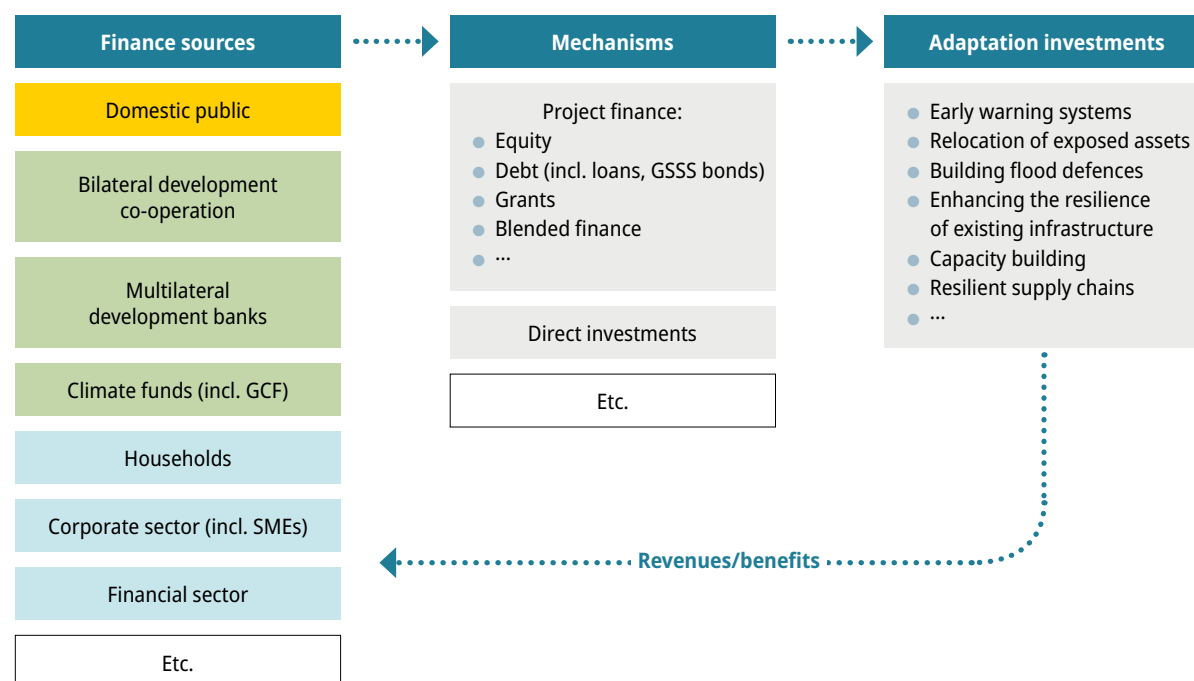
needs (CPI, 2024_[81]). Climate finance mobilised by developed countries for adaptation in developing countries reached USD 32.4 billion in 2022 (Figure 18), on track to meet the Glasgow Climate Pact's goal of doubling adaptation finance from USD 19 billion (2019 levels) by 2025 (OECD, 2024_[82]). However, annual investment needs for adaptation in developing countries are an order of magnitude greater.

To bridge this gap, investment frameworks must be adjusted to encourage climate adaptation. This entails establishing effective regulations and creating an enabling environment that attracts adaptation-focused investments. National adaptation plans should include comprehensive funding strategies that connect financing needs with appropriate public and private sources (Figure 19), ensuring a co-ordinated approach to addressing financial shortfalls.

Integrating climate adaptation into public spending requires green budgeting frameworks and updated project appraisal tools that factor in uncertainties and non-market benefits of adaptation, as well as macrostructural and fiscal models that integrate climate considerations, applied across all levels of government. Targeted financial support and policy coherence are also necessary to align public and private sector incentives, thereby mobilising private sector investments into climate adaptation.

Improving transparency and standardisation in financial disclosures can help align financial markets with climate resilience objectives. Governments play a key role in setting disclosure requirements, facilitating better data access, and, in some regions, developing credible taxonomies to classify and promote adaptation investments. By 2023, 70 countries, including 30 OECD Members, had developed climate-related finance guidelines which typically include considerations for adaptation (OECD, 2024_[4]). These steps enhance investor confidence and direct funding toward climate-resilient projects.

