

OECD WORK ON ENVIRONMENT



2019-20



ENVIRONMENT DIRECTORATE

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The Organisation for Economic Co-operation and Development

Member countries

Australia	Korea
Austria	Latvia
Belgium	Lithuania
Canada	Luxembourg
Chile	Mexico
Czech Republic	Netherlands
Denmark	New Zealand
Estonia	Norway
Finland	Poland
France	Portugal
Germany	Slovak Republic
Greece	Slovenia
Hungary	Spain
Iceland	Sweden
Ireland	Switzerland
Israel	Turkey
Italy	United Kingdom
Japan	United States

The OECD, which traces its roots to the Marshall Plan, groups 36 member countries committed to democratic government and the market economy. It provides a forum where governments can compare and exchange policy experiences, identify good practices, and adopt decisions and recommendations. Dialogue, consensus, and peer review and pressure are at the very heart of the OECD.

Colombia has been invited to join the OECD and is in the final stages of ratifying and signing the instruments. OECD accession discussions are currently under way with Costa Rica. Co-operation continues with Key Partner countries, such as Brazil, the People's Republic of China, India, Indonesia and South Africa.

The OECD is working for a stronger, greener and fairer world economy. The principal aim of the Organisation is to promote policies for sustainable economic growth and employment, a rising standard of living and trade liberalisation. By “sustainable economic growth” the OECD means growth that balances economic, social and environmental considerations.

The OECD is one of the world's largest and most reliable sources of comparable statistical, economic and social data. It monitors trends, collects data, analyses and forecasts economic development, and investigates evolving patterns in a broad range of public policy areas such as agriculture, development co-operation, education, employment, taxation and trade, science, technology, industry and innovation, in addition to environment. The OECD family of organisations also includes the International Energy Agency (IEA), the Nuclear Energy Agency (NEA) and the International Transport Forum (ITF).

Preface



“Our actions must have a keen eye to the future as the investment and mitigation choices we make today determine what we will bequeath to our descendants. It is our collective future that is at stake. Human well-being is the ultimate goal of both environment and development policies.” *

Angel Gurría, OECD Secretary-General

The Paris Agreement takes effect in 2020, yet there are significant gaps in ambition and implementation. Our behaviour continues to threaten our natural environment and future prosperity. Greenhouse gas emissions continue to rise, fossil fuels continue to dominate the energy mix, and the demands of growth continue to exert unsustainable pressure on natural resources. We are also seeing an acceleration of acute ecosystem degradation, increased intensity of water stress, and continued growth in the health impacts of air and water pollution. Adding to these demands, governments find themselves facing immediate and competing socio-economic challenges from rising inequalities and sluggish productivity growth.

The 2011-2020 Aichi Biodiversity Targets, under the Convention on Biological Diversity, are coming to an end, although government actions have not been sufficient to see the targets met. The 2020 Biodiversity COP15 will define post-2020 targets aimed at protecting marine and terrestrial ecosystems throughout the world and provide an opportunity for governments to renew their resolve to address the global biodiversity challenge through a results-orientated framework.

In the last century we have seen an unprecedented increase in the use of natural resources and materials. Global raw material use rose at almost twice the rate of population growth. The report *OECD Global Material Resources Outlook to 2060* projects a doubling of global primary materials use between today and 2060. As the global economy expands and living standards rise, this will place twice as much pressure on the environment as we are seeing today.

In other areas too - from sustainable transport infrastructure to managing human impacts on the nitrogen cycle and addressing water risks - a more holistic approach to protecting the environment and promoting growth and equity are essential to lasting improvements in well-being across the population.

Whilst the scale of the task before governments is great, these challenges are not insurmountable. This OECD Work on Environment brochure details how our Organisation is helping governments face up to cross-cutting, systemic challenges in a more comprehensive manner that is increasingly joining the dots between environment, growth and equity.

* Fourth Biennial Lecture on Climate Change, 3 July 2019, Geneva

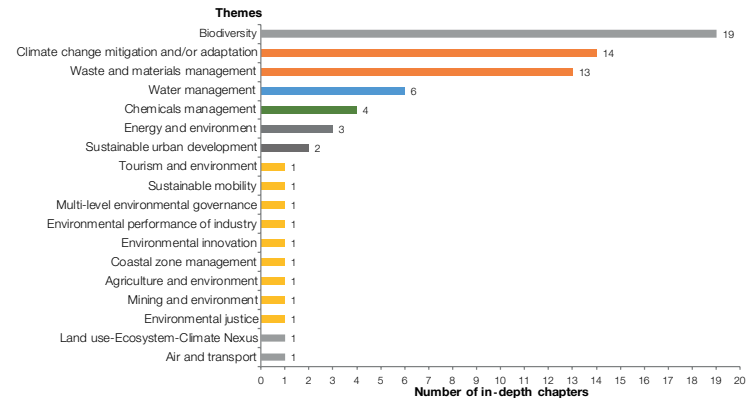
Peer Reviews, Indicators and Outlooks

Monitoring and analysing key environmental challenges, now and in the future

Environmental Performance Reviews

- ▶ Environmental Performance Reviews (EPRs) provide an independent assessment and targeted recommendations aimed at improving policies that impact the environment. Most OECD countries have now been reviewed three times. OECD partner countries, such as Indonesia, Peru and Brazil, have recently been reviewed for the first time.
- ▶ Each EPR is organised in two parts. The first part, common to all reviews, presents key environmental trends, the framework for environmental governance and management, and progress towards green growth: it presents the country's efforts to mainstream environment into its economic policy and to promote the greening of the economy, for example through the use of taxes and other pricing instruments. The second part provides an in-depth analysis of two topics selected by the reviewed country.
- ▶ The Working Party on Environmental Performance and Information, made up of representatives of all 36 OECD governments and the European Commission, endorses the assessment and recommendations section of the EPRs, a central element of the peer review process.
- ▶ In 2019 the OECD conducted the first Green Growth Policy Review of Indonesia. It was developed within the same peer review framework as the EPRs, but focused on a more forward-looking approach to help Indonesia identify how to balance environmental protection with economic and social development needs. Particular emphasis was placed on the nexus between land use, ecosystems and climate change.

Topics for in-depth analysis in EPRs



DID YOU KNOW?

By 2020 most OECD countries will have undergone an environmental performance review three times, with partner countries such as Argentina, Brazil, China, Indonesia, Peru and

South Africa also the subject of review.

Key publications

- *OECD Environmental Performance Reviews: Australia, Turkey, Denmark, Latvia (2019); Argentina, Greece, Luxembourg (2020)*
- *OECD Green Growth Policy Review of Indonesia (2019)*
- *Waste Management and the Circular Economy in Selected OECD Countries: Evidence from Environmental Performance Reviews (2019)*
- *Towards Green Growth in Emerging Market Economies: Evidence from Environmental Performance Reviews (2019)*
- *Biodiversity Conservation and Sustainable Use in Latin America: Evidence from Environmental Performance Reviews (2018)*

www.oecd.org/environment/country-reviews

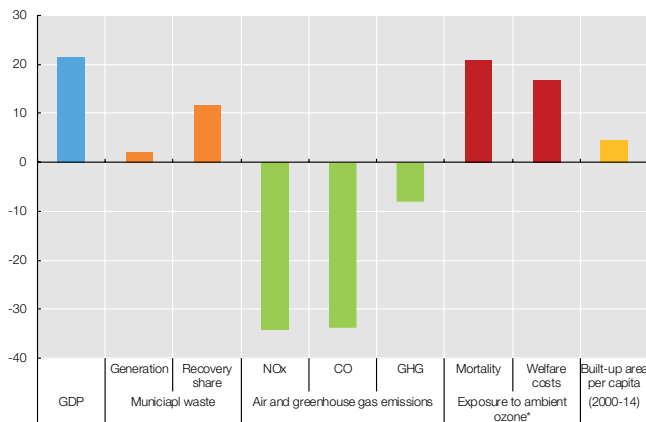
Environmental information, data and indicators

- ▶ The OECD provides harmonised international data and indicators on the environment, and works with countries to improve their environmental information systems and establish effective mechanisms to inform the public and decision-makers.
- ▶ The data, collected from countries and international sources, are treated, harmonised and checked. Much effort is devoted

to improving data quality and the methodologies used. Work is underway on population exposure to environmental risks and natural hazards, material productivity, waste and the circular economy, water resources, land cover change, revenue from environmentally related taxes and environmentally harmful government support for fossil fuels. Data underlying OECD and Sustainable Development Goals (SDGs) indicators receive particular attention.

- ▶ The OECD monitors environmental progress and performance, policy integration, resource productivity and progress towards green growth through dedicated indicator sets. The indicators are used in country reviews and policy analyses. A subset of key environmental indicators was endorsed by OECD Environment Ministers for public communication by the OECD.
- ▶ To better inform on the interactions between the economy and the environment, the OECD supports the implementation of the System of Environmental Economic Accounting (SEEA). Work is underway jointly with the OECD Statistics and Data Directorate to develop accounts on air and greenhouse gas emissions, natural assets and material flows, and to improve data on environmental expenditure and taxes in line with the SEEA.

Environmental trends and GDP, OECD, % change 2005-17



* Premature deaths and related welfare costs, GDP equivalent.

Source: OECD (2019), OECD Environment Statistics (database)

- ▶ A suite of OECD indicators on land cover change has been developed, drawing on Earth observation data from global land cover monitoring systems. It measures some of the key pressures on ecosystems and biodiversity arising mostly from urbanisation and agricultural expansion. For instance, globally an area of the size of the United Kingdom has been covered by buildings since 1990.

Built-up area growth (1990-2014, thousand km²)



Source: OECD calculations using data from JRC GHSL / Pesaresi et al. (2015). For further details, see Hascic and Mackie (2018), <http://oe.cd/land-cover>

Key Publications

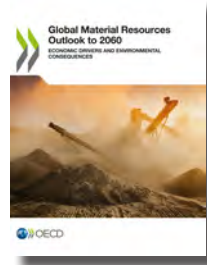
- *Assessing Progress towards Green Growth in the EECCA Region (2020)*
- *Environment at a Glance (2019)*
- *Land Cover Change and Conversions (2018)*
- *Towards Global SEEA Air Emission Accounts (2018)*
- *Green Growth Indicators (2017)*
- *OECD Environment Statistics*

www.oecd.org/site/envind

www.oecd.org/greengrowth/greengrowthindicators.htm

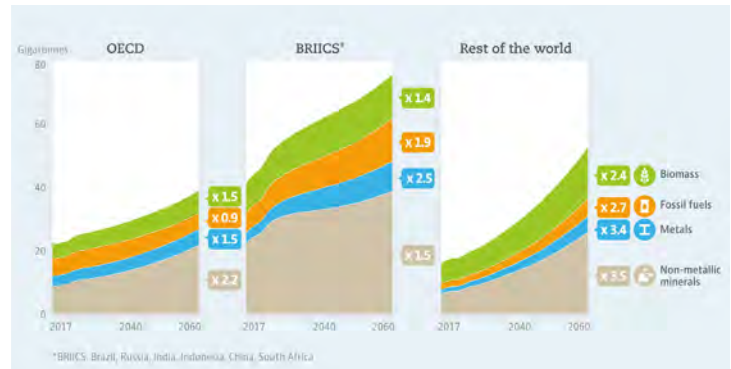
Environmental Outlooks

- ▶ Based on economic-environmental modelling, the *OECD Environmental Outlook to 2050* analyses the consequences of policy inaction in four priority areas: climate change, biodiversity, water, and health impacts of pollution and chemicals. It provides analyses of economic and environmental trends to 2050, and simulations of policy actions to address key challenges.
- ▶ The report *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences* (2019) presents global projections of materials use and their environmental consequences, providing a quantitative outlook to 2060 at the global, sectoral and regional levels for 61 different materials (biomass resources, fossil fuels, metals and non-metallic minerals). It explains the economic drivers determining the decoupling of economic growth and materials use, and assesses how the projected shifts in sectoral and regional economic activity influence the use of different materials. The projections include both primary and secondary materials, providing a deeper understanding of what drives the synergies and trade-offs between extraction and recycling. The report projects a




doubling of global primary materials use between today and 2060. Population and converging per capita income growth drive the growth in materials use. However, structural change, especially in non-OECD countries, and technology improvements partially dampen that growth. Metals and non-metallic minerals are projected to grow more rapidly than other types of materials.

Materials use rises for all materials group



Key Publications

- *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences (2019)*
 <http://www.oecd.org/environment/green-talks-live.htm>
- *OECD Environmental Outlook to 2050: Consequences of Inaction (2012)*
www.oecd.org/environment/indicators-modelling-outlooks
www.oecd.org/environment/modelling

DID YOU KNOW?

By 2050, every year, six to nine million people will die prematurely from outdoor air pollution unless better policies are introduced.



The CIRCLE project

- ▶ The “Cost of Inaction and Resource Scarcity: Consequences for Long-term Economic Growth” (CIRCLE) project identifies how feedback from poor environmental quality, climatic change and natural resource scarcity may affect economic growth in the coming decades. CIRCLE has generated quantitative projections for economic growth which reflect the costs of policy inaction on climate change, outdoor air pollution and other environmental issues. These reference projections improve OECD projections of “baseline” economic growth, as well as assessments of the economics of environmental policies. They highlight the economic rationale for stringent climate and pollution policies.
- ▶ Quantitative analyses of the economic feedback of climate change and air pollution, as well as an assessment of the nexus between land, water and energy have been completed. The core tool being used in the analysis is the OECD’s dynamic global multi-sector, multi-region model ENV-Linkages, which is coupled to biophysical models for an integrated assessment. Using a systems approach allows focusing on interactions



between the various economic agents. The modelling work has been complemented with a study on critical materials in the OECD until 2030 and scoping analyses of the possibilities to quantitatively assess water-economy linkages and the economic feedbacks of loss of biodiversity and ecosystem services.

