The OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE)

OECD

Taking on the transition

Giving centre stage to our cities, regions, small businesses, entrepreneurs and social innovators

Policy Perspectives 2024

About the OECD

The Organisation for Economic Co-operation and Development (OECD) is an international organisation that works to build better policies for better lives. Our goal is to shape policies that foster prosperity, equality, opportunity and well-being for all. We draw on 60 years of experience and insights to better prepare the world of tomorrow.

Together with governments, policy makers and citizens, we work on establishing international norms and finding evidence-based solutions to a range of social, economic and environmental challenges. From improving economic performance and creating jobs to fostering strong education and fighting international tax evasion, we provide a unique forum and knowledge hub for data and analysis, exchange of experiences, best-practice sharing, and advice on public policies and global standard-setting.

The OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE)

The Centre helps local, regional and national governments unleash the potential of entrepreneurs and small and medium-sized enterprises, promote inclusive and sustainable regions and cities, boost local job creation and implement sound tourism policies.

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Foreword

The need for ambitious climate action is more urgent than ever, and everybody has a part to play. At the OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE), we work with policy makers and governments at the national, regional and local level, businesses, higher education institutions, social economy actors and other stakeholders to develop policies that mobilise all actors – including citizens – in achieving net zero.

Action at the subnational level is critical

Regions and cities face very different challenges in navigating the net zero transition. Cities account for nearly two-thirds of global energy demand, producing up to 50% of solid waste and 70% of greenhouse gas emissions. Rural and remote areas, on the other hand, have higher levels of emissions per capita, owing to a greater dependence on heavy industries that will need to undergo radical restructuring as well as on more polluting modes of transport. The geography of green jobs and skills is similarly varied.

Across OECD countries the difference between the region with the highest share of workers in green jobs and the lowest is around 30 percentage points.
Subnational governments are well placed to lead the response to these challenges. They oversee, on average, 63% of climate-related public expenditure and 69% of climate-related public investment, alongside broader powers over skills, housing, transport, waste, water, energy and land use. Many subnational governments have even more ambitious emissions targets than their national governments. In 23 out of 38 OECD countries, at least one city or region has set a more ambitious net-zero target than their national government.

No net zero without our small businesses, entrepreneurs, and social innovators

Small businesses also have a crucial role to play in securing a net zero future. In the EU, SMEs account for around 40% of all business-driven greenhouse gas (GHG) emissions and energy consumption. Yet SMEs are too often overlooked, with policy attention mainly concentrated on large firms. As a result, SMEs lag larger firms in taking environmental action. That needs to change. SMEs will require help to enable them to comply and report, as well as in accessing sustainable finance and skills. At the same time, policies are needed to support green entrepreneurs – including social entrepreneurs - to develop the eco-innovations – from finance to food - needed to drive a just transition to net-zero.

For the tourism sector in particular, the net zero transition is an urgent priority. International tourism flows have risen from 50 million a year in the 1950s to 1.5 billion today and will continue to rise in the decades to come. With the sector already accounting for between 8% and 11% of global greenhouse gas emissions, it needs to undergo deep structural changes to be compatible with global net zero ambitions.

At the CFE, we will continue to support policy makers in this vital mission, providing them with the data, evidence, and inspiration to build resilience and set us on course to make the net-zero transition a reality. This brochure sets out our work programme for 2024.

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GOING LOCAL TO DELIVER ON NATIONAL CLIMATE COMMITMENTS

A Territorial Approach to Climate Action and Resilience

Regions and cities are responsible for most climate-related public investment, but most remain far from meeting net zero ambitions. They face different challenges in making that transition, with very different infrastructure, industries, skills, and institutions. At CFE, we work with national governments to develop frameworks to drive local action to meet national climate commitments. We also work with subnational governments to develop tailored place-based policies to tackle the risks and seize the opportunities presented by the green transition.

Different regions and cities are on very different paths. From 1990 to 2022, greenhouse gas emissions fell in almost half of OECD regions and large metropolitan areas but in a quarter of regions they increased by more than 50%.

These divergent trajectories exist within as well as between countries. For example, in the US, emissions in Nevada have increased by nearly 50%, while they have decreased by 60% in West Virginia.

Most regions will need to make huge changes to meet net zero commitments. In 2022, only 110 out of the 433 OECD large regions and 137 out of the 360 OECD metropolitan areas with more than 500 000 inhabitants registered production-based emissions per capita below the threshold consistent with the IEA Net Zero Emissions (NZE) scenario (4.7t CO_2-eq per capita). On average, OECD regions will have to cut their emissions per capita by a factor of 2.3 by 2030 to reach this target.

The commitment is there from subnational governments. More than 10 000 cities and regions from over 140 countries, representing more than 900 million people, have committed to climate and energy targets and actions. The **OECD Programme A Territorial Approach to Climate Action and Resilience** provides policymakers with granular data and guidance on how national frameworks can drive local action as well as tailored, place-based policy support to accelerate climate mitigation and adaptation at all territorial scales. Its work includes:

1. **Measuring climate challenges and where cities and regions stand vis-à-vis global targets** by using the OECD territorial climate indicator framework.

2. **Assessing national and subnational policy frameworks** by applying a policy checklist to implement a territorial approach to climate and resilience policies.

3. **Supporting multi-level dialogues within and between countries** to enhance co-ordinated action and disseminate best practices.

OECD regions are still far from reaching climate neutrality goals by 2030 (Europe)

Total production based GHG emissions per capita, 2022; emissions growth estimates (%) 1990-2022, OECD large regions (TL2)[1]
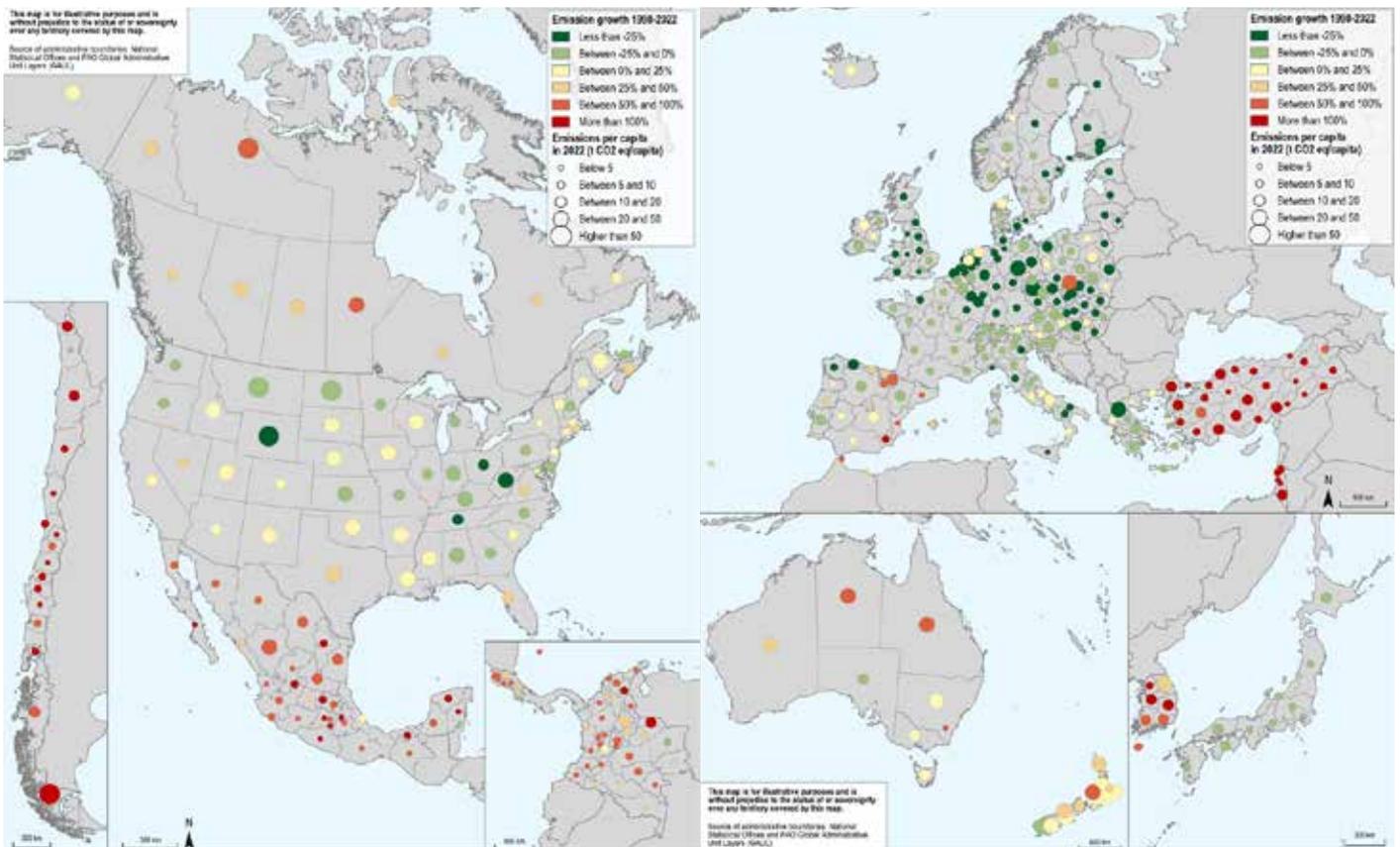
Source: Regions and Cities at a Glance 2024 (Forthcoming) based on the Emissions Database
for Global Atmospheric Research (EDGAR) v8.0

[1] The 433 OECD large (TL2) regions represent the first administrative tier of subnational government, for example, the Ontario Province in Canada

The synthesis report, A Territorial Approach to Climate Action and Resilience presents a policy framework with 45 territorial climate indicators and 9 recommended actions to help decision makers deliver more effective climate action and strengthen resilience. It also presents a compendium of 36 leading practices from cities, regions and countries from all around the world.

CFE is now providing tailored support to countries based on the policy framework, and invites proposals from cities, regions and countries interested in participating.

Nine recommendations for applying a territorial approach to climate action and resilience

Pillar I: Integrate a place-based policy into climate policy

| Measure and monitor **GHG emissions** | Incorporate **climate action** into national plans | Develop **subnational climate goals** |

Pillar II: Climate-proof regional policy at all territorial levels

| **Strengthen urban policy** with climate objectives | Mainstream **climate objectives** in rural policies | Support neighbourhood projects |

Pillar III: Enable and scale up local climate action and resilience

| **Engage local actors,** build partnerships | **Enhance funding** and financing mechanisms | Create **legal and institutional framework** |

Proposed OECD territorial climate indicator framework with 45 indicators

Climate mitigation

1. Total GHG emissions, level and % change
2. GHG emissions per capita, level and % change
3. GHG emission intensities per unit of gross domestic product (GDP), level and % change
4. GHG emissions by sector: share of total emissions, level, per capita and % change
5. Consumption-based GHG emissions
6. Electricity generation by source
7. Carbon intensity of electricity generation
8. Energy mix in total energy supply
9. Total final energy consumption by source
10. Emission intensity of the manufacturing industry
11. Access to public transport
12. Private vehicle ownership
13. Electric and hybrid vehicle adoption
14. Cooling and heating degree days, levels and change, residential built-up volume
15. Built-up area growth
16. Built-up area per capita
17. Difference between built-up area growth and population growth
18. Waste generation
19. Waste recovery

Climate mitigation

Climate adaptation and resilience

Actions and opportunities

Actions and opportunities

40. Existence of local emission reduction targets, distance to local targets, compliance with NDCs
41. Citizens' satisfaction with efforts to preserve the environment
42. Green areas in cities
43. Climate-significant expenditure and investment
44. Existence of climate-related funds, grants and subsidies for subnational action
45. Patent applications in climate mitigation technologies as % of total technologies

Climate adaptation and resilience

20. Air temperature change respective to the climatology 1981-2010
21. Number of hot days and change respective to the climatology 1981-2010
22. Number of tropical nights and change respective to the climatology 1981-2010
23. Number of icing days and change respective to the climatology 1981-2010
24. Heat stress exposure
25. Urban heat island intensity (daytime and night-time)
26. Population exposure to fires
27. Burnt area by land cover type
28. Forest exposure to wildfire danger
29. Population exposure to river flooding
30. Population exposure to coastal flooding
31. Agricultural drought
32. Cumulated precipitation and precipitation change respective to the climatology 1981 2010
33. Extreme precipitation days and change respective to the climatology 1981-2010
34. Built-up exposure to violent storms
35. Population density
36. Population aged < 5
37. Population aged > 70
38. Unemployment rate
39. Poverty rate

Source: OECD (2023), A Territorial Approach to Climate Action and Resilience: Synthesis Report. The 433 OECD large (TL2) regions represent the first administrative tier of subnational government, for example, the Ontario Province in Canada. The 2 414 OECD small (TL3) regions correspond to smaller geographies, and are aligned to lower level administrative regions in all countries except Australia, Canada and the United States

Decarbonising buildings and transport

Buildings are central to the zero-carbon transition. Yet challenges and opportunities for decarbonisation of buildings differ across cities and regions due to the age, density and condition of the building stock, the availability of clean heating sources and human resources that can be devoted to decarbonisation activities.