FIGURE 19. Finance sources, mechanisms and adaptation investments



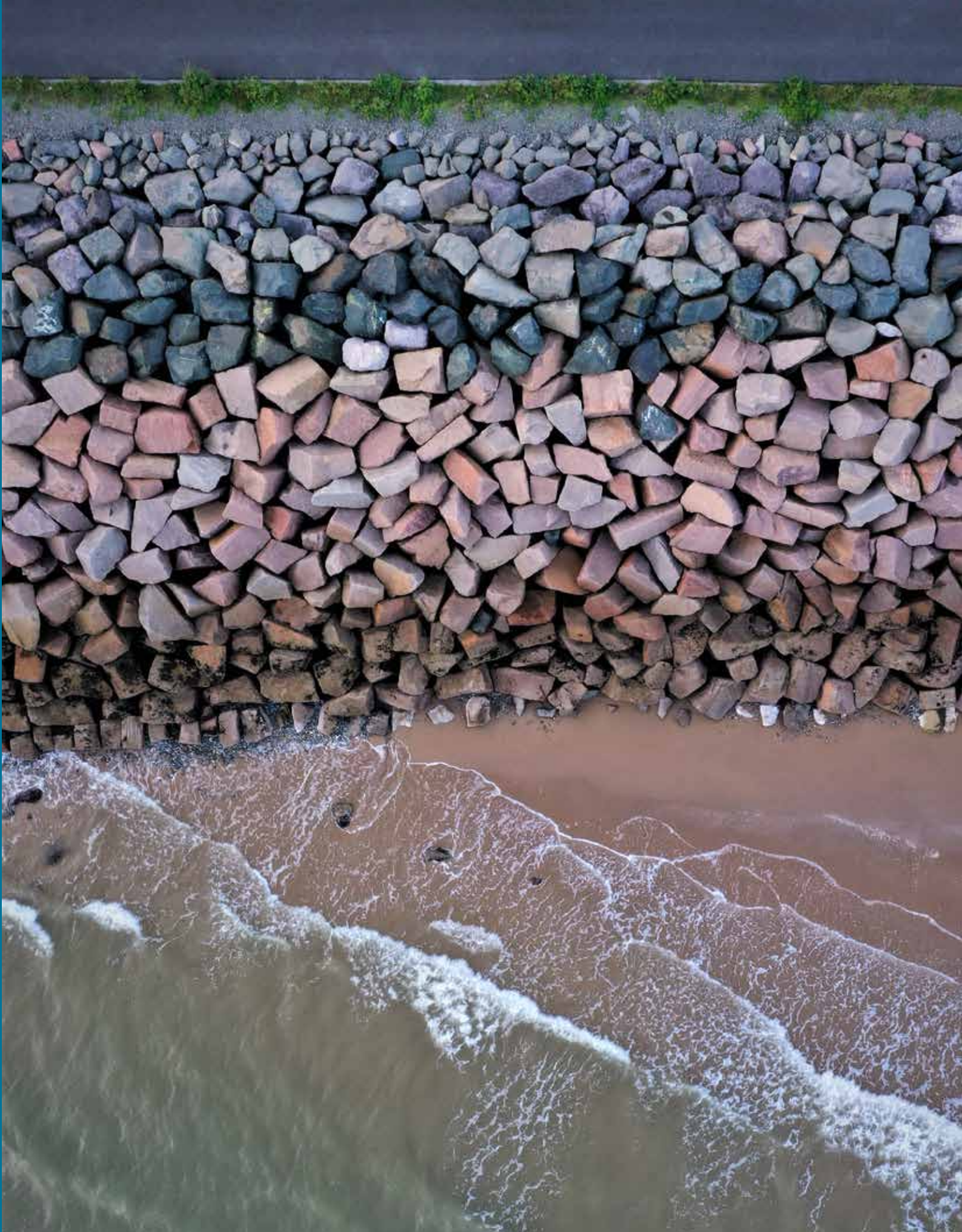
Note: Colours indicate domestic public (yellow), international public (green) and private (blue) sources of finance.

Source: (OECD, 2024^[83]).

Assessing the alignment of finance with climate resilience goals remains challenging, however, as it requires not only an assessment of physical risks and how these relate to financial flows and assets, but also an appraisal of efforts to adapt to or minimise those risks through public policy and financial sector actions. While assessments of physical risk to financial assets and flows are emerging, more accessible and granular data is needed to better reflect the location-specific nature of climate hazards. Better reference points for national and local adaptation policy efforts are also necessary to more accurately assess the alignment of finance with climate resilience goals.