- ▶ Results for the climate change analysis highlight emerging negative consequences of climate change by the middle of the century, plus significant downside risks, especially in vulnerable regions in Asia and Africa. Results for the outdoor air pollution analysis reveal a significant increase in the projected number of premature deaths, not least in People's Republic of China (hereafter China) and India, and very high associated welfare costs.
- ▶ The 2019 Environment Working Paper “Economic interactions between climate change and outdoor air pollution” explores the interactions between the economic consequences of climate change and air pollution.

Economic consequences of air pollution

- ▶ The OECD provides projections of the economic consequences of air pollution. The main focus is on human health, including both mortality and morbidity, and on agriculture. This project quantifies both the consequences for the economy, from changes in labour productivity, health expenditures and crop yields, and welfare costs, from premature deaths and pain and suffering caused by air pollution. Besides costs of inaction on

air pollution, this project also aims at quantifying the benefits from policy action on air pollution that can be derived from reduced air pollution impacts on health and agriculture.

- ▶ The core tool being used in the analysis is the OECD's dynamic global multi-sector, multi-region model ENV-Linkages. This economic model is coupled with biophysical models for an integrated assessment, and in particular to the GAINS model developed at the International Institute for Applied System Analysis (IIASA), which is used to obtain emission coefficients for air pollutants, and with the TM5-FASST atmospheric dispersion model of the European Commission's Joint Research Centre (EC-JRC), which is used to calculate concentrations of pollutants and impacts on crop yields.
- ▶ While taking a global approach, this project focuses on specific regional areas; in particular, on the consequences of black carbon emission reductions in Arctic Council member countries and on the consequences of air pollution in selected countries in Asia (Korea, Japan and China).



Key Publications

- *Economic interactions between climate change and outdoor air pollution, Environment Working Paper (2019)*
- *The Land-Water-Energy Nexus: Biophysical and Economic Consequences (2017)*
- *Economic Consequences of Outdoor Air Pollution (2016)*
- *Economic Consequences of Climate Change Damage (2015)*
www.oecd.org/environment/circle.htm

Climate Change

Responding to the urgency for climate action

Accelerating Climate Action: Refocusing Policies through a Well-being Lens

The OECD is focusing efforts on embedding climate change action in broader sustainability goals across the economy.

- ▶ The report *Accelerating Climate Action: Refocusing Policies through a Well-being Lens* argues that efforts to mitigate climate change are likely to be more successful and less costly when climate action and broader efforts towards human well-being and sustainable development are mutually supportive. On the one hand, action in non-climate policy areas should, wherever and to the maximum extent possible, support and not undermine climate change mitigation goals. On the other hand, climate change mitigation will be more attractive if it also meets other important societal goals, such as clean air and improvements in health, improved access through integrated public transport infrastructure, or energy access through distributed renewable energy generation.
- ▶ The report highlights that rethinking policy objectives and the measures used for tracking progress and reframing decisions across the economy is key to achieving a two-way alignment. This will allow making potential synergies and trade-offs between climate change mitigation and other well-being objectives systematically visible. The report examines how adopting a well-

being lens could lead to a change in perspective and different policy approaches to mitigation in key sectors (electricity, heavy industry, residential, surface transport and agriculture), which together represent over 60% of global GHG emissions. It also explores how climate policies can be implemented in ways that increase synergies and minimise trade-offs with other well-being goals.

Key Publication

- *Accelerating Climate Action: Refocusing Policies through a Well-being Lens (2019)*

Supporting international negotiations and implementation of the Paris Agreement

- ▶ The OECD, together with the IEA, provides the Secretariat to support the Climate Change Expert Group (CCXG), a forum where climate negotiators, policy makers and other experts can discuss key issues relevant to the on-going climate negotiations, as well as on implementation of Parties' Nationally Determined Contributions (NDCs). The CCXG oversees development of analytical papers for the purpose of providing useful and timely input to climate negotiators. The group also holds regular Global Forums that bring together climate negotiators and practitioners from a wide range of governments, as well as other experts.

- ▶ Recent analytical work has focused on elements relating to the development of the “Paris Rulebook” and implementation of the Paris Agreement, including on how to enhance the transparency of mitigation, finance, technology, capacity-building and adaptation; how to develop robust accounting for mitigation contributions (including land sector accounting); how to design effective market mechanisms that deliver environmental integrity; and the design and outputs of the Talanoa Dialogue. The CCXG has an excellent track record of providing technical input to the UNFCCC negotiations that have resulted in concrete outcomes, including in the areas above. For 2019, the CCXG is continuing to focus on issues relating to transparency, carbon markets, as well as implementation and updating of NDCs and long-term low-emission development strategies.
- ▶ The OECD has further made unique contributions to finance-related discussions under the UNFCCC by producing a series of reports that provide estimates and analyses of climate finance provided and mobilised by developed countries for climate action in developing countries (OECD, 2019; OECD, 2016; OECD, 2015). These publications build on the long-standing expertise of the OECD in tracking development and climate finance.
- ▶ Work being developed by the Environment Directorate of the OECD also focuses on supporting countries in developing their long-term low emission development strategies (LT-LEDS). As part of this work, the team is comparing experiences from countries that have submitted their LT-LEDS to the UNFCCC. The aim is to draw key messages and lessons from: a) the institutional and technical

process developed for creating the LT-LEDS; the characteristics that can make the document itself more useful; and the mechanisms that some of these countries have put in place to facilitate implementation of the LT-LEDS.



Key Publications

- *Climate Finance Provided and Mobilised by Developed Countries in 2013-17 (2019)*
- *Reporting Tables – potential areas of work under SBSTA and options – Part I – GHG inventories and tracking progress towards NDCs (2019)*
- *Reporting Tables – potential areas of work under SBSTA and options – Part II – Financial support provided, mobilised and received (2019)*
- *Markets negotiations under the Paris Agreement: a technical analysis of two unresolved issues (2019)*
- *Operationalising selected reporting and flexibility provisions in the Paris Agreement (2018a)*
- *Tracking progress towards NDCs and relevant linkages between Articles 4, 6 and 13 of the Paris Agreement (2018b)*
- *Reporting on capacity-building and technology support under the Paris Agreement: Issues and options for guidance (2018c)*
- *Accounting for baseline targets in NDCs: Issues and options for guidance (2018d)*
- *Enhancing mitigation and finance reporting (2017a)*
- *Information needed to facilitate the clarity, transparency and understanding of mitigation contributions (2017b)*
- *Towards the USD 100 Billion Goal (2016)*
- *Climate Finance in 2013-14 and the USD 100 billion Goal (2015)*
- *OECD Environmental Outlook to 2050: The Consequences of Inaction (2012)*

www.oecd.org/environment/cc

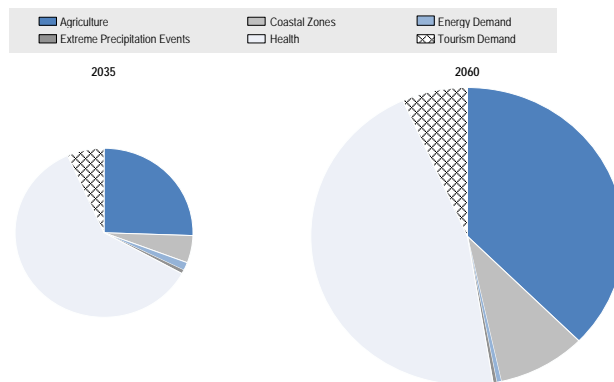
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Adaptation to climate change

- ▶ Efforts to reduce GHG emissions need to be complemented with policies and incentives to adapt to the effects of a changing climate. The OECD is working to support governments in planning and implementing effective, efficient and equitable adaptation policies.
- ▶ Recent years have seen significant progress in OECD countries' preparations for the effects of climate change. Most countries have established national strategies and action plans for climate change adaptation. The OECD Adaptation Taskforce was created to bring together governments' leading experts on climate change adaptation to support countries' efforts in implementing their national climate change adaptation agendas. The Taskforce provides a platform for countries to exchange on policies and practices and to identify and address key issues in moving the adaptation agenda forward.
- ▶ The OECD is examining how economic analysis can inform adaptation responses. Analysis of progress to date has emphasised the need to improve decision makers' ability to understand and use climate data to make decisions that are robust in the context of uncertainty about the future. Building on this analysis, recent work examines how to improve decisions in specific sectors and for specific impacts.

Attribution of damage to selected climate change impacts

Percentage change in GDP with respect to no-damage baseline



Source: ENV-Linkages model

- ▶ The OECD is focusing on how climate change adaptation can be incorporated into different sectoral activities. The Policy Perspectives on “Climate-Resilient Infrastructure” provides guidance on how governments might best support the development of climate-resilient infrastructure networks, through improved provision of information, alignment of policy frameworks and the development of standards. Future work on infrastructure will focus on scaling-up the use of nature-based solutions.

- ▶ Coastal regions are extremely vulnerable to the impacts of climate change, due to their exposure to the combined effects of sea level rise and intense storm events. Coastal risks are set to intensify in the future, with the potential to bring unprecedented costs to livelihoods and economies. The OECD's report *Responding to Rising Seas: OECD Country Approaches to Tackling Coastal Risks* takes stock of what OECD countries are currently doing to prepare for coastal change, and puts forward a policy framework for coastal adaptation that is equipped to meet the challenges of ever-increasing global temperatures. The work will continue with a view to revisiting OECD guidance on coastal zone management.

Key Publications

- *Responding to Rising Seas: OECD Country Approaches to Tackling Coastal Risks* (2019)
 <http://www.oecd.org/environment/green-talks-live.htm>
- *Climate-Resilient Infrastructure, OECD Environment Policy Papers, No. 14* (2018)
- *Innovative Approaches to Building Resilient Coastal Infrastructure* (2018)
- *Climate Change Adaptation: Emerging Practices in Monitoring and Evaluation* (2015)
- *Climate Change Risks and Adaptation: Linking Policy and Economics* (2015)
<http://www.oecd.org/environment/cc/climate-adaptation/>

Green Finance and Investment

- ▶ Achieving the Sustainable Development Goals (SDGs) and long-term climate objectives requires substantial investment globally. Given limited public budget, leveraging private capital will be crucial for addressing climate change and broader sustainability challenges.
- ▶ The OECD Centre on Green Finance and Investment, launched in 2016, helps catalyse and support the transition to a green, low-emissions and climate-resilient economy through the development of effective policies, institutions and instruments for green finance and investment www.oecd.org/cgfi. The Centre provides cross-cutting analysis at the intersection of environment, sustainability and finance. A forthcoming study will examine emerging sustainable finance taxonomies, identifying common practices, and considering possible gaps and implications for policy and markets.
- ▶ Scaling-up investment for the low-carbon transition will require mobilising both domestic and international private capital. The *OECD Progress Update on Approaches to Mobilising Institutional Investment for Sustainable Infrastructure* (2018) catalogues the tools and techniques available to public actors to attract institutional investors while *Mapping Channels to Mobilise Institutional Investment in Sustainable Energy* (2015) provides a detailed view of the various investment channels through which institutional investors can invest in sustainable energy assets.

- ▶ Given the long life cycle of infrastructure assets and their central role in economic and social development, the OECD regularly analyses the finance and investment landscape for sustainable infrastructure. *Developing Robust Project Pipelines for Low-Carbon Infrastructure* (2018) considers project pipelines in the context of investments in support of long-term climate objectives, exploring what project pipelines mean for low-carbon investment and how they relate to governments' wider investment policy frameworks. *The Empirics of Enabling Investment and Innovation in Renewable Energy* (2017) provides an empirical assessment of the impact of investment conditions on investment and innovation in renewable technologies while *State-owned Enterprises and the Low-carbon Transition* (2018) examines the influence of competition policy and state-owned enterprises in this market.
- ▶ The OECD also works on innovative financing tools and institutions such as green bonds and green investment banks. Green bonds are debt instruments used to finance green projects that deliver environmental benefits. As *Mobilising Bond Markets for a Low-Carbon Transition* (2017) shows, they have the potential to provide low-cost, long-term sources of debt capital needed by infrastructure projects. *Green Investment Banks: Scaling up Private Investment in Low-carbon*, *Climate resilient Infrastructure* (2016) explores the role of publicly capitalised green investment banks in leveraging private investment for the domestic low-carbon economy.



DID YOU KNOW?

The green bond market is still young - it started only ten years ago – but has experienced rapid growth. With growing market appetite for such bonds, annual issuance rose from just USD 2.6 million in 2012 to USD 167.6 billion in 2018. At the end of 2018, the total outstanding balance of green bonds issued from 2007 amounted to USD 521 billion. (Source: Climate Bonds Initiative)

- ▶ As part of its efforts to catalyse investment for the low-carbon transition, the OECD launched the Clean Energy Finance and Investment Mobilisation (CEFIM) Programme in January 2019. The CEFIM programme aims to support five emerging economies in strengthening their clean energy policies and unlocking finance for renewables and energy efficiency solutions. In each country, the programme will review clean energy finance and investment policies, provide in-country technical assistance and convene high-impact domestic and international dialogues to highlight investment opportunities and address policy misalignments.