As a result, there is huge regional variation in CO2 emissions from buildings within countries. For example, in Germany, in 2022, direct building emissions per capita in Brandenburg -a more rural setting- are 60% higher than in Bremen. Since 2000, building emissions per capita decreased in 60% of OECD regions, with Swedish regions experiencing a decrease of more than 65%.

Our 2022 report on Decarbonising Buildings in Cities and Regions **shows how regions and cities can support the decarbonisation of buildings, including in the buildings they own directly as well as through planning, regulations and incentives.** The report includes a Checklist summarising key actions for national, regional and local governments. Alongside this report, the OECD Programme on Decarbonising Buildings in Cities and Regions provides local data and analysis, international knowledge sharing and tailored case studies, such as the recent report on Decarbonising Homes in Cities in the Netherlands: A Neighbourhood Approach.

» **Building emissions can vary significantly across regions within countries**

Direct building emissions per capita (t CO_2 -eq/capita) estimates, OECD large regions (TL3), 2022
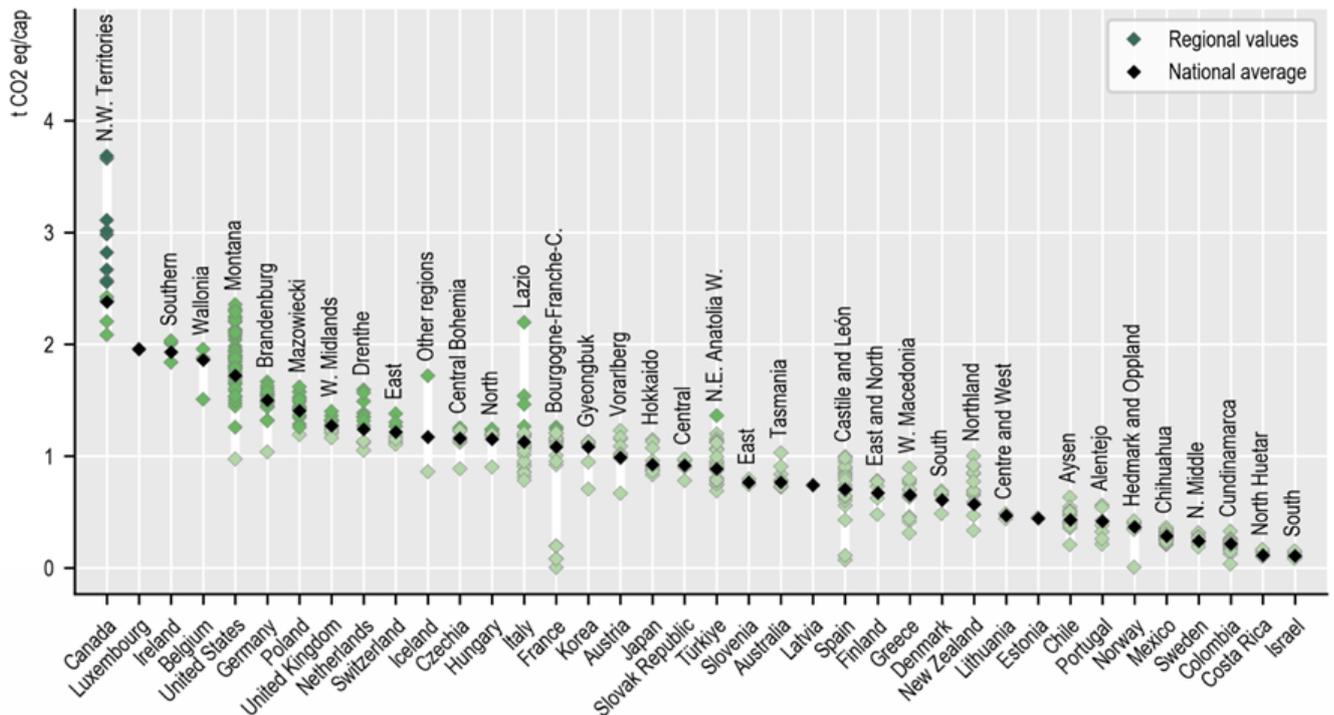
Source: OECD Regions and Cities at a Glance 2024 (Forthcoming) based on the Emissions Database for Global Atmospheric Research (EDGAR) v8.0. The 2 414 OECD small (TL3) regions correspond to smaller geographies, and are aligned to lower level administrative regions in all countries except Australia, Canada and the United States

Did you know? Buildings and construction account for about 40% of energy-related CO2 emissions globally, and for a much higher share of urban emissions – up to 70% - in large cities such as Paris, Tokyo, or New York.

Promoting Sustainable transport

» **Decarbonising transport is urgently needed to respond to the climate emergency.** Regions and cities are taking a range of actions, including applying charges for high-emission vehicles and providing incentives for electric or hybrid vehicles to promote cleaner mobility, as well as improving and greening public transport networks. The OECD report on Improving Transport Planning for Accessible Cities highlights the need for cities to increase density, optimise public transport through the use of new digital technologies, and explore new mechanisms to finance projects, such as land value capture.

» **Combining transport reforms with housing and wider land use policies can generate greater benefits**. For instance, **transit-oriented development (TOD)** is a planning tool that can guide high-density and mixed-used development around transit stations and create walkable and cyclable neighbourhoods, leading to less greenhouse gas emissions. In 2021, The Global State of National Urban Policy report found that National Urban Policies (NUPs) in 54 countries address climate change, 89% of which are doing so by promoting public transport, cycling and walking and 74% by adopting mixed-use, dense and compact planning policies.

Did you know? Transport is estimated to account for 35% of GHG emissions in Rio de Janeiro, 30% in New York, 24% in Paris, and 17% in Sydney. CO2 emissions from urban mobility are expected to increase globally by 26% by 2050. Despite some progress on air quality, most cities – together with their commuting zones – are exposed to higher levels of particulate matter (PM2.5) than the WHO guideline of 5 μg/m3.

Adapting to climate risks and building water resilience

Cities are particularly impacted by heat waves, as the temperature tends to be higher than in the surrounding areas due to the urban "heat island" effect. In the past five years, almost half of OECD cities witnessed a summer daytime heat island intensity of more than 3°C. Large cities are more impacted by this phenomenon than smaller ones.

Rising temperatures are also increasing the risk of wildfires. The Australian Capital Territory is the worst affected region in the OECD, where 55% of the forest area burned in the past 5 years, followed by Canberra region and Central Portugal. In 29 regions located in Latin America, Australia and around the Mediterranean Basin, more than 50% of the population has been exposed to wildfires.

» **Heat stress has increased significantly in many OECD regions**

Population exposure to heat stress; Average additional days per year of strong heat stress or worse over 2018-2022, compared to 1981-2010, OECD large regions (TL3)
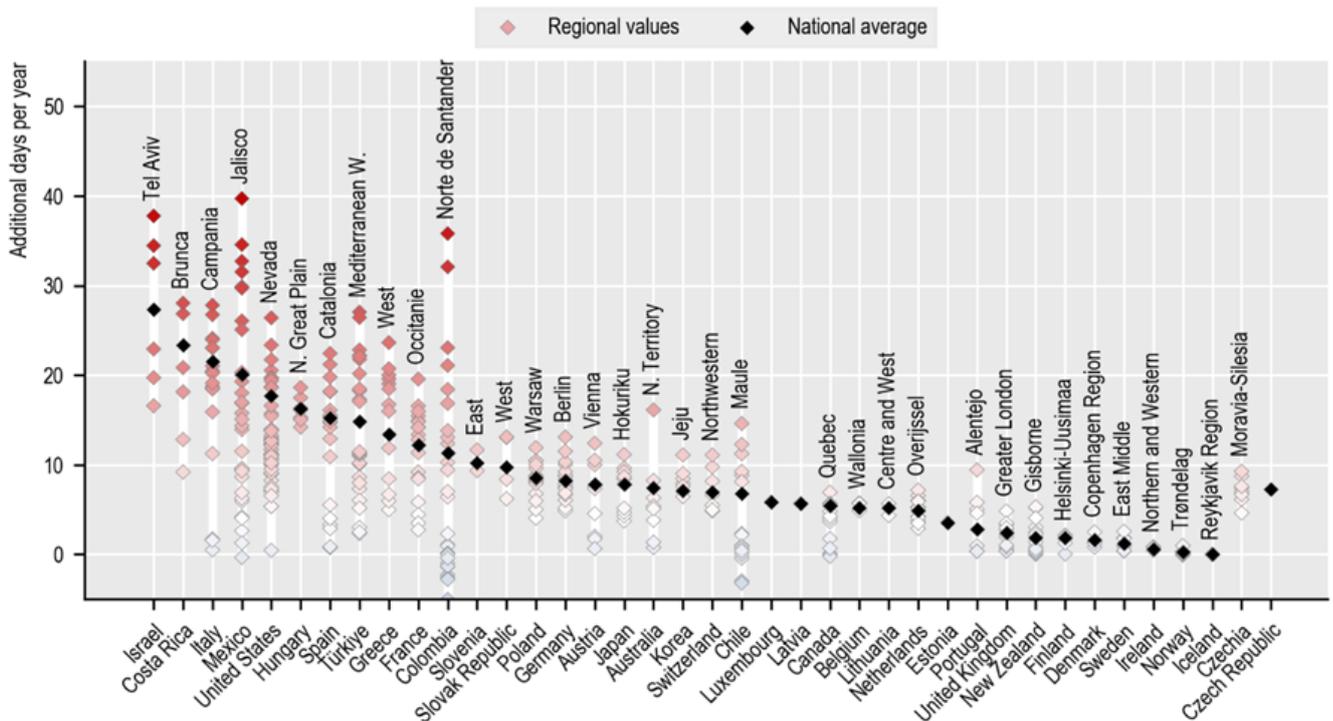
Source: OECD Regions and Cities at a Glance 2024 (Forthcoming) based on ERA5- HEAT data. The 2 414 OECD small (TL3) regions correspond to smaller geographies, and are aligned to lower level administrative regions in all countries except Australia, Canada and the United States

Did you know? Nearly all (95%) regions in OECD countries experienced an increase of exposure to heat stress over the past 5 years compared to 1981-2010 while cooling needs have increased by almost 25% in OECD cities on average since 1970. Population exposure to heat stress has been particularly high and increased fastest in Central America and in the Mediterranean Basin.

Most of the effects of climate change disrupt the water cycle, amplifying the risks of "too much", "too little" and "too polluted" water. In 70% of OECD regions, croplands' soil moisture dropped over the past 5 years compared to 1981-2010; in some regions by more than 10%. At the same time, climate change is also leading to more frequent flooding. In 45 OECD regions across 18 countries, more than 20% of the population at risk of river flooding. In some regions such as Yukon in Canada, Tabasco in Mexico and Guaviare in Colombia, the share of people living in areas at risk reaches more than 60%.