Insurance and risk transfer mechanisms are essential for managing climate-related physical risks. Through risk-based pricing, they encourage risk reduction while offering financial protection. However, significant coverage gaps persist, particularly in high-risk areas where insurance may be unavailable or unaffordable. Governments and financial institutions should develop targeted programmes to improve accessibility and affordability of climate risk insurance, ensuring broader financial protection.

Developing countries are particularly vulnerable to climate impacts due to their geographic exposure and limited investment capacity. These nations face numerous barriers to accessing adaptation finance, necessitating increased international support. Climate finance providers can help scale up adaptation funding for developing countries through 1) evaluating the alignment of their spending plans with climate finance goals; 2) supporting domestic efforts to create an enabling investment environment; 3) enhancing development practices for efficient finance delivery; 4) leveraging public and blended finance to attract private investments; and 5) exploring innovative financing sources such as carbon markets.



5. Bridging knowledge gaps can improve the effectiveness of climate policies

Many governments are developing the broad and comprehensive policy packages needed for climate action. The second phase of the OECD's horizontal project Building Climate and Economic Resilience: Net Zero+ has generated rich insights from multi-disciplinary analyses across the contributing OECD policy committees and bodies. However, it has also identified important questions and knowledge gaps, such as:

- **How effective are climate policy packages?** Ex-post evidence on policy effectiveness is lacking. As governments implement increasingly comprehensive and stringent policy packages, more evidence is needed on their effectiveness, interactions, and what works best in what context.
- **How significant is government support?** Notwithstanding some progress within the OECD, data on the magnitude and nature of government support to industries key to the green transition remains incomplete. Given the scale of industrial policy packages, better understanding their impacts, including on driving progress on climate goals, would greatly support policymakers in designing or enhancing such strategies.
- **To what extent is finance aligned with climate goals and targets?** Improved assessment is needed across most financial sources. Given the crucial need to align financial flows with climate goals, developing better methodologies and data sources in this area is imperative.
- **How can data and capacity gaps in developing countries be closed?** Developing countries often face challenges when projecting climate impacts or the impacts of the net-zero transition. Filling data gaps, increasing modelling and assessment capacity and finding innovative means to address challenges faced by developing countries is crucial. Localised approaches to impact assessments, making use of qualitative methods such as surveys and interviews, may be useful.
- **How resilient are economies and societies to climate impacts?** Stronger evidence is needed to inform adaptation policies, including improved mainstreaming of climate risk assessments and enhanced monitoring and evaluation to better understand the effectiveness of adaptation efforts and whether they remain fit-for-purpose as climate impacts evolve.
- **What is the carbon footprint of everything?** Knowing the carbon footprint of goods, processes and activities would make it possible for governments to design more effective policies and for consumer demand to create markets for low-carbon goods, both of which improve incentives for firms to decarbonise. Better information and incentives would in turn help firms unlock the financing needed for investments in decarbonisation. Improving carbon footprint information relies on proportional efforts balancing precision and resource requirements, innovation and competition, as well as interoperability across sectors, countries and initiatives.