- ▶ The OECD-led Research Collaborative on Tracking Private Climate Finance is a technical research network and platform to advance and share knowledge on data and methodologies of relevance to policy making and UNFCCC processes. It has, since 2013, produced extensive work focused on estimating publicly-mobilised private finance for climate action in developing countries (*Private finance for climate action*, 2017; *Estimating Publicly-Mobilised Private Finance for Climate Action*, 2017). Since 2018, further work has been initiated on tracking finance flows more broadly towards assessing their consistency with climate objectives as called for by Article 2.1c of the Paris Agreement (see *Tracking finance flows towards assessing their consistency with climate objectives*, 2019).

Key Publications

- *Financing Infrastructure for the Low-Carbon Transition: Stocktaking of Institutional Investment* (2020)
- *Emerging Taxonomies: Stocktake of Efforts to Develop Sustainable Finance Definitions* (2020)
- *Improving Access to Green Finance for Small and Medium-Sized Enterprises in Georgia* (2020)
- *Tracking finance flows towards assessing their consistency with climate objectives* (2019)
- *Tracking Green Finance in Kyrgyzstan* (2019)
- *Developing Robust Project Pipelines for Low-Carbon Infrastructure* (2018)
- *Progress Update on Approaches to Mobilise Institutional Investment for Sustainable Infrastructure* (2018)
- *State-owned Enterprises and the Low-carbon Transition* (2018)
- *Access to Private Finance for Green Investments: Energy Efficiency and Renewable Energy Financing in Ukraine* (2018)
- *Energy Subsidy Reform Schemes in the Republic of Moldova: Assessing Energy Affordability and Environmental Impacts* (2018)
- *Inventory of Energy Subsidies in the EU Partnership Countries* (2018)
- *Mobilising Finance for Climate Action in Georgia* (2017)
- *Mobilising the Bond Markets for a Low-Carbon Transition* (2017)
- *The Empirics of Enabling Investment and Innovation in Renewable Energy* (2017)
- *Private finance for climate action: Estimating the effects of public interventions* (2017)
- *Estimating Publicly-Mobilised Private Finance for Climate Action* (2017)
- *Green Investment Banks: Scaling up Private Investment in Low-carbon, Climate-resilient Infrastructure* (2016)
- *Policy Guidance for Investment in Clean Energy Infrastructure* (2015)
- *Mapping Channels to Mobilise Institutional Investment in Sustainable Energy* (2015)
- *Aligning Policies for the Transition to a Low-Carbon Economy* (2015)

www.oecd.org/environment/cc/financing.htm

www.oecd.org/investment/green.htm

Phasing-out environmentally harmful government support measures for fossil-fuels

- ▶ The OECD supports countries in their commitments to phase out fossil-fuel subsidies through its regularly updated OECD Inventory of Support Measures for Fossil Fuels and through sharing its expertise and facilitating the exchange of relevant information among its member countries and other interested parties. The OECD has identified and inventoried almost 1 200 individual policies that support the production or consumption of fossil fuels in OECD countries and eight emerging economies (Argentina, Brazil, China, Colombia, India, Indonesia, Russia and South Africa). The overall value of these support measures was USD 140-250 annually over the period 2010-17 (OECD, 2018). In addition, joint OECD-IEA estimates value fossil-fuel support in 76 economies to be USD 340 billion (OECD, 2019).

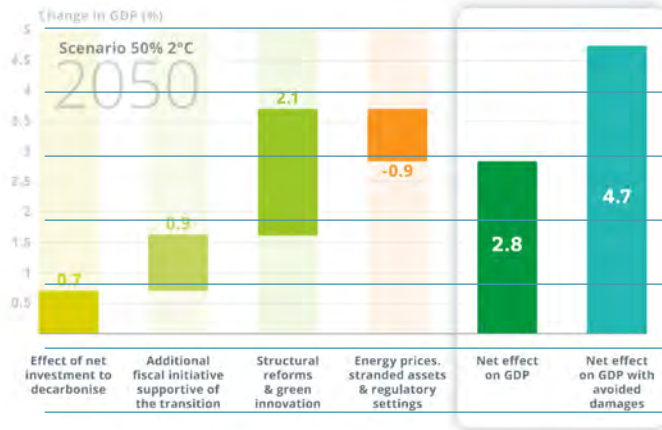
www.oecd.org/fossil-fuels

- ▶ The OECD played a Secretariat role for the voluntary and country-led G20 peer reviews of China, Germany, Indonesia, Italy, Mexico and the United States. Under the six completed peer reviews, more than one hundred government policies were discussed and evaluated. Subsidies reviewed were mostly direct transfers and tax expenditures, two-thirds of which were directed to end-users of fossil fuels. The peer reviews of inefficient fossil-fuel subsidies are a mechanism for information generation and sharing, knowledge exchange, and an invaluable commitment to transparency.

Growth, investment and the low-carbon transition

- ▶ Governments around the world are facing the imperatives of re-invigorating growth while improving livelihoods and urgently tackling climate change. In 2017, the OECD undertook a major project on the economic growth and investment implications of the transition to a low-carbon, climate resilient economy in the context of the German G20 Presidency. The OECD report *Investing in Climate, Investing in Growth* provides an assessment of how low-emission and climate-resilient development can be achieved without compromising economic growth, competitiveness or well-being across the G20 group of countries and beyond.
- ▶ With the right policies and incentives in place – notably strong fiscal and structural reform combined with coherent climate policy – governments can generate growth that will significantly reduce the risks of climate change, while also providing near-term economic, employment and health benefits. Such a climate-compatible policy package can increase long-run GDP by up to 2.8% on average across the G20 in 2050 relative to a continuation of current policies, across developed and emerging economies. If the positive impacts of avoiding climate damage are also taken into account, the net effect on GDP in 2050 rises to nearly 5%.

More ambitious climate policies combined with targeted economic reform will increase GDP in the long run



Key Publication

- *Investing in Climate, Investing in Growth (2017)*
www.oecd.org/environment/g20-climate.htm



Financing Climate Futures: Rethinking Infrastructure

- ▶ Infrastructure worldwide has suffered from chronic under-investment for decades and currently makes up more than 60% of greenhouse gas emissions. A deep transformation of existing infrastructure systems is needed for both climate and development, one that includes systemic conceptual and behavioural changes in the ways in which we manage and govern our societies and economies.
- ▶ In 2018, the OECD, UN Environment and the World Bank Group joined forces under an initiative entitled Financing Climate Futures: Rethinking Infrastructure, with the aim to help countries move beyond an incremental approach to financing low-emission, resilient infrastructure towards the transformational agenda needed for decisive climate action.
- ▶ The initiative, supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), was launched in response to an invitation from the 2017 G20 Hamburg Climate and Energy Action Plan for Growth to “compile ongoing public and private activities within the G20 for making financial flows consistent with the Paris goals and, building on this, to analyze potential opportunities for strengthening these efforts”.



- ▶ The report *Financing Climate Futures: Rethinking Infrastructure* (2018) outlines an agenda for a radical transformation of existing infrastructure and investment systems. It highlights six areas that are key to aligning financial flows with climate goals in the areas of planning, innovation, public budgeting, financial systems, development finance and cities.
- ▶ The report was presented to the Sherpas of the G20 Troika (Germany, Argentina, Japan) and of the three international organisations, during their final meeting on 28 November 2018 in Buenos Aires. A series of outreach and dissemination activities have followed throughout 2018 and 2019, including at high-level gatherings such as COP 24 in Katowice, the United Nations Environment Assembly in Nairobi, and the Global Solutions Summit in Berlin.

Key Publication

- *Financing Climate Futures: Rethinking Infrastructure* (2018)
<http://www.oecd.org/environment/cc/climate-futures/>
 <http://www.oecd.org/environment/green-talks-live.htm>
 https://youtu.be/FzDNEx3I_eY

Six transformative areas to align financial flows with low-emission, resilient infrastructure



Biodiversity and Ecosystems

Promoting conservation and sustainable use of biodiversity and ecosystem services

Economics of biodiversity

- ▶ OECD analysis focuses on the economic aspects of biodiversity – enhancing understanding of how biodiversity and associated ecosystems can be valued, and how these values can be captured through policy instruments and incentives to support biodiversity conservation and sustainable use. The objective is to promote policies that are environmentally effective, economically efficient and distributionally equitable. OECD work on biodiversity also supports the work of the UN Convention on Biological Diversity (CBD).
- ▶ Given recent and projected trends in biodiversity loss and degradation, there is an urgent need for: greater and more ambitious use of policies including economic instruments, more cost-effective use of existing finance for biodiversity, and mainstreaming of biodiversity in other sectors of the economy. The CBD COP15 taking place in October 2020 presents a key opportunity to devise a more effective post-2020 global biodiversity framework.

The Post-2020 Global Biodiversity Framework

- ▶ The OECD is working on a project called The Post-2020 biodiversity framework: targets, indicators and

measurability implications at global and national level. A background paper was prepared for an international expert workshop that was convened on February 26, 2019. The final report will be released in advance of CBD COP15.

- ▶ In the lead up to CBD COP15, and in response to a request by France in its role as G7 Presidency, the OECD released *Biodiversity: Finance and the Economic and Business Case for Action*. The report was launched at the G7 Environment Ministers' Meeting on May 6 in Metz, France. Follow-up work is now underway, as mandated by the G7.

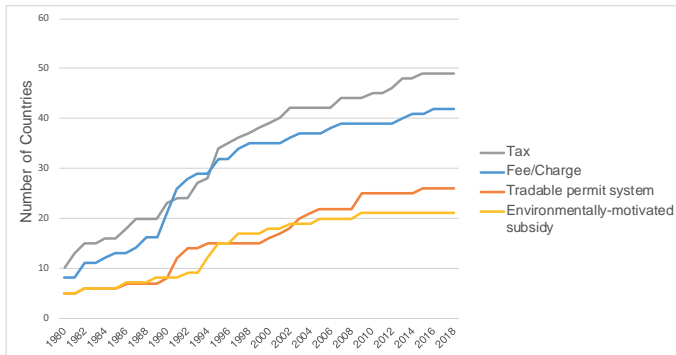
Scaling up policy instruments for biodiversity and tracking progress, and reforming subsidies harmful to biodiversity

- ▶ OECD work is also focusing on tracking economic instruments and the finance they mobilise for biodiversity, which is relevant to Aichi Target 3 on incentives and Target 20 on resource mobilisation. This covers biodiversity-relevant taxes, fees and charges, positive subsidies and tradable permits. This data is used under the Biodiversity Indicators Partnership to monitor progress towards Aichi Target 3. Also relevant to Aichi Target 3 is on-going OECD work

on developing guidance to identify and assess subsidies harmful to biodiversity.

- ▶ Other recent OECD work has focused on the effective design and implementation of biodiversity offsets, and of marine protected areas.

Countries with biodiversity-relevant instruments



Source: OECD (2018), Tracking Economic Instruments and Finance for Biodiversity. See also <http://oe.cd/pine>

Monitoring and evaluation

- ▶ A key challenge in efficiently allocating biodiversity finance is the need to ensure appropriate design and implementation of biodiversity instruments so as to best achieve their intended goals. This includes the need to develop appropriate indicators for biodiversity instruments, and to

ensure robust monitoring and reporting frameworks. Recent work on ‘Evaluating the effectiveness of policy instruments for biodiversity’ examined the use of impact evaluation studies, cost-effectiveness and other more commonly used approaches. It provides an inventory of impact evaluation studies on terrestrial and marine ecosystems.

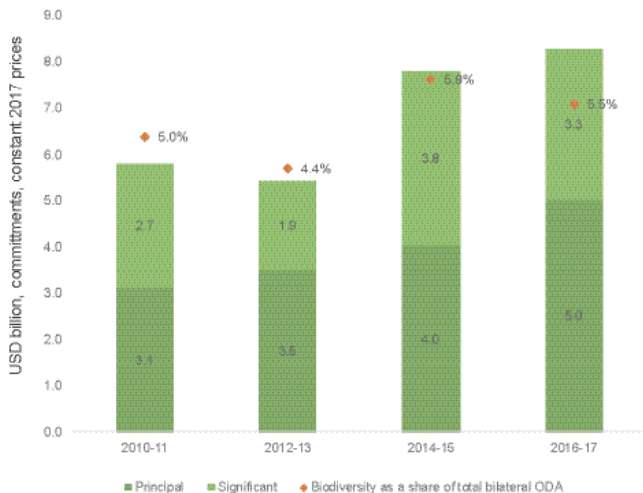
Mainstreaming biodiversity into national and sectoral policies, ensuring synergies and minimising trade-offs

- ▶ The pressures on biodiversity often stem from policies in other sectors and areas such as agriculture, fisheries, forestry and climate change. Linkages between biodiversity and other sectoral policies are complex and greater efforts are needed to mainstream biodiversity into decision-making processes across the economy. The 2018 report *Mainstreaming Biodiversity for Sustainable Development* supports the need to mainstream biodiversity into economic growth and development in support of the SDGs. It examines how biodiversity is being mainstreamed in national development plans and other strategies; across the agriculture, forestry and fisheries sectors; in development co-operation; and how the monitoring and evaluation of biodiversity mainstreaming could be improved. Moreover, work on *The Political Economy of Effective Biodiversity Policy Reform* examines how to overcome obstacles to reform, such as concerns about distributional issues and competitiveness, across both terrestrial and ocean ecosystems (e.g. such as agriculture and fisheries).

- ▶ The OECD also monitors external development finance targeting biodiversity objectives through its Creditor Reporting System using the biodiversity “Rio markers”. Bilateral biodiversity-related aid commitments by members of the OECD Development Assistance Committee (DAC) reached USD 8.3 billion on average per year in 2016-17, representing 5.5% of total bilateral official development assistance (ODA).