Climate-hazards have cascading and compounding consequences across multiple policy sectors and systems, which are felt differently across people and places. It is therefore crucial to adopt a place-based response that considers the local interactions between different domains and delivers solutions that generate synergies and co-benefits.

Subnational governments generally already have powers to strengthen climate resilience through land use, spatial planning and waste management. CFE has developed a framework to understand and address systemic climate resilience in cities, as part of the **OECD's Horizontal Project on Climate and Economic Resilience**, supported by a framework of indicators to assess climate-related hazards at different territorial levels.

We have also developed 12 **Water Governance Principles** and an **Action Plan of Mayors, Local and Regional Governments for Water Security** setting out concrete local actions for good water governance **The OECD Programme on Cities and Regions for a Blue Economy** supports governments in fostering resilient, inclusive, sustainable and circular blue economies. The

Programme supported the development of the New York City Multi-stakeholder Pledge on Localising the Blue Economy launched at the UN 2023 Water Conference (New York City, March 2023) and is currently working on a deep dive case study on the blue economy in the metropolitan area of Rio de Janeiro.

In recognition of the specific water risks in Africa, in 2021 we published a report on **Water Governance in African Cities**. Solutions to water challenges in the region are discussed at our **OECD/UCLG-Africa Roundtable of African Mayors for Water Security**, which provides a platform to raise the voice and enhance the capacity of local governments to achieve water security goals.

》》 **The OECD Principles on Water Governance**
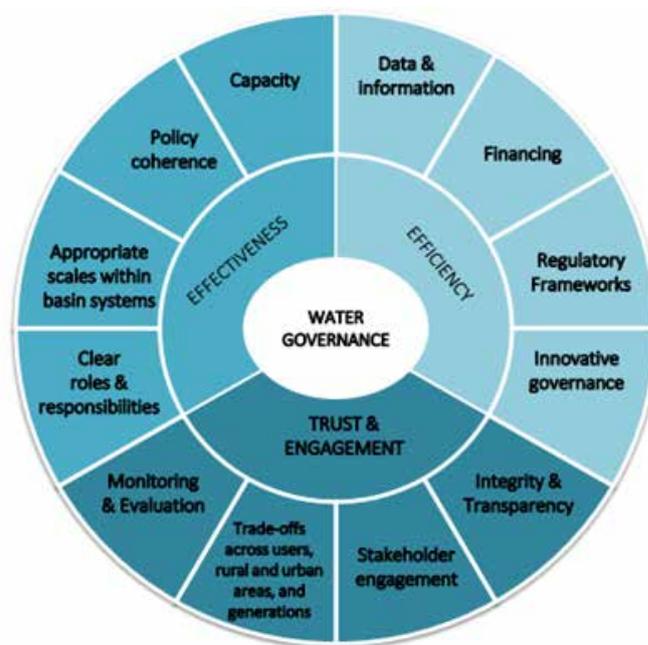
Source: OECD (2015), OECD Principles on Water Governance
Access: www.oecd.org/cfe/regionaldevelopment/OECD-Principles-on-Water-Governance-en.pdf

Did you know? By 2050, over 570 low-lying coastal cities will face projected sea level rises of at least 0.5 metres, putting over 800 million people at risk.

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# Financing subnational climate action

Financing the green transition calls for greater investment, including by subnational government. Climate compatible infrastructure will require largescale investment, much of it executed by subnational governments who account for 69% of climate-significant investment in the OECD. However, the capacity of subnational governments to invest in a tight fiscal environment, is limited, creating significant funding gaps for meeting current and future climate-compatible infrastructure needs.

To support policymakers better understand the role of subnational government in financing the climate transition, the OECD and the European commission's DG REGIO joined forces on the pioneering project

Financing Climate Action in Regions and Cities. The project resulted in the launch of the **Subnational Government Climate Finance Hub**, which provides data on climate-significant expenditure and investment undertaken by subnational governments, and an interactive **dashboard of subnational government climate-related public revenue sources in OECD and EU countries.** The Hub helps policymakers to track the progress regions and cities are making towards achieving the Paris Agreement commitments and other green objectives, and identify areas where further action is needed to align their expenditure, investment and revenues with climate goals and mobilise additional sources of finance.

❯❯ **Subnational governments are responsible for the majority of public climate-significant investment**

Subnational climate-significant investment as a share of total public climate-significant investment (2019)
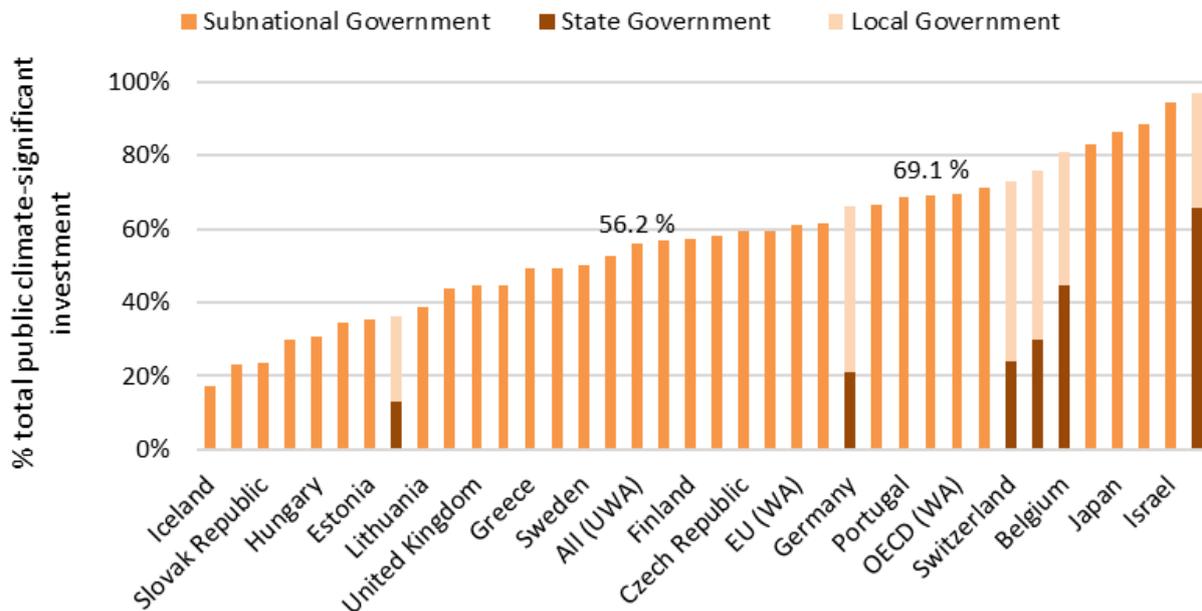
Source: OECD Subnational Government Climate Finance database. Unweighted averages refer to the arithmetic means of the ratios. Weighted averages are computed from the sum of total expenditure for all countries and the sum of GDP or general government expenditure, in USD PPP.

Subnational governments are responsible for the majority of public climate-significant expenditure

Subnational climate-significant expenditure as a share of total climate-significant expenditure (2019)
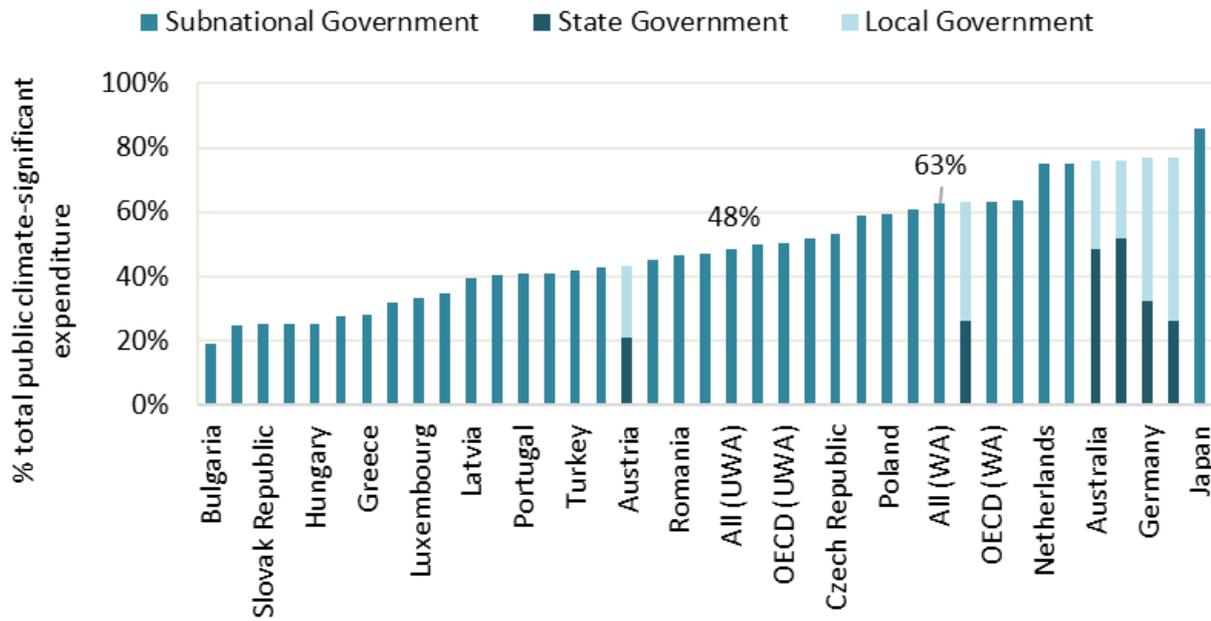
Source: OECD Subnational Government Climate Finance database

We are supporting subnational governments to access new financing instruments. In 2022 we delivered the G20/OECD Policy Toolkit to mobilise funding and financing mechanisms for inclusive and quality infrastructure investment in regions and cities and in 2023, the report Financing Cities of Tomorrow, which explores the potential for city governments to access emerging forms of sustainable finance. Both reports were endorsed by G20 Leaders.