References

- Aulie, F. et al. (2023), “Did COVID-19 accelerate the green transition?: An international assessment of fiscal spending measures to support low-carbon technologies”, *OECD Science, Technology and Industry Policy Papers*, No. 151, OECD Publishing, Paris, <https://doi.org/10.1787/5b486c18-en>. [12]
- BEUC (2023), *The Great Green Maze: Survey Results from 16 Countries*, https://www.beuc.eu/sites/default/files/publications/BEUC-X-2023-149_The_Great_Green_Maze_How_environmental_advertising_confuses_consumers.pdf. [25]
- Bhattacharya, A. et al. (2023), *A climate finance framework: decisive action to deliver on the Paris Agreement - Summary*, London School of Economics, <https://www.lse.ac.uk/granthaminstitute/publication/a-climate-finance-framework-decisive-action-to-deliver-on-the-paris-agreement-summary/>. [69]
- BloombergNEF (2023), *2H 2023 LCOE Update: An Uneven Recovery*, <https://about.bnef.com/blog/2h-2023-lcoe-update-an-uneven-recovery/>. [9]
- CAPMF (2024), *Climate actions and policies measurement framework*, [https://data-explorer.oecd.org/vis?lc=en&fs\[0\]=Topic%2C1%7CEnvironment%23ENV%23%7CEnvironmental%20policy%23ENV_POL%23&pg=0&fc=Topic&bp=true&snb=10&df\[ds\]=dsDisseminateFinalDMZ&df\[id\]=DSD_CAPMF%40DF_CAPMF&df\[ag\]=OECD.ENV.EPI&df\[vs\]=1.0&pd=2018%2C&dq=AUS.A](https://data-explorer.oecd.org/vis?lc=en&fs[0]=Topic%2C1%7CEnvironment%23ENV%23%7CEnvironmental%20policy%23ENV_POL%23&pg=0&fc=Topic&bp=true&snb=10&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_CAPMF%40DF_CAPMF&df[ag]=OECD.ENV.EPI&df[vs]=1.0&pd=2018%2C&dq=AUS.A). [14]
- Causa, O. et al. (2024), “Labour markets transitions in the greening economy: Structural drivers and the role of policies”, *OECD Economics Department Working Papers*, No. 1803, OECD Publishing, Paris, <https://doi.org/10.1787/d8007e8f-en>. [43]
- Costa, H. et al. (2024), “The heat is on: Heat stress, productivity and adaptation among firms”, *OECD Economics Department Working Paper No 1828*, <https://doi.org/10.1787/19d94638-en>. [76]
- CPI (2024), *Global Landscape of Climate Finance 2024*, <http://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2024>. [81]
- Creutzig, F. et al. (2023), “Demand, Services and Social Aspects of Mitigation”, in *Climate Change 2022 - Mitigation of Climate Change*, Cambridge University Press, <https://doi.org/10.1017/9781009157926.007>. [7]
- Earth4All (2024), *The Earth for All 2024 Survey: Exploring global attitudes to political and economic transformation*, <https://earth4all.life/global-survey-2024/>. [53]
- European Environment Agency (2023), *Economic losses from weather- and climate-related extremes in Europe*, <https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related?activeAccordion=546a7c35-9188-4d23-94ee-005d97c26f2b> (accessed on 24 April 2024). [75]
- Garsous, G., D. Smith and D. Bourny (2023), “The climate implications of government support in aluminium smelting and steelmaking: An Empirical Analysis”, *OECD Trade Policy Papers*, No. 276, OECD Publishing, Paris, <https://doi.org/10.1787/178ed034-en>. [63]
- Goodwin, L. (2023), *The Global Benefits of Reducing Food Loss and Waste, and How to Do It*, Word Resource Institute - insights, <https://www.wri.org/insights/reducing-food-loss-and-food-waste>. [23]
- ICPEN (2021), *Global sweep finds 40% of firms’ green claims could be misleading*, <https://icpen.org/news/1147> (accessed on 5 March 2024). [24]