Bilateral Biodiversity-related ODA, 2010-2017

Two-year averages and shares of total bilateral ODA



Source: OECD DAC Creditor Reporting System Statistics, December 2018

<http://oe.cd/RioMarkers>



DID YOU KNOW?

Terrestrial biodiversity is projected to decline by a further 10% by 2050 without more ambitious policies to protect it.

Climate, Land Use, Ecosystems and Food: Aligning policies in the land-use nexus

- ▶ Effective land-use management is essential for achieving many national and international goals and commitments, such as those related to the Sustainable Development Goals, the Paris Agreement and the Aichi Biodiversity Targets. The 2019 report *Climate, Land Use, Ecosystems and Food: Aligning policies in the land-use nexus* examines what tools and institutions are best suited to achieving effective land-use management consistent with national and international environmental commitments.
- ▶ The study examines six case study countries (Brazil, France, Indonesia, Ireland, Mexico and New Zealand), drawing out common challenges and opportunities to align policy frameworks and manage the synergies and trade-offs between different strategies, institutions and policies that can enhance or impede effective action on the ground. The areas covered are: coherence across national strategies and action plans, institutional co-ordination and coherence, and policy instruments relevant to the land-use nexus.


Key Publications

- *Biodiversity: Finance and the Economic and Business Case for Action* (2019)
- *Climate, Land Use, Ecosystems and Food: Aligning policies in the land-use sector* (2019)
- *The Post 2020 Biodiversity Framework: Targets, indicators and measurability implications at global and national level, forthcoming* (2020)
 <http://www.oecd.org/environment/green-talks-live.htm>
- *Tracking Economic Instruments and Finance for Biodiversity* (2018)
- *Evaluating the effectiveness of policy instruments for biodiversity: impact evaluation, cost-effectiveness analysis and other approaches* (2018)
- *Mainstreaming Biodiversity for Sustainable Development* (2018)
- *Marine Protected Areas: Economics, Management and Effective Policy Mixes* (2017)
- *Biodiversity Conservation and Sustainable Use in Latin America* (2018)
- *The Political Economy of Effective Biodiversity Policy Reform* (2017)
- *Biodiversity Offsets: Effective Design and Implementation* (2016)
- *Biodiversity Policy Response Indicators* (2015)
- *The Role of National Ecosystem Assessments in Influencing Policy Making* (2014)
- *Scaling up Finance Mechanisms for Biodiversity* (2013)
- *OECD Environmental Outlook to 2050: The Consequences of Inaction* (2012)
www.oecd.org/environment/resources/biodiversity

Agriculture

- ▶ In 2019-20, the OECD agri-environmental work will focus primarily on monitoring progress and improving policy design for sustainability and on implementing GHG mitigation policies in the agriculture sector.

Key Publications

- *Innovation, productivity and sustainability in food and agriculture* (2019)
- *Evaluating the environmental impact of agricultural policies* (2019)
- *Land use and ecosystem services* (2018)
- *The role of agriculture in global GHG mitigation* (2018)
- *Improving energy efficiency in the agro-food chain* (2017)
- *Water risk hotspots for agriculture* (2017)
 <http://www.oecd.org/environment/green-talks-live.htm>
www.oecd.org/agriculture

The Ocean

Towards a sustainable ocean economy

The OECD is helping governments reconcile the ever-growing use of marine resources with the need to safeguard and improve the health of ocean ecosystems. The policy analysis and guidance developed by the OECD helps countries to work towards fulfilling their international commitments on the ocean including Sustainable Development Goal 14 on Life below Water, the Convention for Biological Diversity's Aichi Targets, the United Nations Convention on the Law of the Sea and the Paris Agreement on climate change. The OECD advocates an integrated, "whole-of-government" approach that responds to the complex challenges facing the ocean by mobilising expertise across many policy fronts, covering environmental, economic, financial and social dimensions.

Ocean conservation and sustainable use

- ▶ The OECD is working to support governments is scaling up action to conserve and sustainably use our ocean and marine resources, which are under severe pressure from human activities, notably over-exploitation of fish and other marine resources, habitat destruction, invasive alien species, pollution and climate change.
- ▶ Marine protected areas (MPAs) are one of the policy instruments available to help ensure the conservation and sustainable use of marine ecosystems. They can address pressures such as over-fishing, habitat destruction and the adverse impacts of noise pollution, and can help protect rare and threatened species. MPAs can also help ensure the sustainable provision of multiple other ecosystem services fundamental to human well-being, including for fisheries, coastal protection (buffering against storms and erosion), tourism and recreation. *Marine Protected Areas: Economics, Management and Effective Policy Mixes* (OECD, 2017) examines the evidence on the costs and benefits of MPAs and presents good practice insights on how to enhance the environmental and cost effectiveness of MPAs, and to scale up finance.
- ▶ Mainstreaming marine conservation and sustainable use across all sectors of the ocean economy is vital to ensuring the sustainability of the ocean economy. *Mainstreaming Biodiversity for Sustainable Development* (OECD, 2018) draws on experiences and insights from 16 predominantly megadiverse countries to examine how biodiversity is being mainstreamed at the national level in agriculture, forestry and fisheries sectors

and in development co-operation. *The Political Economy of Biodiversity Policy Reform* (OECD, 2017) provides insights on the types of obstacles that have been encountered in designing and implementing effective marine and terrestrial biodiversity policy reform.

- ▶ The new OECD project “Sustainable Ocean Economy for All: Harnessing the benefits of the sustainable ocean economy for developing countries” draws on OECD expertise in science, technology and innovation, and in environmental protection and biodiversity, development finance and international co-operation. It offers new evidence and a policy space for the urgent global challenge of developing sustainable ocean economies worldwide. www.oecd.org/ocean

Ocean pollution

- ▶ The oceans are under increasing stress from multiple urban and rural sources of pollution, notably solid and liquid wastes from cities, fertiliser and manure run-off from farming, air emissions from shipping, and incorrect disposal of plastic from land-based and sea-based sources.
- ▶ The OECD is supporting governments to adequately address these challenges. The cumulative effects of ocean pollution can be devastating for human well-being and ecosystem health. Ultimately, they can undermine sustainable economic growth. The OECD provides policy insights on managing and preventing water pollution and marine plastic waste, and reducing the environmental impacts of shipping.

- ▶ One of the main policy challenges facing OECD countries is the effective management of diffuse sources of nutrient pollution, which are caused by activities that have no specific point of discharge, and are often linked to agricultural and urban pollution via overland flow to surface waters. *Human Acceleration of the Nitrogen Cycle: Managing Risks and Uncertainty* (OECD, 2018) and *Diffuse Pollution, Degraded Waters: Emerging Policy Solutions* (OECD, 2017) examine the risks and provide a combination of policy recommendations and measures to tackle this growing global challenge.
- ▶ Plastic waste is also a growing concern and is present in all the world’s ocean basins, including around remote islands, the poles and in the deep seas. Accumulating in the natural environment, plastics will only decompose over hundreds or even thousands of years. The most effective mitigation strategies must focus on reducing the inflow of plastics into the marine environment. This requires a two-pronged approach to tackle plastics litter: plastics waste prevention and improvement of waste management systems to ensure adequate end-of-life treatment.
- ▶ *Improving Markets for Recycled Plastics: Trends, Prospects and Policy Responses* (OECD, 2018) discusses the reasons behind low recycling rates of plastics and policy approaches to improve them, including measures to create a separate market for recycled plastics where its price is decoupled from virgin plastics, and ways to increase the quantity and quality of recovered plastics. The 2018 OECD Global Forum on

Environment addressed the sustainable design of plastics, with a focus on the criteria that define sustainable plastics, the tools available to designers, and the policies that can help to incentivise their design.

Climate change and the ocean

- ▶ The ocean regulates the global climate by mediating temperature and determining rainfall, droughts and floods. The ocean has already absorbed over 90% of the excess heat trapped by the rising concentration of greenhouse gases. While the ocean's ability to store heat has slowed global warming, this in turn is changing the ocean's chemistry. The complex interactions between continued emissions of greenhouse gases and changes in the ability of the ocean to store excess heat will be a major determinant of the speed and magnitude of long-term climate change impacts, with global economic implications.
- ▶ The ocean and coastal communities are being disproportionately impacted by increasing greenhouse gas emissions. Warming is leading to the melting of inland glaciers and ice, causing rising sea levels with significant impacts on coastal areas such as coastal flooding and erosion, saltwater intrusion, and habitat destruction. Communities and infrastructure are already under pressure from coastal flooding and erosion.
- ▶ The OECD is working to support governments to adapt to the risks from sea-level rise. *Responding to Rising Seas:*

OECD Country Approaches to Tackling Coastal Risks (OECD, 2019) reviews how OECD countries can use their national adaptation planning processes to ensure that coastal communities are adapting to the impacts of rising seas. The report outlines policy tools that national governments can use to encourage an efficient, effective and equitable response to ongoing coastal change, such as land-use regulation that includes sea-level rise considerations.

- ▶ Infrastructure networks will be affected by the physical impacts of climate variability and change, such as increased coastal flooding. They will also play an essential role in building resilience to those impacts. New infrastructure assets should be prioritised, planned, designed, built and operated to account for the climate changes that may occur over their lifetimes. Existing infrastructure may need to be retrofitted, or managed differently, because of climate change. The Policy Paper “Climate-Resilient Infrastructure” outlines the co-ordinated response needed to ensure that new and existing infrastructure networks are resilient to climate change impacts.

DID YOU KNOW?

Only 14-18% of global plastics waste is collected for recycling.



The Sustainable Ocean Economy database

- ▶ The OECD is building a comprehensive database on the Sustainable Ocean Economy. Reliable and timely data on the sustainability of the ocean economy, the well-being and resilience of coastal communities and the health of marine ecosystems are scarce. This work will help meet the demands of the international community for a better evidence base to support decision making, including SDG 14.
- ▶ The Sustainable Ocean Economy database will answer the following questions on the measurement of a sustainable use of the ocean:
 - Are we becoming more efficient in using marine ecosystem services?
 - Is the natural asset base of the ocean being maintained?
 - How does a sustainable ocean economy benefit people?
 - What are the opportunities arising from promoting a sustainable ocean economy?
 - What policy responses are needed to speed up the transition?
- ▶ Work on the database is in progress, an initial version will be available in Q2-2020.



Key Publication

- *Responding to Rising Seas: OECD Country Approaches to Tackling Coastal Risks (2019)*
 - 📄 <http://www.oecd.org/environment/green-talks-live.htm>
 - 📺 <https://youtu.be/UivkO7rV0us>
- *Mainstreaming Biodiversity for Sustainable Development (2018)*
- *Tracking Economic Instruments and Finance for Biodiversity (2018)*
- *Human Acceleration of the Nitrogen Cycle: Managing Risks and Uncertainty (2018)*
- *Improving Markets for Recycled Plastics: Trends, Prospects and Policy Responses (2018)*
- *Climate-Resilient Infrastructure, OECD Environment Policy Papers, No. 14 (2018)*
- *Diffuse Pollution, Degraded Waters: Emerging Policy Solutions (2017)*
 - 📄 <http://www.oecd.org/environment/green-talks-live.htm>
- *Marine Protected Areas: Economics, Management and Effective Policy Mixes (2017)*
- *The Political Economy of Biodiversity Policy Reform (2017)*

Water

Achieving water security

Recommendation of the OECD Council on Water

- ▶ In December 2016, the OECD Council, OECD's governing body, adopted a new Council Recommendation on Water. The Recommendation captures the key OECD policy guidance on water management. It covers water quantity, water quality, water risks and disasters, governance and financing. It was developed through a 2-year consultation process with delegates from member countries and stakeholder groups. Accession and non-member countries are welcome to adhere to the Recommendation on Water. Work continues to facilitate implementation in adherent countries. In 2020, Adherents to the Recommendation will report back to Council on progress made towards implementation; an opportunity to capture and promote best practices for water management and to assess challenges countries face in approximating them.

The economics and governance of water

- ▶ The Sustainable Development Goals recognise the critical contribution of water to sustainable development. However, investment in water security falls short of global needs and the impacts on communities, economies and the environment are still significant. The *OECD Policy Perspectives*

on Water, Growth and Finance explains that this does not result from a shortage of finance, but from inadequate risk-returns in the water sector.

- ▶ In 2017, together with the World Water Council and the Netherlands, the OECD established the Roundtable on Financing Water to facilitate an ongoing dialogue between the water and finance communities (broadly interpreted) on how to overcome the global challenges of financing investments that contribute to water security and sustainable growth. Specifically, the Roundtable: i) tracks water-related financing needs and capacities in different regions of the world; ii) develops policy recommendations on how to leverage existing sources of finance to mobilise private finance (e.g. through blending development finance with domestic commercial finance); and iii) analyses how to ensure that available finance goes to projects which are not merely bankable but beneficial, i.e. deliver tangible benefits in terms of water security and sustainable development. The Roundtable embarks on a series of regional meetings (covering North and Latin America and Asia in 2019, other regions in 2020) for more tailored discussions on issues and opportunities.