Many subnational governments are now adopting green budgeting to better align their expenditure, revenue, and investment decisions with climate and environmental objectives. The OECD is supporting regions and cities in these efforts, including through the report Aligning Regional and Local Budgets with Green Objectives, which provides guidelines for subnational governments for adopting or upgrading their green budgeting practices, supported by case studies of the Region of Brittany (France) and the City of Venice (Italy) – and a self-assessment tool. Policy Highlights of the report are available in English, French, Spanish and Italian.
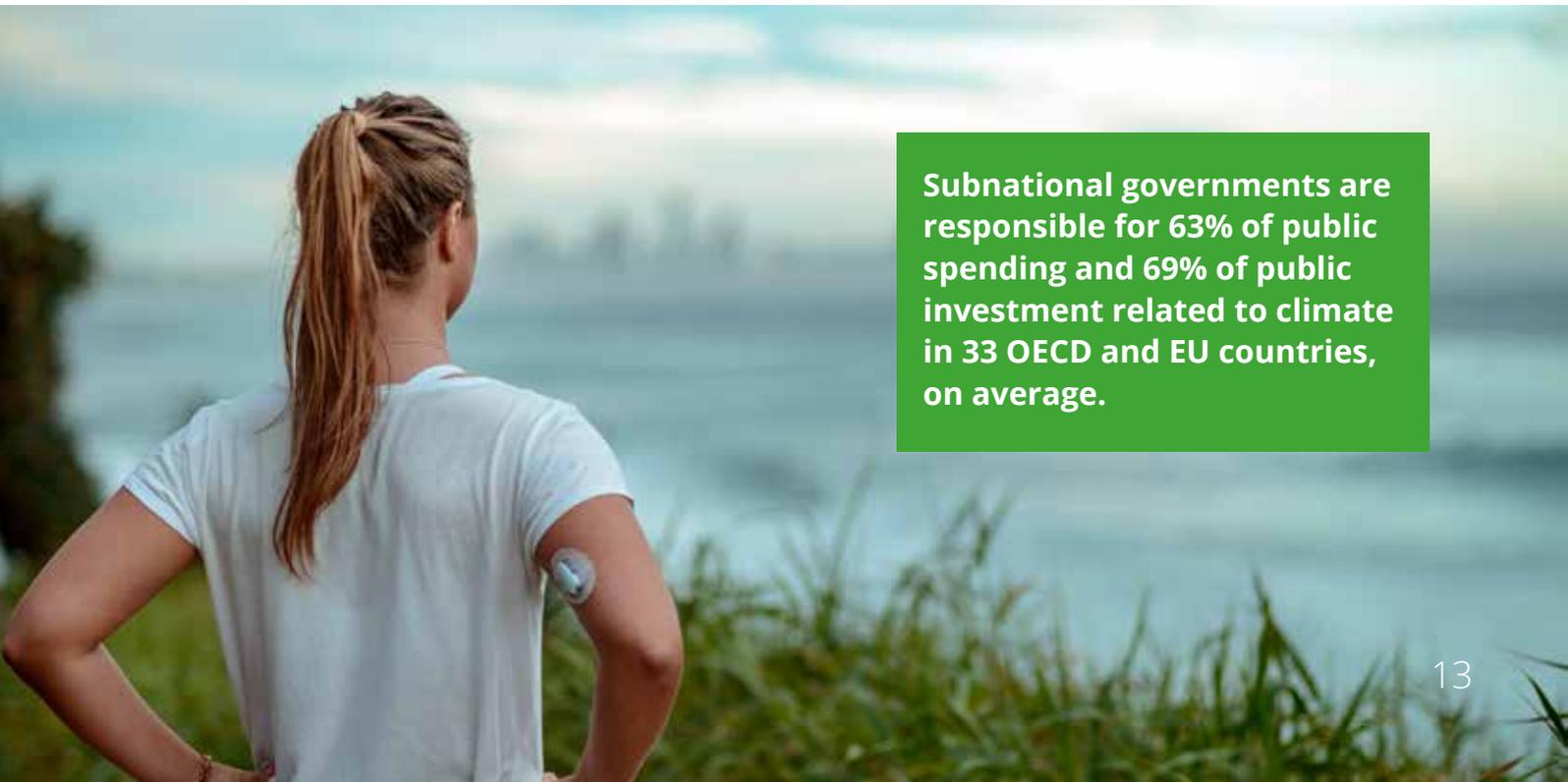
> **Subnational governments are responsible for 63% of public spending and 69% of public investment related to climate in 33 OECD and EU countries, on average.**

National Urban Policies

National urban policy (NUP) frameworks can help ensure that climate objectives are firmly embedded in policymaking at all levels. The 2021 global monitoring of National Urban Policies shows that close to half (48%) of the 162 countries surveyed had included climate objectives in their national urban policy. This is a significant improvement from 2018 (36%). NUP frameworks can provide powerful vehicles to ensure progress on low-carbon mobility, compact urban development, sustainable buildings and risk-sensitive land-use policies. In 2023, the OECD, in collaboration with UN-Habitat and Cities Alliance, started a new round of global monitoring. It will focus on urban resilience and housing and will continue to monitor how NUPs address climate challenges. The report will be launched at the World Urban Forum in Cairo in November in 2024.

» **Climate objectives are increasingly more relevant in National Urban Policies**
Levels of attention given to selected themes in their NUPs across 113 countries

	Extensive	Moderate	Low
Climate resilience	15%	33%	52%
Environmental sustainability	23%	41%	36%
Economic development	30%	37%	34%
Human development	38%	41%	22%
Spatial structure	45%	35%	20%

Per cent of countries, total = 113   0%   ■ Extensive   ■ Moderate   ■ Low   100%
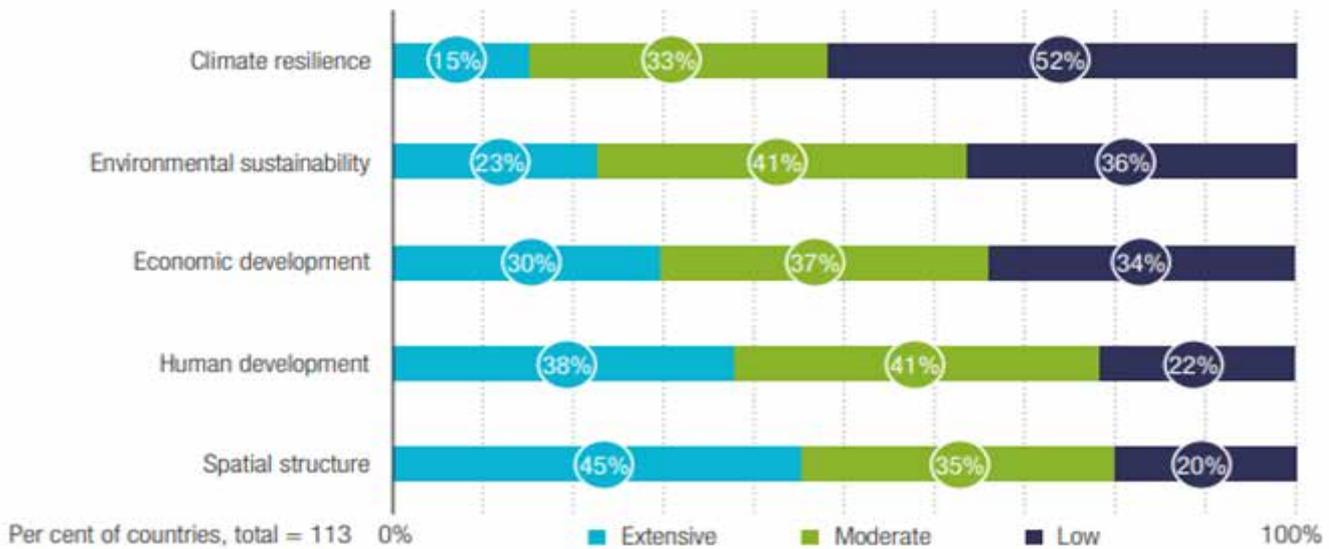
Source: OECD/UN-Habitat/Cities Alliance, Global State of National Urban Policy 2021 Synthesis Brochure
https://doi.org/10.1787/9789264311299-10-en

Did you know? Cities account for almost two-thirds of global energy demand, produce up to 50% of solid waste and are responsible for 70% of greenhouse gas emissions. Without action by 2050, global levels of municipal solid waste will double.

Transitioning to a Circular Economy in Cities and Regions

The circular economy can reduce cities' environmental footprint by promoting the sharing, reuse, repurposing and remanufacturing of goods and assets.

An OECD survey of 51 cities and regions found that 37% of the surveyed cities and regions have a circular economy initiative in place (e.g., Paris, Amsterdam, London). It also found that the vast majority (73%) reported regulatory challenges, including uncertainties over the classification of waste products and standards for reuse, as well as public procurement channels for green products and services.

Our work shows that the circular economy at the city level can be unlocked with the right governance conditions, including mechanisms for mobilizing citizens and businesses, improving access to public procurement for green businesses, and stimulating eco-innovation. **The OECD Checklist and Scoreboard on the Governance of the Circular Economy in Cities and Regions** can guide governments promoting, facilitating and enabling the circular economy.

OECD Checklist for Action towards a circular economy
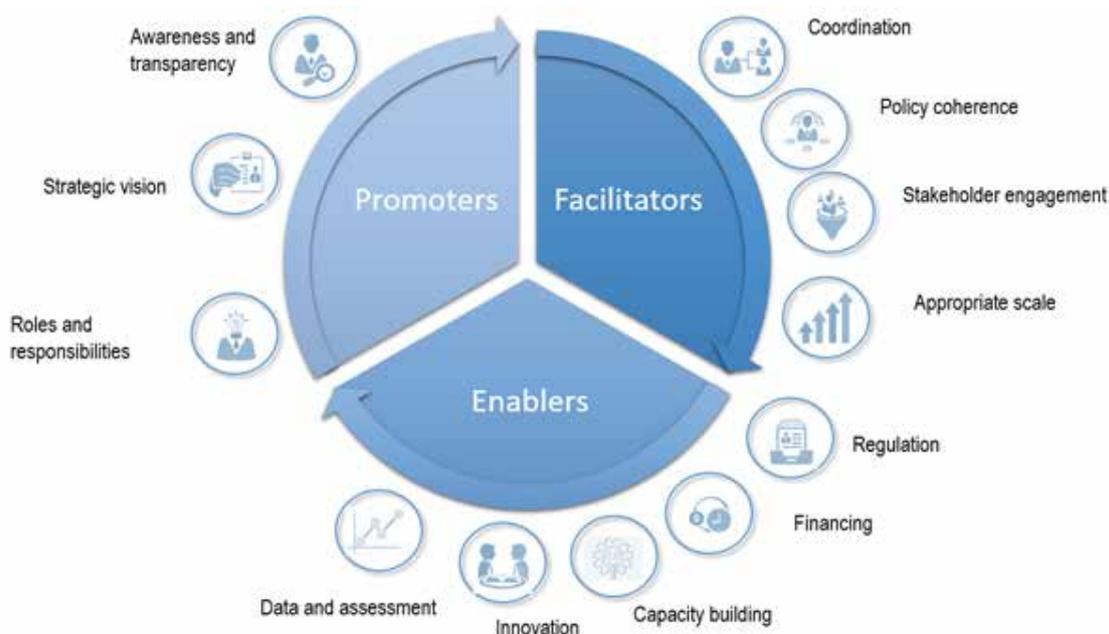
Source: OECD (2020), The Circular Economy in Cities and Regions: Synthesis Report, OECD Urban Studies, OECD Publishing, Paris, https://doi.org/10.1787/10ac6ae4-en.

The **OECD Programme on the Circular Economy in Cities and Regions supports national and subnational governments in their transition towards the circular economy** through evidence-based analysis, multi-stakeholder dialogues, tailored recommendations and customised action plans. Since 2018, we have worked closely with nine countries and their subnational governments – Ireland and Italy as well as the cities of **Groningen** (Netherlands), **Umea** (Sweden), **Glasgow** (UK), **Valladolid** (Spain), **Granada** (Spain), **Tallinn** (Estonia) and **Montreal** (Canada) – to develop their circular economy strategies. We are now working with 10 European cities and regions in partnership with the European Commission's Circular Cities and Regions Initiative (CCRI) and 10 Latin American countries through a collaboration with the Inter-American Development Bank (IDB) focussing on water.

Nature-Based Solutions

As part of their net zero transition, many cities are looking for ways to integrate nature into urban development. Nature Based Solutions such as green roofs, façades and other green spaces in cities can bring multiple benefits including cleaner water and air, increased resilience to flooding, reduced heat stress, and improved physical and mental well-being. Green spaces can also absorb and retain surface water, which plays a critical role in reducing urban floods and enhance biodiversity.

Yet cities have very variable adoption of Nature Based Solutions. Cities in Norway, Switzerland, the United Kingdom, and Ireland include three times more green areas relative to their total land area than those in Chile, Japan, or Mexico. The cities with the highest share of green areas are mostly located in Central and Western Europe, on the American East Coast, the Midwest, and the Northwest.

In Spain, Türkiye, Japan, and Chile, almost all cities, apart from a few coastal cities, have very scarce vegetated areas. In per capita terms, cities located in the United States record the highest green area per capita with 300 m2/person, compared to 26 m2/person in Chile or Türkiye.

An **OECD paper on effective subnational biodiversity policies,** drawing on policy practices from Scotland (UK), France and other signatories to the Edinburgh Declaration, sets out how cities can promote biodiversity through innovative uses of brownfield sites, green budgeting and partnerships with social enterprises, among other measures. We have also supported Hungary to promote nature-based solutions in municipalities.