- IEA (2024), *Energy Technology Perspectives 2024*, [6]
<https://www.iea.org/reports/energy-technology-perspectives-2024>.
- IEA (2024), *Global Methane Tracker 2024*, <https://www.iea.org/reports/global-methane-tracker-2024>. [19]
- IEA (2024), “Methane Tracker database”, [18]
<https://www.iea.org/data-and-statistics/data-tools/methane-tracker-data-explorer>.
- IEA (2024), *World Energy Employment 2024*, <https://www.iea.org/reports/world-energy-employment-2024>. [41]
- IEA (2024), *World Energy Outlook 2024*, <https://www.iea.org/reports/world-energy-outlook-2024>. [20]
- IEA (2023), *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach*, IEA, [56]
<https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach>.
- IEA (2023), *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach - 2023 Update*, [59]
<http://www.iea.org/t&c/>.
- IEA (2023), *World Energy Outlook 2023*, <https://www.iea.org/reports/world-energy-outlook-2023>. [28]
- IEA (2022), *Global Methane Tracker 2022*, <https://www.iea.org/reports/global-methane-tracker-2022>. [21]
- IEA (2022), *World Energy Outlook 2022*, <https://www.iea.org/reports/world-energy-outlook-2022>. [26]
- IEA (2021), *World Energy Outlook 2021*, <https://www.iea.org/reports/world-energy-outlook-2021>. [27]
- IPCC (ed.) (2023), *Climate Change 2022 - Mitigation of Climate Change*, Cambridge University Press, [16]
<https://doi.org/10.1017/9781009157926>.
- IPCC (2023), “Investment and Finance”, in *Climate Change 2022 - Mitigation of Climate Change*, Cambridge [68]
 University Press, <https://doi.org/10.1017/9781009157926.017>.
- IPCC (2022), *Investment and finance*, Cambridge University Press, <https://doi.org/10.1017/9781009157926.017>. [57]
- IRENA (2023), *Geopolitics of the Energy Transition Critical Materials*, [60]
<https://www.irena.org/Publications/2023/Jul/Geopolitics-of-the-Energy-Transition-Critical-Materials>.
- Kowalski, P. and C. Legendre (2023), “Raw materials critical for the green transition: Production, international trade [58]
 and export restrictions”, *OECD Trade Policy Papers*, No. 269, OECD Publishing, Paris,
<https://doi.org/10.1787/c6bb598b-en>.
- Meadowcroft, J. and D. Rosenbloom (2023), “Governing the net-zero transition: Strategy, policy, and politics”, [13]
Proceedings of the National Academy of Sciences, Vol. 120/47, <https://doi.org/10.1073/pnas.2207727120>.
- Nachtigall, D. et al. (2024), “The Climate Actions and Policies Measurement Framework: A Database to Monitor and [15]
 Assess Countries’ Mitigation Action”, *Environmental and Resource Economics*, Vol. 87/1, pp. 191-217,
<https://doi.org/10.1007/s10640-023-00821-2>.
- Nijse, F. et al. (2023), “The momentum of the solar energy transition”, *Nature Communications*, Vol. 14, [11]
<https://doi.org/10.1038/s41467-023-41971-7>.
- Noels, J. et al. (2024), “Towards assessing the alignment of finance with climate resilience goals: Exploring options, [67]
 methodologies, data and metrics”, *OECD Environment Working Papers*, No. 251, OECD Publishing, Paris,
<https://doi.org/10.1787/9446d65e-en>.

- OECD (2025), *Empowered Citizens, Informed Consumers and Skilled Workers: Designing Education and Skills Policies for a Sustainable Future*, OECD Publishing, Paris, <https://doi.org/10.1787/311cdbeb-en>. [45]
- OECD (2025), "Government Support in the Solar and Wind Value Chains", *OECD Trade Policy Papers*, No. 288, OECD Publishing, Paris, <https://doi.org/10.1787/d82881fd-en>. [10]
- OECD (2025), *Investing in climate for growth and development: The case for enhanced NDCs*, <https://www.oecd.org/content/dam/oecd/en/about/projects/new-ndcs-to-deliver-climate-action-for-growth/investing-in-climate-for-growth-and-development-the-case-for-enhanced-NDCs-key-messages.pdf>. [5]
- OECD (2025), *Measuring Carbon Footprints of Agri-Food Products: Eight Building Blocks*, OECD Publishing, Paris, <https://doi.org/10.1787/8eb75706-en>. [66]
- OECD (2024), "Accelerating Climate Adaptation: A Framework for Assessing and Addressing Adaptation Needs and Priorities", *OECD Economic Policy Papers No.35*, <https://doi.org/10.1787/8afaaeb8-en>. [78]
- OECD (2024), *Anti-Corruption and Integrity Outlook 2024*, OECD Publishing, Paris, <https://doi.org/10.1787/968587cd-en>. [33]
- OECD (2024), *Climate Adaptation Investment Framework*, Green Finance and Investment, OECD Publishing, Paris, <https://doi.org/10.1787/8686fc27-en>. [83]
- OECD (2024), *Climate Finance Provided and Mobilised by Developed Countries in 2013-2022*, Climate Finance and the USD 100 Billion Goal, OECD Publishing, Paris, <https://doi.org/10.1787/19150727-en>. [70]
- OECD (2024), *Climate Finance Provided and Mobilised by Developed Countries in 2013-2022*, Climate Finance and the USD 100 Billion Goal, OECD Publishing, Paris, <https://doi.org/10.1787/19150727-en>. [82]
- OECD (2024), "Closing in on net zero: Background and issues explored in Phase Two of the Net Zero+ project", *OECD Net Zero+ Policy Papers*, No. 1, OECD Publishing, Paris, <https://doi.org/10.1787/bbe55705-en>. [1]
- OECD (2024), *Development Co-operation Report 2024: Tackling Poverty and Inequalities through the Green Transition*, OECD Publishing, Paris, <https://doi.org/10.1787/357b63f7-en>. [50]
- OECD (2024), *Education at a Glance 2024 Sources, Methodologies and Technical Notes*, OECD Publishing, Paris, <https://doi.org/10.1787/e7d20315-en>. [55]
- OECD (2024), *Education at a Glance 2024: OECD Indicators*, OECD Publishing, Paris, <https://doi.org/10.1787/c00cad36-en>. [54]
- OECD (2024), *Feeling the Heat: Working under increasing temperatures*, OECD Publishing, https://www.oecd.org/en/publications/feeling-the-heat_e07ce0e6-en.html. [37]
- OECD (2024), *Green Budgeting in OECD Countries 2024*, OECD Publishing, Paris, <https://doi.org/10.1787/9aea61f0-en>. [32]
- OECD (2024), *Green industrial policies for the net-zero transition OECD Net Zero+ Policy Papers No.2*, <https://www.oecd.org/en/about/programmes/net-zero-building-climate-and-economic-resilience.html>. [61]
- OECD (2024), *Measuring Progress in Adapting to a Changing Climate: Insights from OECD countries*, OECD Publishing, Paris, <https://doi.org/10.1787/8cfe45af-en>. [77]
- OECD (2024), *OECD Employment Outlook 2024: The Net-Zero Transition and the Labour Market*, OECD Publishing, Paris, <https://doi.org/10.1787/ac8b3538-en>. [38]