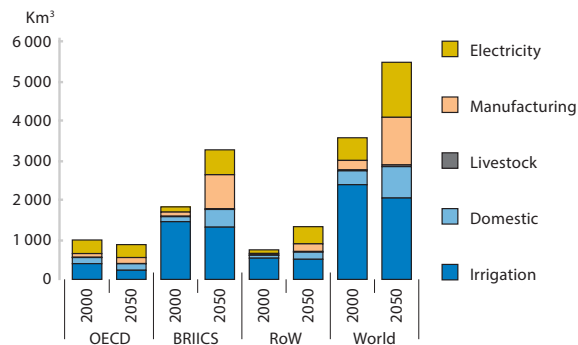
- ▶ Dedicated OECD work continues on policies to control water pollution. In 2017, the report *Diffuse Pollution, Degraded Waters: Emerging Policy Solutions* proposed a policy framework to tackle diffuse water pollution and presented innovative case studies of diffuse pollution control. In 2019, a companion report analyses innovative policy responses to control pharmaceutical residues in freshwater, making the best use of on-going scientific developments. Similar work is being undertaken in 2019-20 with a focus on mitigating microplastics in the freshwater and marine environment.
- ▶ Agriculture is increasingly subject to water risks and it is also the largest using sector and a major polluter of water. OECD continues to work on how to improve the management of water in agriculture; it recently explored the management of water risks for agriculture and how to shape reform processes in this area. In 2019-20 the OECD will review recent policy changes and analyse how to monitor policy progress in agricultural water management.
- ▶ The OECD Water Governance Initiative was set up as an international multi-stakeholder network where delegates from public, private and not-for-profit sectors share good practices in support of governance in the water sector. It has led to the development of the OECD Principles on Water Governance, which have been incorporated in the OECD Council Recommendation on Water. The Initiative has developed indicators that countries can use to self-report and track progress towards good water governance. The governance of water regulators is also a major focus of OECD work.



National policy dialogues on water

- ▶ The OECD supports ambitious water policy reforms in selected countries, on demand. These combine robust analyses of water economics and governance with insights from international practitioners, in the framework of national policy dialogues on water.
- ▶ Water Policy Dialogues have so far been undertaken in Mexico, the Netherlands, Brazil and Korea. They have helped to inform the water policy agenda.
- ▶ The OECD continues to provide support to the transition economies of Eastern Europe, the Caucasus and Central Asia (EECCA) to improve their environmental and water policies, integrate environmental considerations into the processes of economic, social and political reform, and gradually shift to a green growth and sustainable development model. As a key implementing partner of the European Union Water Initiative (EUWI), OECD work on policy reforms in the region are aimed at the economic and financial dimensions of sustainable water resources management, the reform of water supply and sanitation systems, and enhanced transboundary co-operation in water basins.

Global water demand



RoW: rest of the world

This graph only measures blue water demand and does not consider rainfed agriculture.

Source: Environmental Outlook Baseline; output from IMAGE

DID YOU KNOW?

In France, at current pace, a full replacement of existing networks would take 160 years for water supply networks and 140 years for waste water collection and treatment.



Key Publications

- *Pharmaceutical Residues in Freshwater: Hazards and Policy Responses* (2019)
- *Making Blended Finance Work for Water and Sanitation: Unlocking Commercial Finance for SDG 6* (2019)
- *Enhancing the Economic Regulatory System for Moldova's Water Supply Sanitation* (2019)
- *Policy Perspectives for the Irrigation Sector Reform in Tajikistan* (2019)
- *Navigating pathways to reform water policies in agriculture* (2019)
- *Reforming water policies in agriculture: lessons from past reforms* (2018)
- *Policy Perspectives on Financing Water: Investing in sustainable growth* (2018)
 <http://www.oecd.org/environment/green-talks-live.htm>
- *Managing the Water-Energy-Land-Food Nexus in Korea: Policies and Governance Options* (2018)
- *Facilitating the reform of economic instruments for water resources in Georgia* (2018)
- *Strengthening Shardara Multi-Purpose Water Infrastructure in Kazakhstan* (2018)
- *Reforming Sanitation in Armenia: Towards a National Strategy* (2017)
- *Working Paper on Managing Multi-Purpose Water Infrastructure: A Review of International Experience* (2017)
- *Policy Perspectives on Multi-Purpose Water Policy Infrastructure* (2017)
- *Diffuse Pollution, Degraded Waters: Emerging Policy Solutions* (2017)
- *Allocation of Groundwater* (2017)
- *Towards a National Strategy on Sustainable Sanitation in Armenia* (2017)
- *Domestic Support Mechanisms for Water Supply and Sanitation in Moldova* (2017)
- *OECD Council Recommendation on Water* (2016)
- *Policy Perspectives on Water, Growth and Finance* (2016)
www.oecd.org/water



Nitrogen Management

Developing a framework for nitrogen management policies

- ▶ In its unreactive form, nitrogen is abundant, making up nearly 80% of the earth's atmosphere. But all known forms of life need nitrogen in a reactive (fixed) form that is bonded to carbon, hydrogen or oxygen, most often as organic nitrogen compounds (such as amino acids), ammonium or nitrate. For example, reactive nitrogen is an essential input for plants to grow and thus to food production.
- ▶ Since the 1950s and as part of efforts to achieve food and energy security, reactive nitrogen emissions have greatly increased, causing unprecedented changes to the global nitrogen cycle. This is largely due to the increased production of nitrogen fertiliser, by far the largest human source of reactive nitrogen. During the twentieth century, mankind has also increasingly produced other forms of reactive nitrogen as a by-product of combusting fossil fuels and as a component of wastewater.
- ▶ The abundance of anthropogenic sources of nitrogen in terrestrial, aquatic and atmospheric ecosystems has adverse effects on public health and the environment. For example, coastal dead zones are rapidly increasing because of excess nutrients (coupled with warming waters). Reactive nitrogen reduces air quality via the creation of particulate matter, increasing human health risks such as respiratory illnesses and cancer. Reactive nitrogen can also damage ecosystems through acidification of soils and seas. Reactive nitrogen is an important greenhouse gas. In the stratosphere, it is also a powerful ozone depleting substance.
- ▶ The OECD project on the human impacts on the nitrogen cycle, supported by the OECD Nitrogen Expert Group, is assessing the use of different policy approaches to manage the unwanted release of nitrogen. This project aims to take a holistic view of nitrogen policies across a wide range of emitting sectors, including agriculture, energy, industry, transport and households.
- ▶ Work in 2017-18 provided a conceptual framework for designing policies to address the health and environmental impacts of reactive nitrogen. *Human Acceleration of the Nitrogen Cycle: Managing Risks and Uncertainty* was published in 2018.

Eutrophication and coastal dead zones – a growing global challenge

- ▶ Globally, one of the most prevalent water quality challenges is eutrophication, a form of water pollution from excess nutrients (nitrogen and phosphorous), which can trigger toxic algal blooms, causing “dead zones” in coastal waters.
- ▶ There is compelling evidence of the rapid increase in coastal dead zones. Some 884 coastal areas around the world have been identified as experiencing the effects of eutrophication; of these, 576 have problems with hypoxia, 234 are at risk of hypoxia and, through nutrient management, 74 can be classified as recovering. This figure does not include the likely many unreported hypoxic areas in the tropics because of the lack of local scientific capacity for their detection. It has been estimated that more than 10% of coral reefs are at high risk of hypoxia.
- ▶ Coastal dead zones are particularly vulnerable to climate change: almost all of them are in regions that will experience at least a 2°C temperature increase by the end of the century. Climate change exacerbates hypoxic conditions by increasing sea temperature, ocean acidification, sea level, precipitation, wind and storms.
- ▶ Coastal dead zones remain a concern in the OECD area despite improvements in the efficiency of nitrogen use and improved nitrogen budgets in agriculture. The creation of dead zones is not only due to agriculture or other land-based sources (wastewater). A key source of export of river nitrogen to the sea is atmospheric deposition. It is necessary to identify the different sources of nitrogen, their emission zones and the effective tools to manage the risk of dead zones they create.
- ▶ Building on 2017-18 work to develop a framework for nitrogen management policies, work in 2019-20 will compare experiences and identify good practices in OECD countries, and possibly elsewhere, in addressing the different sources of nitrogen to manage the risk of creating coastal dead zones.

Key Publication

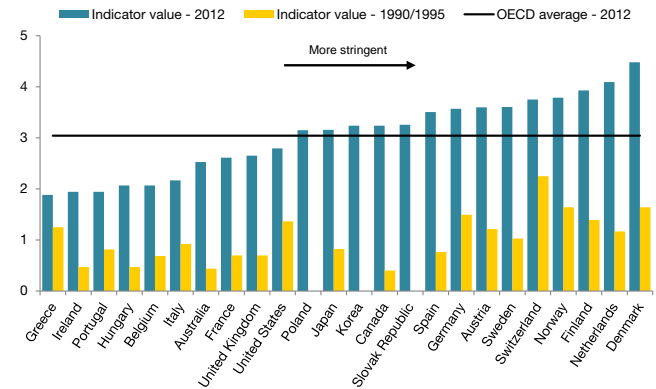
- *Human Acceleration of the Nitrogen Cycle: Managing Risks and Uncertainty (2018)*

Environmental Policies and Economic Outcomes

Ongoing empirical work sheds light on the economic effects of environmental policies

- ▶ The effects of environmental policies on economic performance are a subject of heated debate. On the one hand, environmental policies have been argued to burden economic activity, as they raise costs without increasing output and restrict the set of production technologies and outputs. On the other hand, the Porter Hypothesis claims that well-designed environmental policies can encourage innovation, gains in efficiency and profitability, which can outweigh the costs of compliance.
- ▶ Joint work between the OECD Environment Directorate and the Economics Department on Environmental Policies and Productivity Growth has laid the ground for empirical analyses of the economic effects of environmental policies. It provided quantitative proxies measuring the stringency and competition-friendliness of environmental policies. In particular, the newly-developed indicator of Environmental Policy Stringency (EPS) provided a comparable, cross-country and over-time measure of the aggregate stringency of selected environmental policy instruments. The new EPS indicator has progressively extended coverage and now covers most OECD countries and the BRIICS, ranging up until 2015. It was used in empirical analysis to gauge

The stringency of environmental policies has been increasing across the OECD



the effects on multifactor productivity growth, trade and competitiveness, investment (domestic and foreign) and innovation—at various levels of aggregation: the macroeconomic, industry and firm levels. The initial work's contribution helped show that environmental policies need not be bad for productivity and that in practice some aspects of their design can be made more friendly to entry and competition without compromising the stringency of the policy signal.

- ▶ The work is constantly developed and updated, with results being progressively published here: <http://oe.cd/oq>

New insights on pollution haven hypothesis and firm investment

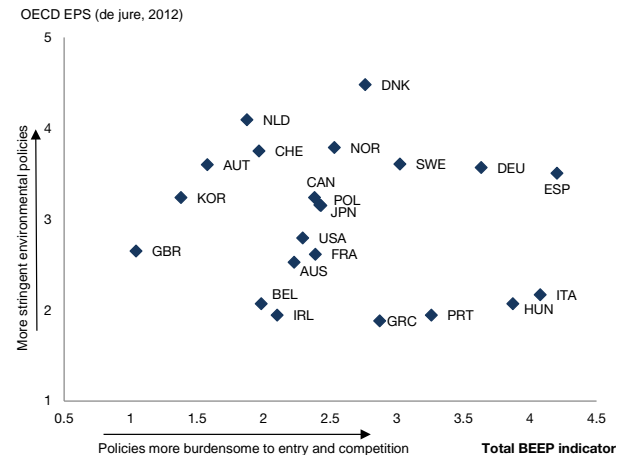
- ▶ New empirical work sheds light on claims that more stringent environmental policies or higher energy prices undermine competitiveness and lead to the erosion of industrial activity to the benefit of countries with laxer regulations – the so-called Pollution Haven Hypothesis. Overall, environmental policies were not found to be a major driver of international trade patterns, even if some significant effects on specialisation could be identified. Increasing the stringency of domestic environmental policies was not found to have a significant effect on overall trade in manufactured goods, but was associated with tilting the comparative advantage away from pollution intensive industries. At the same time a corresponding advantage in “cleaner” industries could be identified.
- ▶ Similarly, higher energy prices could indeed be associated with higher outward FDI stock at the firm-level. However, the effects were small with respect to other drivers of FDI.

Burdens on the economy from environmental policies (BEEP)

- ▶ Environmental policies seek to address market failures related to the protection of the environment. However, they

may also increase barriers to entry and distort competition. If stringent environmental policies can be designed in a way that minimises such economic burdens, they can facilitate the achievement of economic and environmental goals and a cleaner growth model. The OECD’s indicator of burdens to entry and competition associated with environmental policies focuses on measuring barriers associated with environmental policies, in particular administrative burdens and discrimination between entrants and incumbents, and compares them with the overall stringency of environmental policies (Kozluk, 2013). An update and revision of the BEEP is foreseen in 2019, as part of the OECD Product Market Regulation indicator process.

The BEEP indicator and measures of environmental policy stringency



Impacts of green growth policies on employment

- ▶ In 2017-18, modelling work was conducted to assess the impacts of climate and energy policies on labour markets and wage income distribution. The work showed that, despite large impacts on specific sectors, the aggregate impact of decarbonisation policies on employment is generally small and positive, at least when the carbon targets considered are not too ambitious and when the carbon tax revenues are used to lower wage tax rates. For all policies considered, low-skilled workers will generally be more affected by the policies than the other categories of worker.
- ▶ In 2019-20, an extension of this work focuses on employment impacts of policies that imply transition to a resource-efficient and circular economy.
- ▶ In addition, empirical work is currently ongoing to complement the modelling work with econometric analysis. It analyses the impact of energy prices and Environmental Policy Stringency on employment based on a global firm-level dataset.

Economic and environmental responses of firms

- ▶ In 2017-18, the work focused on the collection of micro-data to allow deeper and broader empirical analysis—in particular, insights on the joint environmental and economic impacts of environmental policies. A pilot study showed that the

European Union Emissions Trading System, the largest carbon market in the world, effectively reduced carbon emissions among regulated entities without negatively affecting employment or other economic outcomes.