>> **Access to green areas varies significantly across regions, with cities located in the US recording the highest green area per capita**

Share of population with access to green areas of at least 1 h within 400 walking distance, FUA's urban centre, 2020

Source: Regions and Cities at a Glance 2022. https://doi.org/10.1787/e9073a0f-en
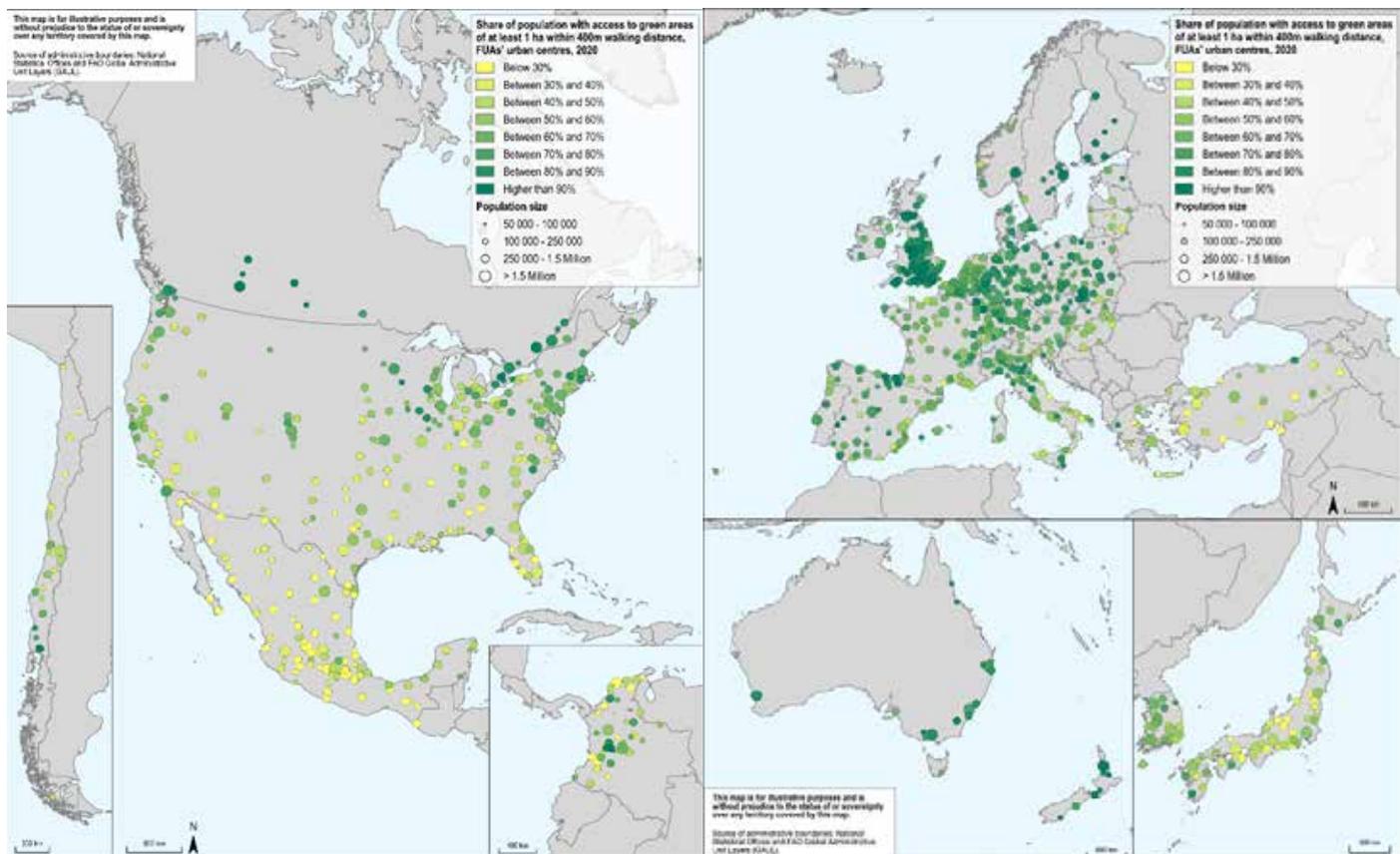
# Supporting Regions in Industrial Transition

Some regions remain dependent on polluting industries and will face major challenges in making the transition to net zero. While over a third of OECD regions generate most of their electricity from low-carbon sources, more than 50 (spread across 19 OECD countries) still rely on coal for most of the electricity they generate and more than 50 regions in OECD European alone rely on natural gas.

The transition will be even more challenging for some manufacturing activities. The transition will require investment in new and emerging technologies, raw materials and zero-emission fuels, such as hydrogen and ammonia, as well as, in some cases, carbon capture and storage (CCS) - on top of major investments - to reduce energy needs.

» Polluting jobs tend to be under-represented in capital regions[2]
Share of population with access to green areas of at least 1 h

Source: OECD Job Creation and Local Economic Development 2023. https://doi.org/10.1787/21db61c1-en
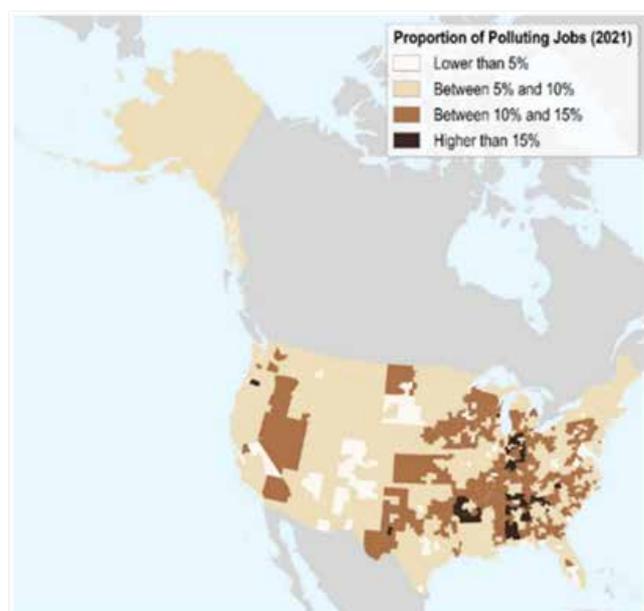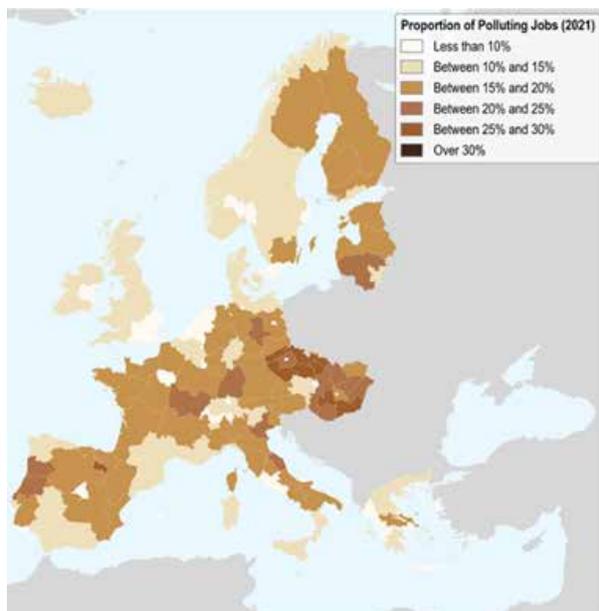
The regions with furthest to travel are often those with the least resources to do so. Our recent report in collaboration with the European Commission's DG REGIO on Regions in Industrial Transition shows that regions with both high emissions per capita and high employment shares in vulnerable sectors also tend to be weaker economically. GDP per capita, firm productivity and average regional wages are lower, and, in many of these regions, workers have lower skills and are at higher risk of poverty.

The geography of green jobs follows a very different pattern to that of polluting jobs. Our publication Job Creation and Local Economic Development 2023: Bridging the Great Green Divide examines the impact of the green transition on local labour markets across the OECD. It reveals stark differences within

30 OECD countries, showing that in some capital regions, the share of green-task jobs is as high as 30% while it can be as low as 5% in other regions. It also reveals that over the past 10 years, there has been no convergence between the leading and lagging regions in terms of green jobs. Instead, regional gaps have increased in several OECD countries.

Shortages of workers with green skills present a major risk to achieving climate objectives in many regions. In Europe, for example, more than 80% of companies faced skills shortages in 2022, especially for green and digital skills. Additionally, almost 70% of local authorities report a skills shortage among public sector employees that prevents projects on climate change from being implemented. This shortage of green talent could be a major obstacle to green growth,

[2] Polluting jobs are those that have no green tasks and are particularly concentrated in highly polluting sectors, based on the emission of seven contaminants: CO, VOC, NOx, SO2, Pm10, PM2.5, lead and CO2.

green innovations and, ultimately, in meeting climate goals. Local skills policies can match workers to new local opportunities, supporting the redeployment of displaced workers.

Our work also shows the risk of widening gaps in jobs opportunities and incomes within local labour markets. No OECD region reaches gender parity in green jobs, with the share of women in green jobs ranging from 12% to 46%. At the same time, men face higher risks of job losses, accounting for over 80% of workers in the most polluting industries. The green transition could also widen the divide between high- and low-skilled workers, with most green jobs currently requiring high levels of skills and education.

The CFE provide bespoke analysis and recommendations for regions in industrial transition. As part of this programme, we are working with the Hamburg Chamber of Commerce and Industry to identify recent trends and key actions and to reach climate neutrality in the city by 2040. Meanwhile, the OECD Local Employment and Economic Development (LEED) Programme provides tailored guidance on how to reshape local labour markets and the transition pathways for firms and workers. It is also undertaking deep dives into the local skills challenges and opportunities facing sectors in the green transition including aviation and manufacturing

» **On average, the gap between regions in the percentage of green jobs is 7 percentage points[3]**

Share of green-task jobs, % of total, 2021.

Source: OECD Job Creation and Local Economic Development 2023. https://doi.org/10.1787/21db61c1-en
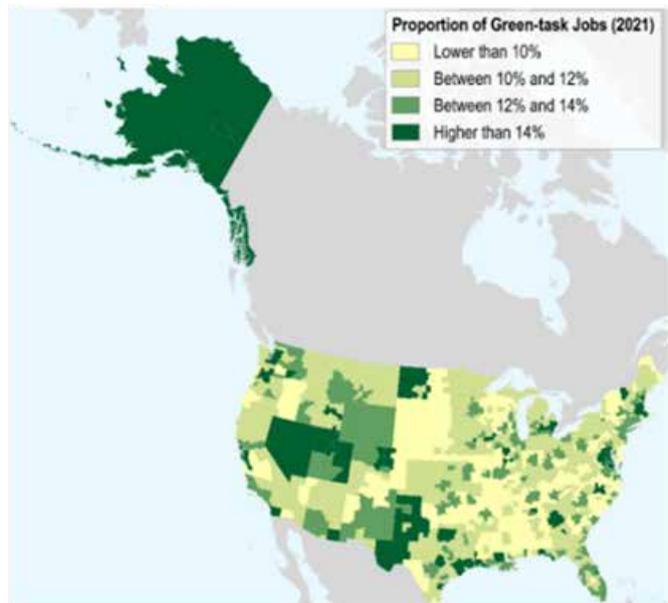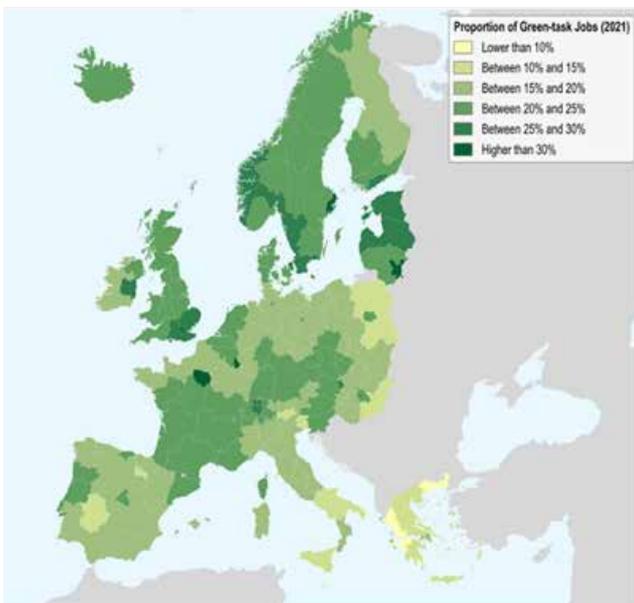
[3]Note: To examine the geography of jobs with a significant share of green tasks and to examine differences across workers within regional labour markets, a binary measure is constructed which classifies an occupation as being green-task or non-green-task. Here, green-task jobs are defined as those occupations with at least 10% of their tasks considered green.