- OECD (2024), *OECD Review on Aligning Finance with Climate Goals: Assessing Progress to Net Zero and Preventing Greenwashing*, Green Finance and Investment, OECD Publishing, Paris, <https://doi.org/10.1787/b9b7ce49-en>. [4]
- OECD (2024), *OECD Survey on Drivers of Trust in Public Institutions – 2024 Results: Building Trust in a Complex Policy Environment*, OECD Publishing, Paris, <https://doi.org/10.1787/9a20554b-en>. [36]
- OECD (2024), *The Climate Action Monitor 2024*, OECD Publishing, Paris, <https://doi.org/10.1787/787786f6-en>. [2]
- OECD (2024), “Towards more accurate, timely, and granular product-level carbon intensity metrics: challenges and potential solutions: An IFCMA report”, *Inclusive Forum on Carbon Mitigation Approaches Papers*, No. 4, OECD Publishing, Paris, <https://doi.org/10.1787/87bbd6bf-en>. [65]
- OECD (2023), *A Territorial Approach to Climate Action and Resilience*, OECD Regional Development Studies, OECD Publishing, Paris, <https://doi.org/10.1787/1ec42b0a-en>. [79]
- OECD (2023), *Government at a Glance 2023*, OECD Publishing, Paris, <https://doi.org/10.1787/3d5c5d31-en>. [31]
- OECD (2023), *Informality and Globalisation: In Search of a New Social Contract*, OECD Publishing, Paris, <https://doi.org/10.1787/c945c24f-en>. [49]
- OECD (2023), *Job Creation and Local Economic Development 2023: Bridging the Great Green Divide*, OECD Publishing, Paris, <https://doi.org/10.1787/21db61c1-en>. [42]
- OECD (2023), *OECD Database of Representative Deliberative Processes and Institutions*, <https://airtable.com/appP4czQIAU1My2M3/shrX048tmQLI8yzdc/tblm3C6n7vM6vPSCz/viw2EEqp8wOhaHACK>. [51]
- OECD (2023), *OECD SME and Entrepreneurship Outlook 2023*, OECD Publishing, Paris, <https://doi.org/10.1787/342b8564-en>. [40]
- OECD (2023), *Questionnaire to Adherents for assessing the implementation, dissemination and continued relevance of the OECD Recommendation on Policy Coherence for Sustainable Development..* [30]
- OECD (2023), *Regional Industrial Transitions to Climate Neutrality*, OECD Regional Development Studies, OECD Publishing, Paris, <https://doi.org/10.1787/35247cc7-en>. [39]
- OECD (2023), *Scaling Up the Mobilisation of Private Finance for Climate Action in Developing Countries: Challenges and Opportunities for International Providers*, Green Finance and Investment, OECD Publishing, Paris, <https://doi.org/10.1787/17a88681-en>. [71]
- OECD (2023), *Survey on Strategic Decision-making at the Centre of Government*. [29]
- OECD (2023), *Taming Wildfires in the Context of Climate Change*, OECD Publishing, Paris, <https://doi.org/10.1787/dd00c367-en>. [72]
- OECD (2023), *The Climate Action Monitor 2023: Providing Information to Monitor Progress Towards Net-Zero*, OECD Publishing, Paris, <https://doi.org/10.1787/60e338a2-en>. [73]
- OECD (2023), “The Gender Equality and Environment Intersection: An overview of development co-operation frameworks and financing”, *OECD Development Perspectives*, No. 38, OECD Publishing, Paris, <https://doi.org/10.1787/c16d8fe8-en>. [48]
- OECD (2022), *Are Students Ready to Take on Environmental Challenges?*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/8abe655c-en>. [52]
- OECD (2021), *Gender and the Environment: Building Evidence and Policies to Achieve the SDGs*, OECD Publishing, Paris, <https://doi.org/10.1787/3d32ca39-en>. [46]