- ▶ Further work is ongoing to assess the joint environmental and economic impacts of environmental policies based on confidential micro-level data from various member and non-member countries.

Key Publications

- *Economic Interactions between Climate Change and Outdoor Air Pollution, OECD Environment Working Paper, No. 148 (2019)*
- *Impacts of Green Growth Policies on Labour Markets and Wage Income Distribution (2018)*
- *Environmental Policy Toolkit for SME Greening in EU Eastern Partnership Countries (2018)*
- *The joint impact of the European Union emissions trading system on carbon emissions and economic performance (2018)*
- *Energy prices, environmental policies and investment (2017)*
- *Foreign Direct Investment and the Pollution Haven Hypothesis (2017)*
- *How stringent are environmental policies (2016)*
- *Do environmental policies affect global value chains? A new perspective on the pollution haven hypothesis (2016)*

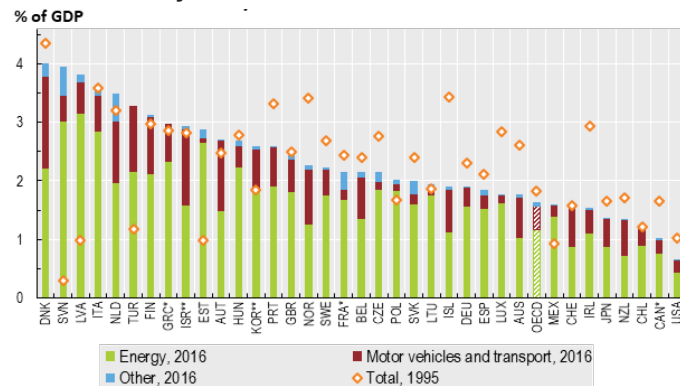
Environmental Policy Tools and Evaluation

Ensuring policies are economically efficient and environmentally effective

Economic instruments and policy mixes

- ▶ The OECD's focus on policy instruments such as taxes, tradable permits and more efficient regulatory instruments, makes an important contribution to integrating environmental protection and economic growth.
- ▶ The OECD is doing in-depth and detailed analyses of the pricing of energy use through taxes and emission trading systems, as well as support to fossil fuels extraction or use in member and partner countries. This information will be updated and expanded further in 2019-2020.
- ▶ A project on effective carbon prices estimated the costs to society per tonne of CO₂eq abated using different policy instruments in selected sectors. It showed clearly that these costs were lower for taxes and emission trading systems than for other instrument categories.
- ▶ Revenue from environmentally related taxes in OECD countries varies from 0.5% up to 4% in GDP-equivalent terms. A vast majority of the revenue generated comes from taxes on energy and motor vehicles; only a small proportion is derived from other taxes such those on water pollution, fertilisers and pesticides, or groundwater extraction.

Environmentally related tax revenue in OECD countries



Source: OECD Policy Instruments for the Environment (PINE) database <http://oe.cd/pine>

Policy evaluation

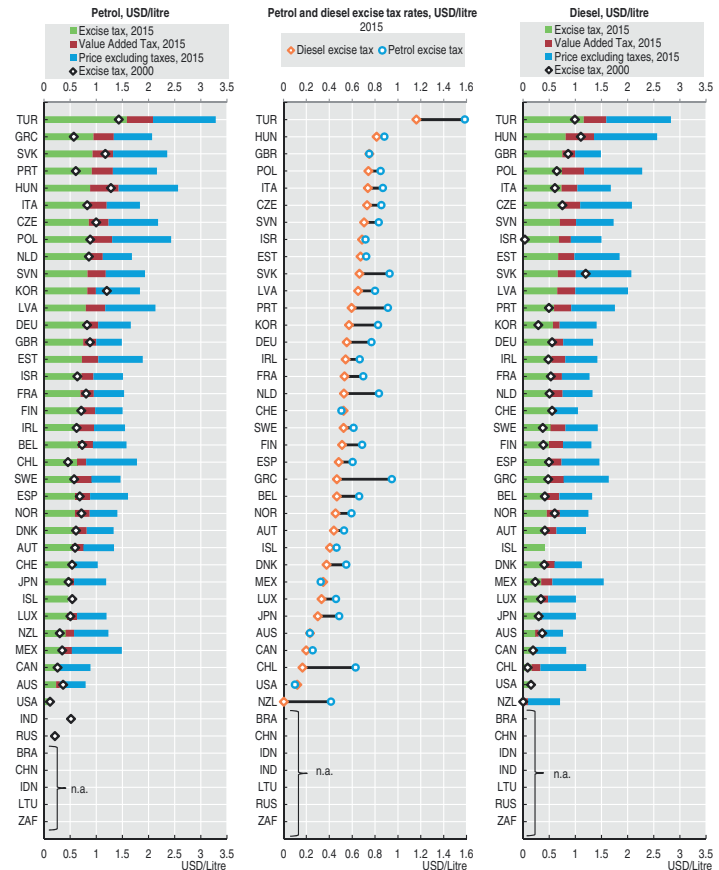
- ▶ Recent work on policy evaluation has focused on an analysis of the costs to society of outdoor air pollution. It found that in 2015 these costs amounted to USD 1.9 trillion for OECD countries. For China, the costs were estimated at USD 1.6 trillion, and for India, USD 0.9 trillion.

- ▶ OECD has updated an earlier report on *Cost-Benefit Analysis and the Environment*, and is also doing ex post cost-benefit analyses of selected environmentally related taxes and tax provisions. Work has been done assessing existing valuations of negative environmental and health impacts stemming from the production, use and disposition of chemicals.
- ▶ Work has started on co-ordinated surveys of people's willingness-to-pay to avoid negative chemicals-related health impacts, such as asthma, IQ-losses, low birth weight, kidney diseases and reduced fertility. Similar surveys will be implemented in a number of countries.

Key Publications

- *Cost-Benefit Analyses and the Environment: Further Developments and Policy Use (2018)*
- *Effective Carbon Rates 2018: Pricing CO₂ through Taxes and Emissions Trading Systems (2018)*
- *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2018 (2018)*
- *Taxing Energy Use 2018: Companion to the Taxing Energy Use Database (2018)*
- *The Rising Cost of Ambient Air Pollution thus far in the 21st Century: Results from the BRIICS and the OECD Countries (2017)*
www.oecd.org/environment/tools-evaluation
<http://www.oecd.org/environment/tools-evaluation/sacame.htm>
<http://oe.cd/env-tax>
<https://oe.cd/pine>

Motor fuel taxation is increasing in half of OECD countries




Note: Prices and taxes are expressed in constant 2010 USD using PPPs, deflated using the Consumer Price Index.
 Source: IEA (2016), IEA Energy Prices and Taxes Statistics (database). © OECD 2019

Spatial Planning Instruments and the Environment (SPINE)

- ▶ Spatial planning instruments have long been used to organise and alter the distribution of human settlements and economic activity, and balance tensions between economic, social and environmental objectives. The SPINE project focuses on the evaluation of the effectiveness of spatial planning instruments in achieving environmental and economic objectives. This evaluation relies on the development of a cutting-edge modelling framework (MOLES), and the use of empirical methods and refined geospatial and georeferenced data.
- ▶ Recent empirical work in this area has explored the linkage between urban structure, air pollution and individual well-being. It has also analysed the economic effects of environmental zoning policies in France and the trade-offs between open space conservation and local public finance in urban areas in the United States.

- ▶ In 2019-20, this work uses modelling and econometric approaches to analyse the effects of spatial planning and transport policy instruments, in the context of city case studies. Modelling work is based on MOLES (Multi-objectives Local Environmental Simulator) and simulates the effects of these policies on the environment (e.g. CO₂ emissions, air pollution), economic welfare and housing affordability. Empirical work focuses on the environmental and welfare effects of parking policies.

Key Publications

- *The Environmental and Welfare Implications of Parking Policies*, OECD Environment Working Paper, No. 145 (2019)
- *Rethinking Urban Sprawl: Moving Towards Sustainable Cities* (2018)
 <http://www.oecd.org/environment/green-talks-live.htm>
- *Multi-objective local environmental simulator (MOLES 1.0): Model specification, algorithm design and policy applications*
www.oecd.org/environment/tools-evaluation/spine-spatial-planning-instruments-and-the-environment.htm

Individual Behaviour and Environmental Policies

- ▶ Environmental policies need to help individuals take into account the environmental consequences of their activities. OECD work in this area analyses how environmental policies affect individuals' decisions in the real world. To this end, it relies on economic theory and insights from behavioural sciences, and on the use of state-of-the-art



empirical methods. Insights from behavioural sciences can help policy makers better understand the mechanisms driving individual decision making and eventually design more effective policies.

- ▶ Recent research in this area includes an assessment of the impacts of payments for ecosystem services on landowners' conservation efforts and an analysis of the attitude-behaviour gap in sustainable food consumption. OECD recent work also comprises a meta-analysis of empirical studies to evaluate the magnitude of the rebound effect in road transport and identify its determinants. In 2017-18, work focused on the evaluation of the effects of environmental policy on individuals' travel behaviour and the application of insights from behavioural sciences to policy making.
- ▶ Smart meters have the potential to have a significant effect on the electricity market through two mechanisms. First, they make it possible for electricity consumers to obtain information in real-time about the quantity of electricity consumed as well as the price of electricity. Second, smart meters make it possible for consumers to be exposed to electricity prices that vary over time, to better reflect scarcity in the electricity market. Recent OECD work on the effect of real time information reviews the literature on the impact of real-time information provision on consumer decision making. In addition, it describes the results of a study in

which about 7 000 households in Ontario, Canada were provided with in-home displays linked to smart meters that provided real-time feedback on electricity consumption. The results show that electricity consumption declines by about 3% as a result of information feedback. Although households reduce electricity consumption on average when exposed to real-time feedback, the findings suggest that real-time information has an ambiguous effect on household responsiveness to electricity price changes.

Key Publications

- *Leveraging the Smart Grid: The Effect of Real-Time Information on Consumer Decisions* (2018)
- *Tackling Environmental Problems with the Help of Behavioural Insights* (2017)
 - ▶ <http://www.oecd.org/environment/green-talks-live.htm>
- *The Rebound Effect in Road Transport: A Meta-Analysis of Empirical Studies* (2016)
 - ▶ www.oecd.org/environment/consumption-innovation/households.htm
 - ▶ www.oecd.org/environment/tools-evaluation/behavioural-experimental-economics-for-env-policy.htm

DID YOU KNOW?

Including estimates of electric appliances' lifetime operating costs in energy labels can help consumers purchase more energy efficient models.

Resource Productivity and Waste

The transition towards a circular economy

Sustainable materials management and waste

- ▶ The OECD is developing policies that incentivise and encourage waste prevention, minimisation and recycling. Current work focuses on promoting the transition towards a circular economy in order to improve resource productivity and support green growth. This transformation requires significant changes to the way our economies operate, resulting in sectoral shifts, new business models and lower environmental impacts.
- ▶ In 2019-20, the OECD is continuing its efforts to develop a better understanding of the macro-economic effects of the circular economy through the use of in-house modelling tools. Work is also focusing on better understanding how resource efficiency in value chains can be improved; the opportunities and challenges that digitalisation provide to circular economy transition; the design of economic instruments and waste prevention policies, as well as a strong focus on plastics and the policy measures and initiatives that can help to address single use and micro-plastics, and to improve the design of plastics to make them more sustainable. Finally, efforts are also focusing on issues surrounding trade and the circular economy.

The Re-CIRCLE project

- ▶ RE-CIRCLE aims to identify and quantify the impact of policies which increase resource efficiency and further the transition to a circular economy. The aim is to provide policy guidance to a range of stakeholders in OECD member countries and emerging market economies through quantitative and qualitative analysis. Improving resource efficiency and furthering the transition to a circular economy are important elements of green growth. Increasingly, these objectives are also recognised as key components of broader environmental and economic policy, as illustrated by recent initiatives at the G7 and G20.
- ▶ The first work package on qualitative policy guidance encompasses a number of activities on priority areas. Plastics are given particular attention, as they are one of the major material waste streams where circularity is less developed and leakage into the environment is putting marine ecosystems at risk. The planned work also covers specific economic policy instruments, the potential influence of digitalisation, assessments of particular material resources and food, the role and effects of circular business models on the environment, and resource efficiency in global value chains.

- ▶ The second work package builds upon OECD's expertise in environment-economy modelling. The work investigates the interlinkages between materials use and economic activity, including the use of virgin and secondary materials in economic production. Modelling tools are used to examine plausible long-term trends in global materials use and assess the macroeconomic implications of policies to stimulate resource efficiency and the transition to a circular economy. These core assessments are complemented by more detailed analysis, including of the labour market and distributional consequences, resulting changes in international trade and links with climate change.



RE-CIRCLE

Resource Efficiency & Circular Economy Project

Key Publications

- *Development of Extended Producer Responsibility (EPR) Systems in Kazakhstan (2020)*
- *Policy Approaches to Incentives Sustainable Plastic Design, OECD Environment Working Paper, No. 149 (2019)*
- *Environment and Mining in EECCA countries (2019)*
- *Global Materials Resources Outlook to 2060: Economic Drivers and Environmental Consequences (2019)*
- *Business Models for the Circular Economy: Opportunities and Challenges from a Policy Perspective (2019)*
- *Improving Markets for Recycled Plastics – Trends, Prospects and Policy Responses (2018)*
- *Extended Producer Responsibility: Update Guidance for Efficient Waste Management (2016)*
- *Nanomaterials in Waste Streams: Current Knowledge on Risks and Impacts (2016)*
www.oecd.org/environment/waste
www.oecd.org/environment/indicators-modelling-outlooks/resourceefficiency.htm
-  *Extended Producer Responsibility and the Impact of Online Sales* <https://youtu.be/RQvYnyLQMU8>

DID YOU KNOW?