Did you know? On average across OECD regions, only 2.3% of employment is in sectors where significant adaptations will be required to meet the Paris Agreement on emissions. However, in some, such as the Gyeongnam Region in Korea and Silesia in Poland, over 6% of jobs potentially at risk. In the most vulnerable regions, poverty and long-term unemployment rates are already typically higher than the national average.

Rural regions

Rural regions face their own challenges in the net-zero transition. Average emissions per capita in OECD countries are three times higher in remote rural regions than in large metropolitan regions. At the same time, rural areas host many of the natural resources that can support the renewable energy solutions needed for the transition. Rural regions therefore have an important role to play in the net-zero transition, but too often their role is neglected in national policy approaches.

The OECD Rural Agenda for Climate Action aims to foster a long-term dialogue with subnational actors, private stakeholders and civil society

to better integrate rural issues in broader national and sub-national climate policies. The Rural Agenda highlights opportunities for rural development linked to the net-zero transition, showcasing leading policy practices in implementing climate-friendly rural policies. The OECD is working with national governments and rural regions to implement the Rural Agenda, and recently produced a "Compendium of Leading Practices," showcasing successful case studies in GreenLab, Denmark and Peatland ACTION, Scotland, while our case study of Enhancing Innovation in Rural Regions in Canada provides recommendations to boost green innovation in remote areas.

» Remote regions tend to generate cleaner electricity than other regions

Share of electricity by source and by type of small regions (TL3), 2019
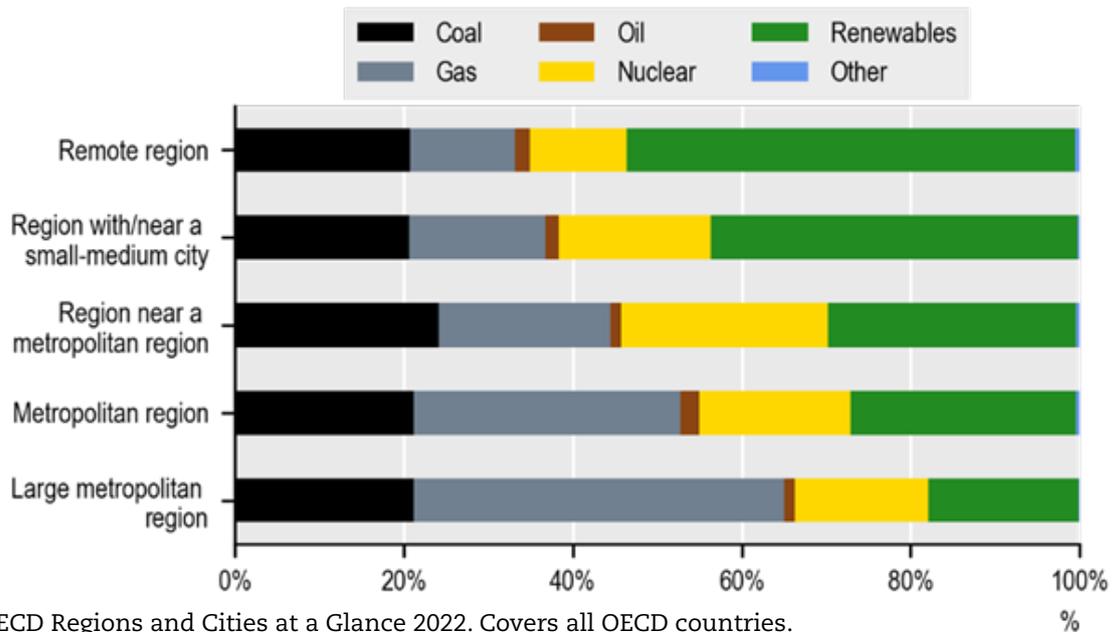
Source: OECD Regions and Cities at a Glance 2022. Covers all OECD countries.
https://doi.org/10.1787/14108660-en

THE RURAL AGENDA FOR CLIMATE ACTION

identifies six main areas of opportunity and action to drive the transition to net-zero in rural regions:

1 Improving the evidence base at the regional and local level.

2 Building local capacity.

3 Fostering renewable energy.

4 Promoting sustainable land management and higher valorisation of ecosystem services

5 Accelerating the circular and bio-economy.

6 Decarbonising transport

Did you know? Rural regions account for 43% of the electricity produced in OECD countries and generate 38% of their electricity using renewable sources. In total, regions far from metropolitan areas account for around half of the total electricity produced from renewable sources in the OECD.

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Mining regions

Mining regions and the communities living there play an important role in the global transition towards a zero-carbon economy by providing essential raw materials. The rise of low-carbon power generation to meet climate goals will triple the demand of minerals by 2040. Among those, demand for lithium is expected to increase more than 40-fold. At the same time, the mining sector is under increasing pressure to adopt more environmentally sustainable practices and prepare local communities for the closure of mines closure as fossil fuels are phased out.

» Industry accounts for a higher proportion of emissions in mining regions

Share of sectors GHG emissions over regional GHG emissions
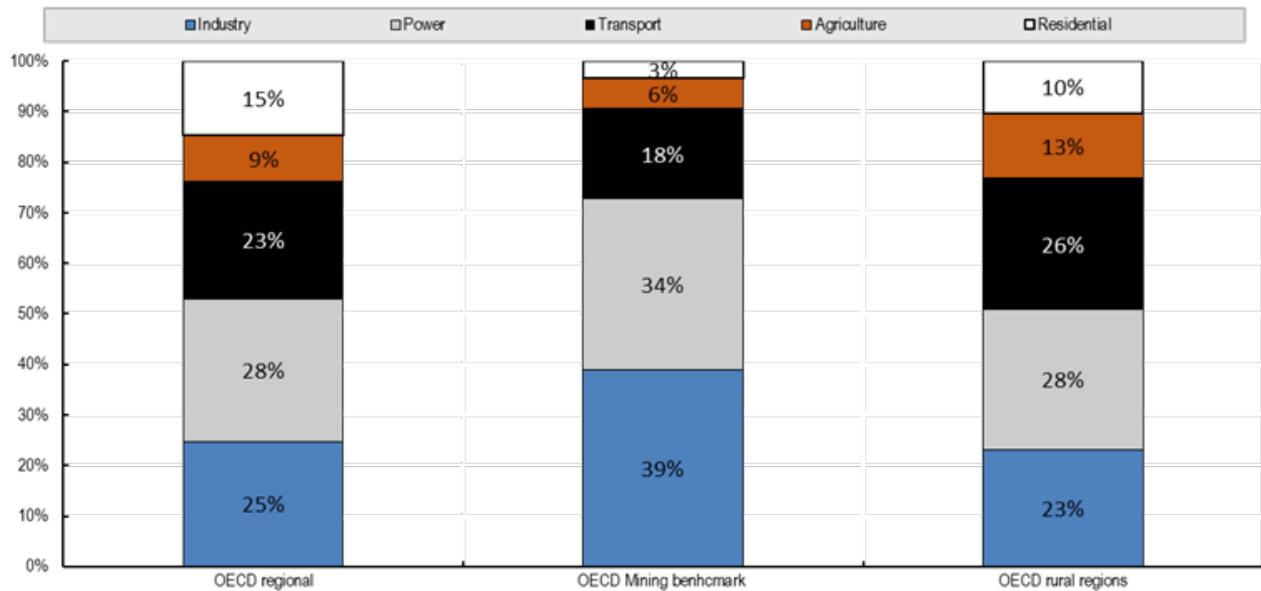
Note: Power refers to GHG emissions from main activity producers of electricity generation, combined heat and power generation, and heat plants (IPCC 1996:1A1a). OECD mining regions benchmark refers to average value of the 50 OECD mining (TL3) regions with a high specialisation in mining activity.
Source: OECD (2022), OECD Regional Statistics (database), OECD, Paris.http://dx.doi.org/10.1787/region-data-en.

The technology exists for mining regions to improve their environmental impact. implement new processes and technologies that help reduce negative impacts on the environment, including CO2 emissions and water pollution. For example, in Western Australia, investments are being made to power mine operations with renewable or hydrogen sources, decarbonising mining value chains and bringing positive health effects.

Mining regions face other challenges too. They have lower levels of economic diversification, which increases their vulnerabilities to external shocks such as income volatility from changes in international commodities prices. They have a lower rate of population growth and job-creation than the average for OECD rural regions, and low rates of female participation in the workforce – on average there are 50% more male workers than women.

The OECD's Mining Regions and Cities Initiative promotes and helps implement good practices and policies to support regions to adapt and contribute to the climate agenda. This initiative promotes this goal through three actions:

1. Specific regional case studies, which have supported regional mining strategies with an environmental scope or innovation policies to increase green practices in mining, such as in North Karelia (Finland), Upper Norrland (Sweden), Pilbara (Australia), Andalusia (Spain), and Antofagasta (Chile).

2. A monitoring web tool of indicators to measure environmental, social and economic outcomes of mining regions, looking also at land use change, green energy production and water management.

3. International events, the initiative has already held events in Antofagasta (Chile), Darwin (Australia), Skellefteå (Sweden) and Karratha (Australia).

In delivering this work, we have identified 50 OECD regions specialised in mining activities and compared their environmental performance vis- a-vis other OECD regions.

The upcoming activities of the initiative include the 5th OECD mining regions and cities international event in Greater Sudbury (Canada), a regional case study of Northern Ontario, Canada and a study with ten EU regions specialised in raw mineral activities.

Did you know? Mining regions emit four times more GHG emissions per capita than OECD regions and three times more than OECD rural regions.

Indigenous communities

Globally, as much as 80% of the world's remaining forest biodiversity lies within Indigenous peoples' territories, and Indigenous lands store one-quarter of the above-ground carbon in the world's tropical rainforests. Across the globe, over half the projects extracting minerals necessary for the green transition are located on or near Indigenous land. In the US, 97% of nickel, 87% of copper, and 79% of lithium is found within 35 miles of Native American reservations

Although progress has been made in including local and Indigenous knowledge and perspectives in climate policy, much more can be done in areas of land tenure and forestry management. For example, there is a need to implement agreements and support the inclusion and leadership of Indigenous peoples in conservation and natural resources management, and give opportunities for Indigenous peoples to generate economic development opportunities from them (e.g. land stewardship and ecosystems services).

There are also opportunities to promote new, green economic opportunities within Indigenous communities. For instance, the Three Fires Group, a company representing several First Nations in Ontario, Canada is supplying Electra Battery Materials Corp with "black mass" (the residual compound from shredding expired lithium batteries) to reduce the amount of lithium needing to be mined.

The OECD has a unique Programme on Linking Indigenous Communities with Regional Development, launched in 2017 which is continuing to work with Indigenous leaders and communities around the world to promote a place-based approach for sustainable development that is led by local Indigenous institutions. The 2019 report on Linking Indigenous Communities to Regional Development provides recommendations to achieve vibrant local and regional Indigenous economies. The OECD has also worked on case studies on Australia, Canada and Sweden. Since the launch of the report, 10 virtual workshops have taken place spanning several cross-cutting topics related to the development of Indigenous communities.