- OECD (2021), "Measuring distortions in international markets: Below-market finance", *OECD Trade Policy Papers*, No. 247, OECD Publishing, Paris, <https://doi.org/10.1787/a1a5aa8a-en>. [64]
- OECD (2021), *OECD Skills Outlook 2021: Learning for Life*, OECD Publishing, Paris, <https://doi.org/10.1787/0ae365b4-en>. [44]
- OECD (2019), *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264307452-en>. [62]
- OECD (Forthcoming), *Greening Public Administration in OECD countries: Driving the Green Transition within and from the Public Sector*. [35]
- OECD (Forthcoming), *Open government for the green transition: Panorama of practices for meaningful citizen participation*. [84]
- Our World in Data (2024), *Share of electricity production from solar*, <https://ourworldindata.org/grapher/share-electricity-solar> (accessed on 27 January 2025). [8]
- Stechemesser, A. et al. (2024), "Climate policies that achieved major emission reductions: Global evidence from two decades", *Science*, Vol. 385/6711, pp. 884-892, <https://doi.org/10.1126/science.adl6547>. [3]
- Thomas, D. et al. (2017), *The Costs and Losses of Wildfires: A literature review*, <https://doi.org/10.6028/NIST.SP.1215>. [74]
- UN Women (2023), *Data Driven Insight: The Effects of Climate Change on Gender Development*, https://www.unwomen.org/sites/default/files/2023-11/data-driven_insight_the_effects_of_climate_change_on_gender_development.pdf. [47]
- UNEP (2023), *Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on climate adaptation leaves world exposed.*, <https://doi.org/10.59117/20.500.11822/43796>. [80]
- UNEP (2021), *Environmental Courts and Tribunals – 2021: A Guide for Policy Makers*, <https://wedocs.unep.org/handle/20.500.11822/40309;jsessionid=DC80BA2189871C9E8F85CEDEABD05288>. [34]
- UNEP (2021), "Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions", <https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions>. [17]
- United Nations Environment Programme and Climate and Clean Air Coalition (2021), *Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions*, Nairobi: United Nations Environment Programme, https://www.ccacoalition.org/sites/default/files/resources//2021_Global-Methane_Assessment_full_0.pdf (accessed on 3 March 2025). [22]



Fast-tracking Net Zero by Building Climate and Economic Resilience

A Summary for Policymakers

Climate action has never been more urgent. 2024 was the hottest year on record and the first to exceed an average of 1.5°C of warming. As the world faces record-breaking heat and escalating climate risks, this report provides governments with policy insights to help close the ambition and implementation gaps to reach net zero. Drawing on the OECD's substantial body of climate policy research, this summary for policymakers brings together findings from the second phase of the Organisation's Net Zero+ project, which focuses on building climate and economic resilience. The report shows that reaching net zero is still possible but requires urgent action. It also discusses the importance of public support, trade, investment and finance, climate adaptation and bridging knowledge gaps to improve the effectiveness of climate policies.



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