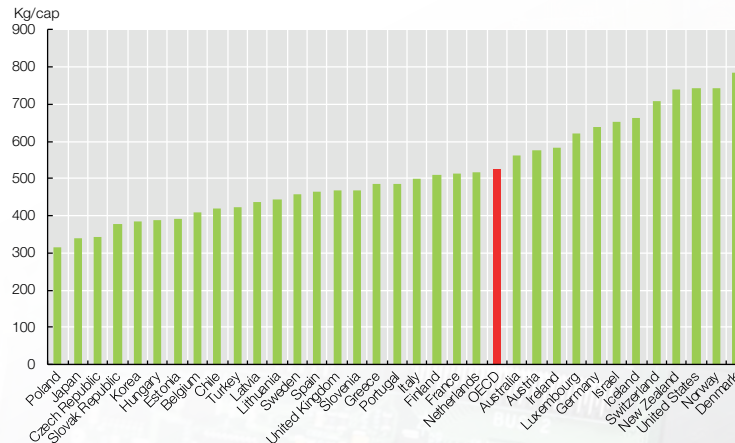
At least 4% of annual GHG emissions could be mitigated if waste management practices were improved, such as through more material recovery.



Material flows accounting

- ▶ The OECD has established a knowledge base on material flows and resource productivity, and has made advances in the development of common measures systems and indicators. Ongoing work focuses on the development of an internationally harmonised method for estimating demand-based material flows (or material footprints).

Municipal Waste Generation, 2017



Source: OECD (2019), "Waste: Municipal waste", OECD Environment Statistics (database)

Key Publications

- *Waste Management and the Circular Economy in Selected OECD Countries: Evidence from Environmental Performance Reviews (2019)*
- *Material Resources, Productivity and the Environment (2015)*
- *Sustainable Materials Management: Making Better Use of Resources (2012)*
- *Guidance Manual for the Control of Transboundary Movement of Recoverable Wastes (2009)*
- *Measuring Material Flows and Resource Productivity (2008)*
www.oecd.org/environment/waste
www.oecd.org/environment/indicators-modelling-outlooks/resourceefficiency.htm
- *Time to rethink plastic recycling*
<https://youtu.be/RT8pEDdvmDM?list=PL30E2933C96762D6E>

Greening Mobility and Transport

Integrating environmental concerns into transport policies

Policies for Greening Mobility and Transport

- ▶ Population and economic growth are expected to significantly increase demand for mobility and transport services in the future and road transport will continue to have a central role in meeting this growing demand. However, a road transport future based on electric, autonomous and shared vehicles provides important opportunities to uncouple the growing demand in road transport from environmental and economic pressures. The OECD Environment Directorate is providing insights on how these opportunities can be turned into a transition to green mobility and transport. The work deals with challenges both on transport supply and demand side, as well as with challenges related to the development of spatial structures promoting sustainable transport systems.

Moving towards zero-emission road passenger transport

- ▶ Barriers to the large-scale adoption of ZEVs are far from overcome, despite the use of a wide array of incentives by governments worldwide to promote their uptake, including tax exemptions, subsidies and non-financial incentives. These incentives have often been very costly

for public budgets and some of them have led to side-effects, manifested in increased car ownership and traffic congestion. It is therefore important to assess remaining barriers to the large-scale adoption of ZEVs, and evaluate the effectiveness and efficiency of incentives for their uptake.

Long-run effects of autonomous cars on the environment

- ▶ Automated driving is a key technological development as it is expected to spawn a series of attractive transport alternatives. The rise of autonomous vehicles poses important questions for future transport and policy making: Will a massive penetration of autonomous vehicles

DID YOU KNOW?

The sales of zero-emission vehicles have grown remarkably in the past five years. By the end of 2017, approximately 2 million ZEVs had been registered worldwide, and latest year-to-year growth rates of the stock of ZEVs are as high as 63%.



In the European Union, non-exhaust emissions are responsible for 55% and 37% of the total emissions of PM10 and PM2.5 from road transport respectively.

increase or decrease vehicle kilometres travelled? To what extent will autonomous vehicles be based on zero-emission technologies? What will be the impact of autonomous vehicles on greenhouse gas emissions and air pollution? Will autonomous vehicles give rise to more compact urban forms or induce more sprawl? The purpose of this project is to examine the expected effects of a widespread adoption of autonomous vehicles on urban form, energy consumption, CO₂ emissions and air pollution.

Mitigating non-exhaust emissions from road transport

- ▶ Non-exhaust emissions are stemming from tyre and break wear, as well as from road surface abrasion and the resuspension of road dust. Non-exhaust sources are a significant contributor to emissions of particulate matter. Their contribution to total PM emissions from road traffic is expected to increase in the future. The transition towards electric and autonomous vehicles may be of little relevance for non-exhaust emissions of particulate matter, which may ultimately undermine the health benefits expected from this transition. The objective of this project is to answer the following question: What policies could be put in place to reduce the non-exhaust emissions of motor vehicles in a cost-effective manner, especially in light of the transitions to electric and autonomous vehicles?

Promoting more sustainable mobility patterns▶

- ▶ One of the most important trends in passenger transport is the proliferation of shared mobility services. In addition to the most well-known type of shared mobility service – public transport – a large number of low-capacity shared mobility services have emerged with the help of digitalisation in the past few years. The proliferation of shared mobility services is likely to reduce car ownership and the demand for parking space in the long run. However, car-based mobility services are also likely to increase the share of trips and the number of kilometres travelled in motor vehicles, especially in a long-term future based on autonomous and electric driving. The project aims to address the following questions: What have been the effects of certain types of car-based sharing services, such as ride-hailing and car-sharing, on car mode choice, vehicle trips, vehicle-kilometres travelled and eventually on emissions of greenhouse gases and air pollutants? What policies can steer car-based shared mobility services towards reductions in the number of vehicle kilometres travelled and emissions from passenger road transport?

Key Publication

- *Evaluating the Impacts of Urban Road Pricing on the Use of Green Transport Mode: The Case of Milan (2019)*

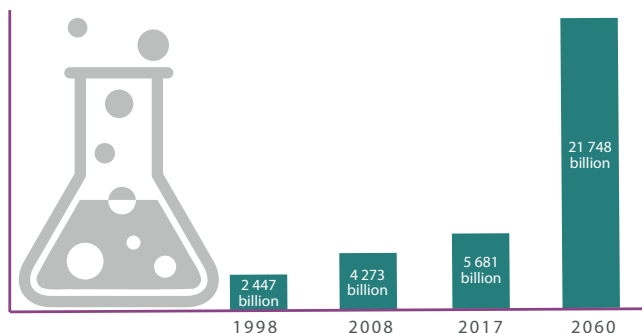
Safety of Chemicals, Pesticides, Biotechnology and Nanomaterials

Protecting human health and the environment

Chemical safety

- ▶ The chemicals industry is one of the world's major economic sectors. The products of the chemical industry are worth about USD 5 681 billion annually and are expected to grow to almost USD 22 000 billion by 2060.

Annual global sales of the chemical industry, 1998-2017, and OECD projections for 2060 (USD billion)



Source: ACC (2018), 2017 Guide to the Business of Chemistry; OECD (2019), Global Materials Resources Outlook to 2060: Economic Drivers and Environmental Consequences

- ▶ The OECD Environment, Health and Safety (EHS) Programme aims to foster international co-operation to ensure the safety of chemicals and chemical products like pesticides, biocides, manufactured nanomaterials, and the products of modern biotechnology. It also aims to avoid barriers to trade at the same time.

Saving time, money and animal lives through the Mutual Acceptance of Data (MAD)

- ▶ The OECD Council Acts on the Mutual Acceptance of Data for the assessment of chemicals (MAD ¹) are international agreements, which set the policies and provide the instruments that governments and industry need to test the safety of chemicals and chemical products. OECD countries must accept safety test data which has been developed in other countries using the OECD Test Guidelines and following the OECD Principles of Good Laboratory Practice. Non-tariff barriers to trade are minimised by harmonised

DID YOU KNOW?

By working together through the OECD, governments and industry save over EUR 309 million annually.

policies and instruments, and duplicative testing is avoided, saving governments and industry time, money and at least 30 000 animal lives every year. Increasingly non-OECD economies are joining the MAD system, with Argentina, Brazil, India, Malaysia, South Africa and Singapore as full adherents; Thailand as a provisional adherent; and others expected to join soon.

¹  <https://youtu.be/dD7e1sfsh3A>

Preventing and controlling the emission of industrial pollutants

► Industrial pollution prevention and control policies can achieve significant environmental, financial and human health gains. A growing number of countries use Best Available Techniques (BAT ²), an evidence-based concept and a multi-stakeholder tool which supports the establishment of legally binding emission limit values in environmental permits, in order to effectively prevent and control industrial emissions to air, water and soil.

²  <https://youtu.be/d2kprBd8Tk0>

► However, implementing, reviewing and updating information on advanced industrial practices and technology for preventing and controlling industrial pollution requires a high level of resources. Therefore, the OECD helps governments to share experience and knowledge on how BAT are applied in various parts of the world, how information on the highest achievable environmental performance is gathered, and how such policies and practices are evaluated with respect to their effectiveness and efficiency.

© OECD 2019

Sharing the regulatory burden for pesticides and industrial chemicals

► All OECD countries regulate chemicals, pesticides and products of modern biotechnology. By using the same methodologies for determining the safety of these products, it is possible for countries and industry to share the burden of testing and even evaluation in some cases. Countries work together in the OECD to share the work load required for registering pesticides and biocides and for notifying, registering or evaluating industrial chemicals.

DID YOU KNOW?

In 2019, the OECD Council adopted the Recommendation on Countering the Illegal Trade of Pesticides to strengthen co-operation between countries and inspectors. Best Practice Guidance helps countries identify illegal pesticides throughout their lifecycle to ensure the safety of consumers and the environment.



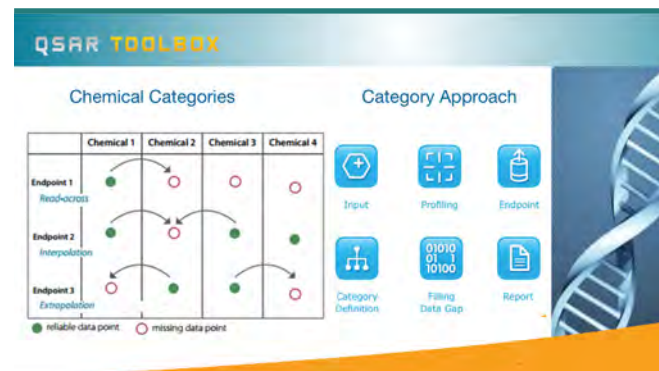
Safety of manufactured nanomaterials

- ▶ OECD countries have been addressing the human health and environmental safety implications of nanomaterials since 2006. In 2013, the OECD Council recommended that its member countries apply existing international and national chemical regulatory frameworks to manage the risks associated with manufactured nanomaterials. Amongst other things, this Recommendation clears the way for nanomaterials to become subject to the Mutual Acceptance of Data. To this end, the OECD released a first set of Test Guidelines developed specifically for nanomaterials:
 - Test Guideline 318 helps to assess how a particular nanomaterial would behave in contact with water or other liquids;
 - Test Guidelines 412 and 413 were updated to determine the toxicity of inhaled nanomaterials.

New and more efficient tools for obtaining hazard information

- ▶ Much information on the hazards associated with specific chemicals is developed through animal tests in the laboratory. The OECD is spearheading the development and use of non-animal methods such as tests with cell cultures and computer simulations. In addition to reducing the need for laboratory animals, such approaches can reduce the time and cost of testing.

- ▶ The OECD has developed the (Quantitative) Structure-Activity Relationship [(Q)SAR] Toolbox aimed at providing estimates of many laboratory test results before the tests are conducted. The computer-based (Q)SARs gives a virtual glimpse of the information a particular test might yield, and offers all stakeholders in the regulation of chemicals new opportunities in setting priorities for limited testing resources. Designed as a decision support tool, it allows users to fill gaps in toxicity data needed for assessing the hazards of chemicals while reducing the need for animal testing to generate information on industrial chemicals.



Safety of bio-tech products

- ▶ The majority of OECD countries and many others have a system of regulatory oversight in place to assess the safety of products of modern biotechnology. The most common

products of this type are genetically engineered crop plants used in agriculture. The OECD works to ensure that the information used in safety assessment and the methods used to collect that information are shared amongst countries. For the first time, the OECD addressed the biology of animal species such as the Atlantic Salmon and the Mosquito *Aedes aegypti*. Today, there is a greater focus on major food crops, especially on Cowpea (*Vigna unguiculata*), Apple (*Malus domestica*), Maize (*Zea mays*) and Potato (*Solanum tuberosum*).

- ▶ Genome editing techniques have emerged as a major topic related to applications of biotechnology. The OECD Conference on Genome Editing: Applications in Agriculture – Implications for Health, Environment and Regulation was held on 28-29 June 2018 to address concerns associated with the use of this new technology in agriculture.

www.oecd.org/environment/genome-editing-agriculture

Preventing major chemical accidents

- ▶ The OECD Programme on Chemical Accidents addresses a subject that concerns everyone who uses or handles hazardous chemicals, works in a chemical plant, or lives near one. This programme helps public authorities, industry, labour and other interested parties to prevent chemical accidents and to respond appropriately if one occurs. The major output of the programme is the *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* which is continuously updated. These principles provide advice to public authorities, industry, employees and their representatives, as well as to

members of the public potentially affected in the event of an accident. These Guiding Principles are complemented by a series of safety performance indicators, which serve as a guide for key stakeholders including public authorities and industry, to determine if their implementation of the Guiding Principles has led to improved chemical safety. The OECD has published a *Guidance on Change of Ownership in Hazardous Facilities* providing a framework to assist stakeholders to identify, understand and minimise the risks during and after a change of ownership at a hazardous facility, and help make the change of ownership a better informed process.