Over the next year, CFE is planning new work to support sustainable development opportunities for Indigenous peoples in mining communities. We will begin a new case study on Mining in Northern Ontario with a specific focus on Indigenous Development and the 5th OECD mining regions and cities conference in Greater Sudbury , Ontario will include a focus on enhancing Indigenous peoples' participation in the mining value chain.
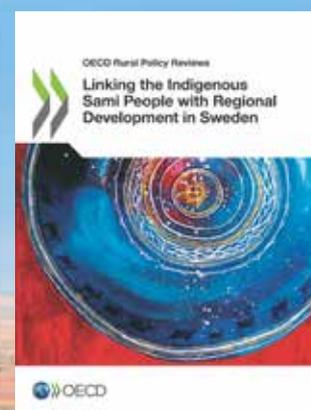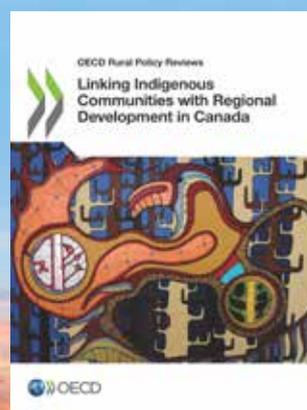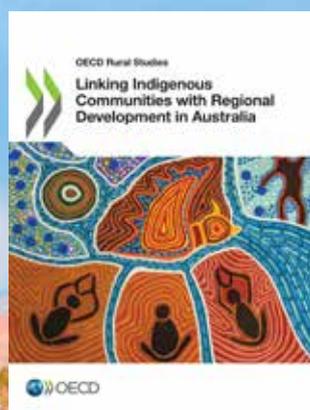
NO NET ZERO WITHOUT OUR SMALL BUSINESSES, ENTREPRENEURS AND SOCIAL INNOVATORS

Greening SMEs and entrepreneurship

SMEs and entrepreneurs have so far received limited attention in the analysis and policy debate regarding climate change. To fill this gap, CFE has advanced on the measurement of the environmental footprint of SMEs, financing SMEs for sustainability, and green entrepreneurship. Our latest report Assessing GHG emissions and energy consumption in SMEs, is part of a pilot dashboard of SME greening and green entrepreneurship indicators.

Our estimates reveal that SMEs account for around 40% of business sector GHG emissions across the EU. However, there are wide variations between countries: GHG emissions in the business sector range from 25% in Poland to 57% in Slovenia. We also find that the SME share of energy consumption in manufacturing ranges from 20% in Sweden to 76% in Estonia. These data help countries understand where targeted action is needed.

The dashboard also highlights the impact on SMEs of the energy crisis caused by Russia's war of aggression against Ukraine, revealing that the energy price burden (i.e., the cost of electricity and natural gas), as measured by the share of business turnover, more than doubled for SMEs in 5 out of 20 European countries between 2018 and 2022, despite emergency support from governments. The paper "SME policy responses to the 2022/2023 energy crisis" assesses support packages in detail, showing that the most common form of support involved energy price caps. The paper also highlights risks that energy subsidies will reduce incentives to invest in energy efficiency.

To accelerate SME greening, policymakers must provide the right incentives and resources for SMEs. Government interventions in the areas of awareness-raising, skills development and capacity-building are key to the transition of SMEs. The Key Issues Paper for the 2023 OECD SME and Entrepreneurship Ministerial Meeting also highlights the opportunity offered by digital tools to green business models and practices, as well as the need for governments to stimulate green demand, including through green public procurement. At the same time, it is important that the development of regulations and standards consider SME capacities to comply and report on them.

Many SMEs and start-ups are already leading the way in green technologies, but governments need to boost support for green entrepreneurship. We are now working with countries to promote green entrepreneurship and eco-innovation. For example, our 2022 report Policies to Support Green Entrepreneurship: Building a Hub for Green Entrepreneurship in Denmark identifies lessons from international policy practices and from three case study countries – Canada, Germany and Israel – to support Denmark to stimulate and support green entrepreneurship. New green entrepreneurship policy reviews will provide tailored advice to countries on stimulating and supporting green entrepreneurship. In parallel, new internationally comparable indicators on green entrepreneurship are being developed to expand the dashboard of SME greening and green entrepreneurship indicators.

SME are responsible for a significant share of GHG emissions in the business sector in the EU

Percentage of total GHG emissions in the business sector, 2018
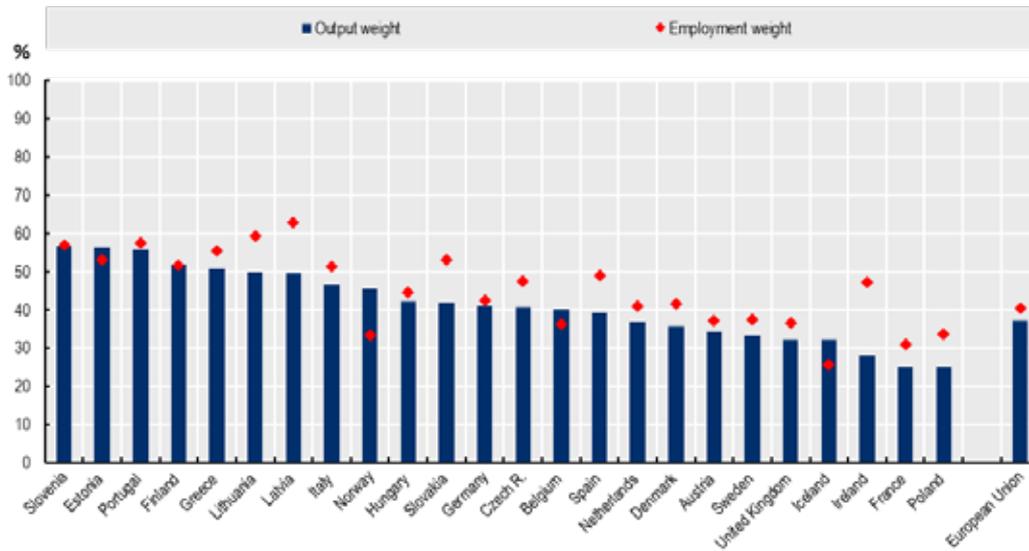
Note: Output weight is the SME share of value added at the two-digit sector level. Employment weight is the SME share of employment at two-digit sector level.
Source: OECD (2023), Assessing greenhouse gas emissions and energy consumption in SMEs: Towards a Pilot Dashboard of SME Greening and Green Entrepreneurship Indicators, OECD Publishing, Paris. (OECD calculations based on Eurostat's Air Emissions Database and Structural Business Statistics).
https://doi.org/10.1787/ac8e6450-en

The energy price burden has significantly increased for many SMEs in the EU

Variation in the SME energy price burden, as a share of turnover, total business sector, 2018 and 2022 (1st semester)
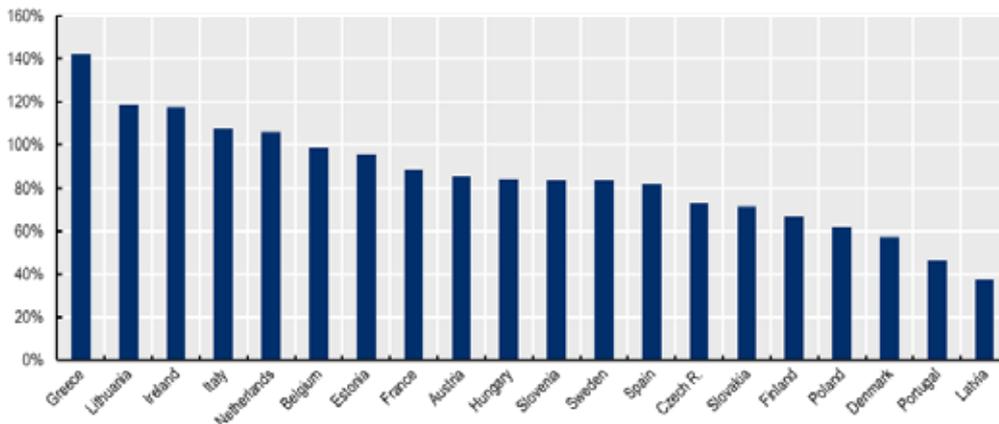
Source: OECD (2023), Assessing greenhouse gas emissions and energy consumption in SMEs: Towards a Pilot Dashboard of SME Greening and Green Entrepreneurship Indicators, OECD Publishing, Paris (OECD calculations based on Eurostat's Energy Balances Accounts and OECD Structural and Demographic Business Statistics (SDBS) database).
https://doi.org/10.1787/ac8e6450-en

Did you know? SMEs in the EU directly account for around 40% of business-driven greenhouse gas emissions and around half of total energy consumption. Many SMEs at EU level are greening: 64% are taking action to reduce waste, 61% to save energy and 57% to save materials.

Financing SMEs for sustainability

Access to sustainable and transition finance is critical for enabling SMEs' transition to net zero and sustainability. Many surveys point to finance being one of the key constraints to SME sustainability action.

The supply of sustainable finance is now growing rapidly in response to this demand. Our survey of nearly 60 financial institutions (FIs) Financing SMEs for Sustainability – Financial institution strategies and approaches, shows that both public and private (FIs) are increasingly integrating climate considerations in their operations, including in developing institutional objectives and plans and assessing some or all financing/investment opportunities. Some FIs are also providing dedicated financing programmes or more advantageous conditions for investments focused on green objectives. Most FIs stated that they are providing tailored financing solutions for SMEs' investments in net zero and greening, including through medium- and long-term loans, short-term loans and factoring, credit guarantees and other financing instruments.

However, there remain barriers to SMEs accessing this growing pool of finance. One of the key barriers is a lack of information on green investments and financing options within SMEs. This is often linked to a lack of skills within SMEs alongside technical, market and regulatory uncertainty. Advisory services can therefore play a key role in supporting SMEs to understand the business case for greening and solutions available.

There are also challenges related to emerging reporting requirements and standards. Financial institutions increasingly need and seek out granular data on their clients' sustainability performance and transition plans to manage risks, develop financing instruments and meet reporting requirements. Yet SMEs are not as well equipped to provide these data as large entities due to their relatively limited capacity to identify, measure and report on their environmental performance. Indeed, many of the existing and emerging standards have been primarily developed with larger firm reporting capacity in mind. This poses potential risks to SMEs' ability to access finance in the future and, in turn, risks for the transition.

» **Sustainable finance for SMEs tends to be provided through debt rather than equity instruments**
FIs use of financial instruments to promote sustainability
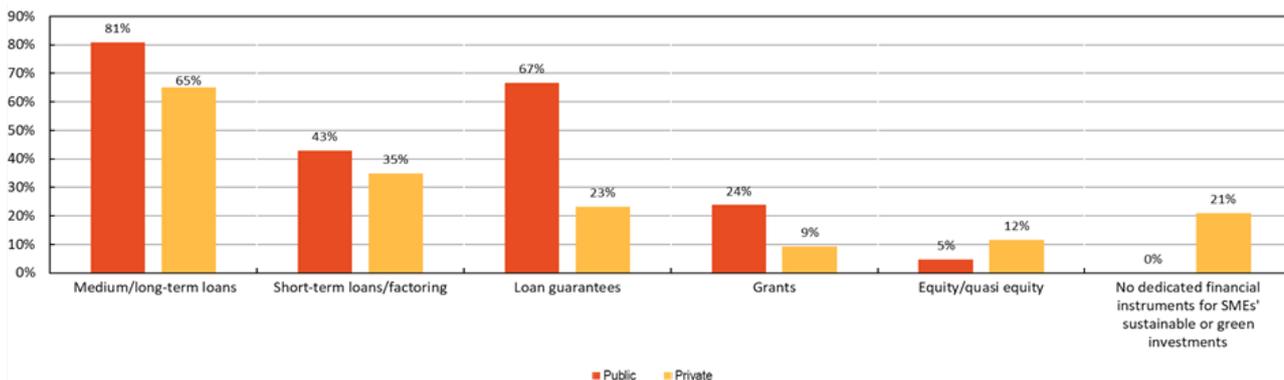
Source: OECD Survey Financing SMEs for Sustainability - Financial institution strategies and approaches, 2023

Did you know? In a recent global SME survey, 55% of SMEs identified a lack of funds as a key reason for limited action on climate change and 70% needed additional funds to accelerate progress on net zero.

The OECD Platform on Financing SMEs for Sustainability, provides a forum for dialogue and knowledge-sharing among public and private financial institutions, policy makers and SME representatives on how to overcome the challenges that SMEs face in accessing sustainable finance and contributing to the green transition. Members include the British Business Bank, the Business Development Bank of Canada, the Industrial Development Bank of Korea, and the Public Investment Bank of France (Bpifrance). Knowledge partners include the European Association of Guarantee Institutions (AECM), Bankers for Net Zero, the European Banking Federation (EBF), the SME Climate Hub and The Montreal Group. The Platform's key outputs and findings are outlined in the Platform's 2023 Activity Report.

The Platform's work supports the implementation of the **2022 Updated G20/ OECD High-Level Principles on SME Financing** developed by the CFE in 2022, and the **OECD Recommendation on SME Financing**, which was adopted by the OECD Council in June 2023 both of which feature a dedicated principle on sustainable finance.

The Platform will continue to boost sustainable finance for SMEs over the coming years by launching a global dialogue among banks, standard setters, policy makers and SME representatives. This dialogue will aim to bridge SME sustainability-related data and reporting gaps, including a stocktake of existing measurement tools and approaches. It will identify good practices in the offer of green sustainable and transition finance instruments and advance the development of frameworks for transition planning tailored to SMEs, to unlock transition finance for small businesses.
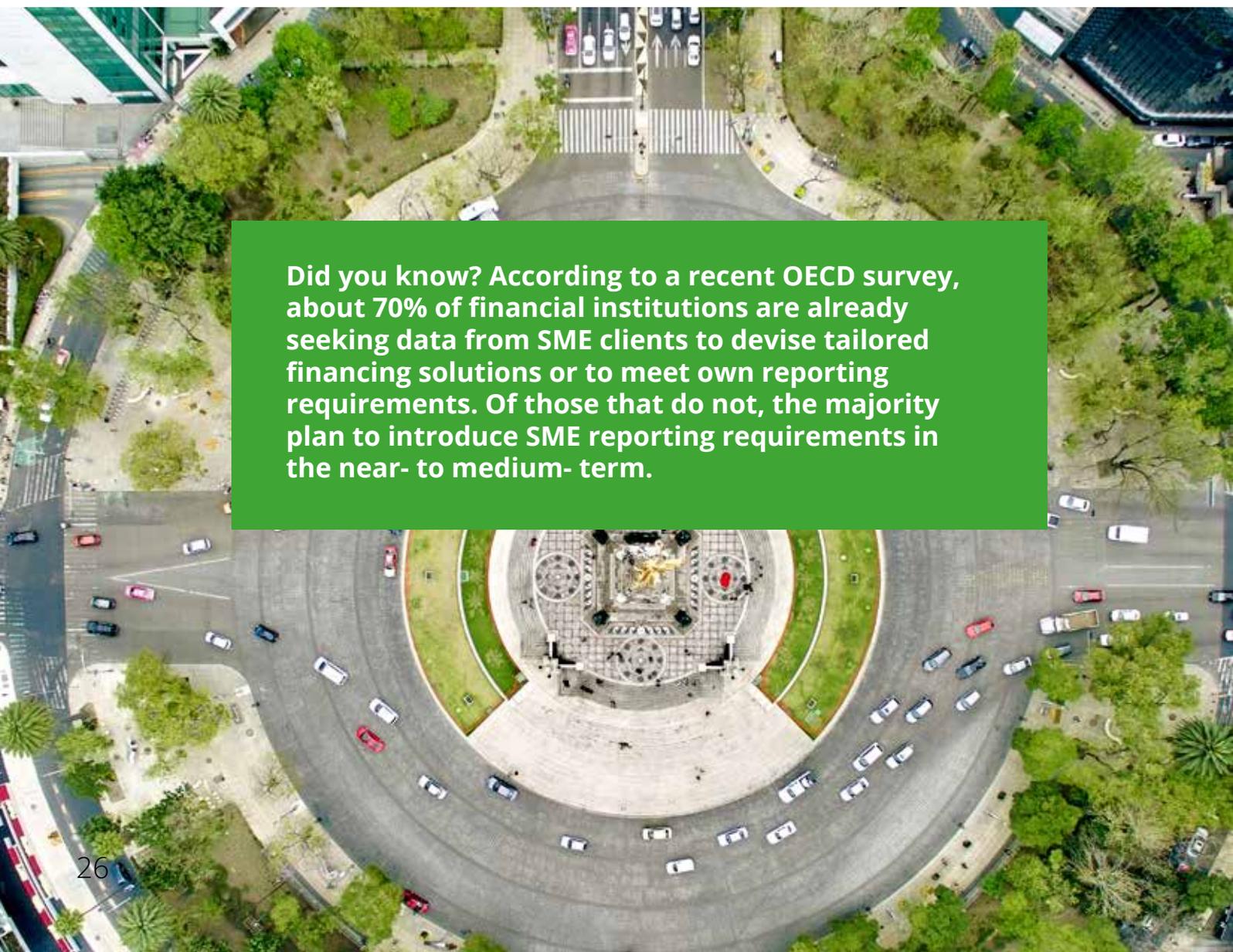
Did you know? According to a recent OECD survey, about 70% of financial institutions are already seeking data from SME clients to devise tailored financing solutions or to meet own reporting requirements. Of those that do not, the majority plan to introduce SME reporting requirements in the near- to medium- term.

Achieving net zero with enterprises in the social and solidarity economy

The social and solidarity economy can play a critical role in driving the green transition, by implementing new business models and inspiring others to do so. In Europe, two million social economy organisations employ about 6% of the EU's workforce, and in some regions, growth in employment in the social economy has outpaced that of the private sector in recent years. Many operate in the circular economy, such as in repair, reuse and recycling activites.

The social economy also helps ensure that the green transition is a just one. Social economy organisations provide vital support to local communities, and to the most vulnerable within them. In doing so, they can help build public support for green investments. For instance, participation in a cooperative significantly improves individuals' attitude toward local onshore wind turbines, as they provide a vehicle for recycling and reinvesting returns to benefit local communities.

The OECD assists national, regional and local governments in designing and implementing strategies to support the social economy through tailored and evidence-based policy recommendations. The OECD and the European Union joined forces as part of a

Global Action Promoting Social and Solidarity Economy Ecosystems to increase the scale and impact of the social and solidarity economy globally. This work, which targets all EU countries and Brazil, Canada, India, Korea, Mexico, and the United States, has developed international guides on legal frameworks and social impact measurement for the social economy, peer learning partnerships, and country-specific intelligence.

Building on this Action and more than two decades of work in this area, the OECD Recommendation on the Social and Solidarity Economy and Social Innovation was adopted in 2022. To help countries to improve their policy ecosystems, including to give social economy a more central role to shape the green transition, the OECD has created, an informal expert group to share knowledge and practices, including on the circular economy and its links with the social economy. We are also partnering with countries to strengthen their policy frameworks and support for the social and solidarity economy, such as through our recent report on Boosting Social Entrepreneurship and Social Enterprise Development in Ireland.

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Transforming tourism for a resilient and low-carbon future

The tourism sector has grown rapidly, with flows of international tourists rising from 50 million in the 1950s to 1.5 billion today. With a heavy dependence on carbon-intensive air and car travel, the sector accounts for around 4.4% of GDP on average across the OECD but an estimated 8% to 11% of global greenhouse gas emissions. Reducing its environmental footprint is a major challenge for policymakers.

Significant progress has been made in recent decades to promote awareness of the environmental consequences of tourism. Signatories to the Glasgow Declaration on Climate Action in Tourism adopted at COP26 in 2021 committed to taking action to reduce emissions by 50% by 2030. Green transformation is one of seven pillars we identified in developing the G20 Rome Guidelines for the Future of Tourism, which were endorsed in the Rome Communiqué of the 2021 G20 Tourism Ministers' meeting.

The COVID-19 pandemic created opportunities to reimagine the tourism sector and accelerate the shift to a greener, more sustainable tourism model. However, tourism has bounced back strongly despite economic and geopolitical challenges, and this is putting renewed pressures on the environment and local communities. At the same time, the impact of climate change on tourism has become more apparent. Extreme weather events such as heatwaves, floods and wildfires have put tourists, local communities and tourism infrastructure and investments at risk in places as diverse as Australia, Canada, Greece, and Hawaii. As governments and

businesses look to navigate the uncertain outlook, there is a risk that the momentum to create a more sustainable tourism future will stall.

The 2022 edition of the biennial OECD Tourism Trends and Policies provides data on green innovation in tourism and the policies needed to shift to a more sustainable tourism economy. The 2024 edition of this report will build on this, including through the development of indicators to measure and monitor the sustainability of tourism, and through policies to strengthen destination management.

The CFE is also providing tailored advice and support to countries to shift to more sustainable models of tourism, including as implementing partner for the EU Technical Support Instrument's Tourism Flagship projects. Through this partnership, we are working with Croatia, Greece, Italy, Malta, Portugal, Slovenia and Spain to support tourism reforms. This work includes developing and implementing indicators measuring and monitoring the sustainability of tourism, including by linking the Tourism Satellite Account with the System of Environmental Economic Accounting, as well as strengthening destination management.

OECD convening platforms for more sustainable cities and regions

The OECD provides unique forums for actors from all sectors to convene and exchange perspectives and experience on what works in promoting a local climate action, including:

- The **OECD Champion Mayors for Inclusive Growth Initiative,** which convenes 60+ city leaders who have committed to tackling inequalities and promoting more inclusive and greener growth in cities.

- The **OECD Local Development Forum**, which brings together thousands of members from 65 countries to share new local approaches, services and initiatives to address today's economic and social challenges. Its members include national policy makers, mayors, regional authorities, local employment agencies, local chambers of commerce, business leaders, start-ups, and social entrepreneurs and innovators.

- The **OECD Roundtable on Smart Cities and Inclusive Growth**, which brings together a wide range of stakeholders from national and local governments, the private sector, civil society, academia and international organisations to share policies, practices and knowledge on how to get smart city initiatives right. The 3rd OECD Roundtable on Smart Cities and Inclusive Growth took place in July 2023 and focused on "How can smart cities boost the net-zero transition?".

- The **OECD Roundtable on the Circular Economy in Cities**, which provides a knowledge-sharing platform for stakeholders to share best practices related to the transition to a circular economy.

- The **OECD Mining Regions and Cities Initiative,** brings over 1,500 representatives from regional governments, private sector (upstream and downstream mining firms), academia and civil society (including Indigenous peoples) to discuss best practices to deliver higher well-being standards in regions specialised in mining and extractive activities.

- The **Linking Indigenous Communities with Regional Development workstream** brings together a network of Indigenous leaders to discuss solutions and common approaches for regional development and self-sufficiency.

- The **OECD Platform on Financing SMEs for Sustainability** brings together public and private financial institutions, governments, Fintech companies, regulators and SME representatives, to bridge knowledge gaps and develop and share innovative, workable solutions and good practices to expand access to sustainable finance for SMEs.

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Reading list

Key publications

OECD Regional Outlook 2021

OECD SME and Entrepreneurship Outlook 2023

Social Impact Investment 2019

Financing SMEs and Entrepreneurs 2022

Regions in Industrial Transition 2023

A Territorial Approach to the Sustainable Development Goals

Decarbonising Homes in Cities in the Netherlands: A Neighbourhood Approach

Decarbonising Buildings in Cities and Regions

OECD Regions and Cities at a Glance 2022

OECD Tourism Trends and Policies 2022

OECD Principles on Water Governance

Mining Regions and Cities in the Region of Antofagasta, Chile

Access the OECD iLibrary: oecd-ilibrary.org

Reading list

Key publications
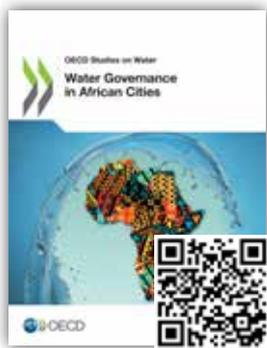
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