Key Publications

- *Saving Costs in Chemicals Management: How the OECD ensures Benefits to Society* (2019)
- *Common Bean, Rice, Cowpea and Apple: Safety Assessment of Novel Foods and Feeds Derived from Transgenic Crops: Volume 3* (2019)
- *OECD Guidelines for the Testing of Chemicals* (series)
- *Guidance Document 150 on Standardised Test Guidelines for Evaluating Chemicals for Endocrine Disruption* (2018)
- *Guidance on Change of Ownership in Hazardous Facilities* (2018)
- *Biology of Mosquito Aedes aegypti, Safety Assessment of Transgenic Organisms: Volume 8* (2018)
- *Economic Features of Chemical Leasing* (2017)
- *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* (2015)
- *Good Laboratory Practice: OECD Principles and Guidance for Compliance Monitoring* (2005)

www.oecd.org/chemicalsafety

Environment in the Global Economy

Making development and environment compatible and mutually supportive

Environment and development

- ▶ Economic growth and development are intricately linked to the sound management of environmental resources. It is the poorest who rely most on environmental resources and are most affected by their degradation. Continuing collaboration between the Environment Policy Committee (EPOC) and the Development Assistance Committee (DAC) aims to support integration of environment and development issues. The main focus is on climate change and on capacity development for environmental management.
- ▶ A major focus of collaboration between DAC and EPOC has been on climate change adaptation. Ongoing work is producing updated guidance on how development co-operation can support the management of climate risks and resilience, and is providing practical guidance for development co-operation providers on how best to achieve coherent and mutually reinforcing approaches to climate change adaptation and climate-related disaster risk management. Recent work has explored how financial protection instruments, such as insurance, can be integrated into climate adaptation strategies, as well as how countries can best measure progress in building resilience. Joint work has explored

how biodiversity is being mainstreamed in development co-operation.

Environment and development in Eastern Europe, the Caucasus and Central Asia (EECCA)

- ▶ The OECD Environment Directorate serves as the Secretariat of the Task Force for the Implementation of the GREEN Action Programme. Projects identified for 2019-20 are organised around four mutually supportive themes: national green economy dialogues and strategies; green finance and investment (including in sustainable infrastructure); integrating environmental, economic and sectoral policies for green growth; and strengthening water management. These are done through robust policy analysis, diffusion and adaptation of good international practices, capacity development, policy dialogue at national and regional levels, and pilot application of policy tools. The GREEN Action Programme Task Force helps EECCA countries to make the best use of available finance and enhance dialogue with private sector and donors. It also contributes to the “Environment for Europe” process and supported the Batumi Ministerial Conference in June 2016.

which investigates in what ways environmental objectives could be incorporated into chapters and articles that are not environmentally specific in order to secure policy coherence across the agreements.

DID YOU KNOW?

About 85% of the economic output of the EECCA region is concentrated in the six resource-rich countries (Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine and Uzbekistan), and 85% of the region's exports are linked to energy and metals.

Trade and environment

- ▶ The Environment Directorate works with the Trade and Agriculture Directorate to better understand interactions between environmental policy and international trade. One main focus has been on regional trade agreements (RTAs) and the environment. Since 2005, the OECD has been tracking and analysing the typology of environmental provisions in RTAs. The OECD has then explored the extent of implementation of environmental provisions in RTAs, and their effectiveness on environmental outcomes. Most recently, the work has begun to focus on “Greening RTAs”

- ▶ Another focus area is on trade and circular economy linkages. A preliminary OECD report highlighted these potential implications, which include (i) the possible effects of a circular economy transition on trade flows; (ii) the potential interaction of trade and circular economy policies; (iii) trade in waste and secondary raw materials; (iv) international co-operation on circular economy and global value chains. However, limited studies are available to date, providing a strong motivation for further analytical work on these potential issues.
- ▶ The 2019-20 work programme will focus on further developing analytical work on the greening of regional trade agreements investigating how trade agreements can incorporate environmental objectives and the interlinkages between trade and the circular economy.

Co-operation with key emerging economies

► Key Partners (Brazil, China, India, Indonesia and South Africa) are invited to co-operate in several areas of OECD work on environment, including green growth, climate change, water, biodiversity, resource productivity and waste, environmental information, environmental indicators and policy instruments. Environmental Performance Reviews (EPRs) of partner countries, such as South Africa (2013), Colombia (2014), Brazil (2015) and Peru (2017) have also been carried out and an EPR of Argentina is ongoing in 2019-20. A Green Growth Policy Review of Indonesia was released in 2019. A broader group of partner countries is invited to Global Forums on Environment (GFENV) on various environmental issues, providing a regular framework to substantiate the dialogue with non-OECD countries. The Global Forums in 2019-20 focus on issues including climate change, chemical safety and gender.

Key Publications

- *Improving Access to Green Finance for Small and Medium-Sized Enterprises in Georgia* (2020)
 - *Green Growth Policy Review: Indonesia 2019*
 - *Addressing Industrial Air Pollution in Kazakhstan: Guidelines for Reforming Environmental Payments* (2019)
 - *Effective Policy Instruments to address challenges of Urban air Pollution in EECCA countries* (2019)
 - *Promoting Clean Urban Public Transport and Green Investment in Kyrgyzstan* (2019)
 - *Promoting Clean Urban Public Transport and Green Investment in Moldova* (2019)
 - *Promoting Clean Urban Public Transport and Green Investment in Eastern Europe, Caucasus and Central Asia: Findings from country studies in Kazakhstan, Kyrgyzstan and Moldova* (2019/2020)
 - *Tracking Green Finance in Kyrgyzstan* (2019)
 - *Assessing Implementation of Environmental Provisions in Regional Trade Agreements* (2018)
 - *Assessing the Effectiveness of Environmental Provisions in Regional Trade Agreements* (2018)
 - *International Trade and the Transition to a More Resource Efficient and Circular Economy* (2018)
 - *Environmental Policy Toolkit for SME Greening in EU Eastern Partnership Countries* (2018)
 - *Access to Private Finance for Green Investments: Energy Efficiency and Renewable Energy Financing in Ukraine* (2018)
 - *Energy Subsidy Reform Schemes in the Republic of Moldova: Assessing Energy Affordability and Environmental Impacts* (2018)
 - *Inventory of Energy Subsidies in the EU Partnership Countries* (2018)
 - *Promoting Clean Urban Public Transportation and Green Investment in Kazakhstan* (2017)
 - *Mobilising Finance for Climate Action in Georgia* (2017)
- www.oecd.org/environment/outreach/eap-tf.htm

Green Growth

Aligning economic and environmental goals

- ▶ The OECD launched its Green Growth Strategy at the Ministerial Council Meeting in May 2011. It responded to a mandate given by 39 countries, when they signed the “OECD Green Growth Declaration” in 2009, committing to “strengthen their efforts to pursue green growth strategies as part of their responses to the crisis and beyond, acknowledging that green and growth can go hand in hand”.



- ▶ The key message of the Green Growth Strategy is that the environment and the economy can no longer be considered in isolation, but that environmental considerations need to be an inherent part of future economic policymaking, development planning and social policy. Importantly, the Strategy argued that green

growth cannot be a mere add-on to the mainstream reform agenda, but requires a reassessment of growth policies and priorities to ensure that their design and implementation better take into account environmental impacts.

- ▶ If implemented in structural reforms, green growth policies can unlock new growth opportunities by various channels. Well-designed green growth policies will ensure that market participants feel the social costs of using environmental assets and hence lead to a more efficient use of resources and natural assets. Better price signals for environmental externalities would also strengthen innovation and foster demand for new, more environmentally-efficient goods and services, creating new markets and hence the potential for new job opportunities. During 2019-20, added emphasis is placed on the interface between inclusive growth and green growth agendas.
- ▶ Stable green growth policies will enhance investor confidence through greater predictability in how governments deal with major environmental issues, and green fiscal reform can support fiscal consolidation and growth, as revenues from pricing externalities rise and harmful subsidies are phased out.

Monitoring progress

- ▶ Green growth policies need to be founded on a good knowledge of environmental developments, the factors that affect growth and their linkages with well-being.

- ▶ To monitor progress and evaluate results, the OECD developed a measurement framework and a set of indicators that capture the main features of green growth: the environmental and resource productivity of the economy, the natural asset base, the environmental dimension of quality of life, and the economic opportunities provided by a greener growth. To facilitate communication with the public and policy makers, a few headline indicators were selected. The work is part of the OECD's broader agenda on measuring progress and well-being. A selection of new and updated indicators, illustrating the progress made by OECD and G20 countries since the 1990s, is available in the report *Green Growth Indicators 2017*. Green growth indicators are routinely used in *Economic Surveys and Environmental Performance Reviews*.
- ▶ Work continues to improve the indicators and the statistical basis and implement environmental accounting (see page 5). The focus is on natural resources and sub-soil assets, environmentally adjusted productivity growth, carbon and material productivity, land cover, and inequalities in population exposure to air pollution.
- ▶ Countries like the Slovak Republic, Slovenia, the Czech Republic, Korea, Mexico, Germany and the Netherlands, have applied the OECD measurement framework to assess their economy in terms of green growth. In a joint project

with UNIDO, Colombia, Costa Rica, Ecuador, Guatemala, Paraguay and Peru have applied the indicators to identify key challenges and improve the choice and design of policy instruments.

Tailoring green growth strategies to individual countries and regions

- ▶ The OECD also facilitates the exchange of experience and good practice on developing and applying a green growth measurement framework in the countries of Eastern Europe, the Caucasus and Central Asia (EECCA). This includes activities under the OECD GREEN Action Task Force in EECCA, and the EU4Environment project funded by the European Union, and implemented jointly with UNEP, UNECE, UNIDO and the World Bank. Ongoing projects in the region raise awareness about the benefits of using the OECD set of green growth indicators, and support their introduction and practical application in individual countries. The project also promotes public and political debate on progress towards green growth by disseminating reports monitoring green growth. Technical co-operation to establish green growth measurement has been launched in Moldova, Ukraine, Armenia and Azerbaijan. Similar work has also been implemented in Kyrgyzstan and Kazakhstan.
www.oecd.org/environment/outreach/eap-tf.htm

- ▶ The OECD is supporting countries in their efforts to design and implement strategies for greener and more inclusive growth, including through its core advice in country-specific and multilateral surveillance, including *Economic Surveys*, *Environmental Performance Reviews*, *Investment Policy Reviews*, *Reviews of Innovation Policy*, the Green Cities Programme and Going for Growth. Through these, the OECD is providing guidance tailored to the needs of individual countries, regions and cities.
- ▶ The report *Towards Green Growth in Southeast Asia* (2014) highlights that the region's booming economy offers tremendous growth potential, but also large and interlinked economic, social and environmental challenges. The region's current growth model is based in large part on natural resource exploitation, exacerbating these challenges. The report provides evidence that, with the right policies and institutions, Southeast Asia can pursue green growth and

thus sustain the natural capital and environmental services, including a stable climate, on which prosperity depends. A Green Growth Policy Review of Indonesia was launched in 2019. The OECD also provides tailored green growth advice to cities, based on case studies on several Southeast Asian cities as summarised in the Synthesis report on the project “Urban Green Growth in Dynamic Asia” (2016).

www.oecd.org/greengrowth



The Green Growth and Sustainable Development Forum at the OECD (GGSD Forum)

▶ The GGSD Forum is an initiative established by the OECD as a vehicle for facilitating dialogue among its committee experts on cross-cutting green growth and sustainable development issues, to build on and complement the extensive work already underway in individual committees and to maximise synergies across them. The GGSD Forums operate as a series of annual conferences or workshops, focusing each year on a different issue of relevance to more than one OECD committee.

▶ The 2019 Green Growth and Sustainable Development Forum focuses on the theme “Greening heavy and extractive industries: Innovation and fiscal implications” (26-27 November 2019). The 2020 Forum will focus on the theme “Securing natural capital: Resilience and risk management for green growth”.

www.oecd.org/greengrowth/ggsd-forum.htm

▶ The 2018 Green Growth and Sustainable Development Forum addressed the Political Economy of Green Growth under the theme “Inclusive solutions for the green transition: Competitiveness, jobs/skills and social dimensions”.

<http://www.oecd.org/greengrowth/ggsd-2018/>



The Green Growth Knowledge Platform (GGKP)

- ▶ The OECD has joined forces with the Global Green Growth Institute, UNEP and the World Bank to establish the GGKP. Launched in January 2012, the GGKP is an international knowledge-sharing platform that identifies and addresses major knowledge gaps in green growth/green economy theory and practice. It aims to provide practitioners and policy makers with better tools to foster economic growth and implement sustainable development. The GGKP held its 6th Annual Conference in Paris, France in conjunction with the OECD Green Growth and Sustainable Development Forum. The 2018 GGKP Annual Conference in Seoul, Korea in October 2019 focused on energy efficiency.

www.greengrowthknowledge.org

Key Publications

- *Towards Green Growth in Emerging Market Economies: Evidence from Environmental Performance Reviews (2019)*
- *Green Growth Indicators 2017 (2017)*
- *Towards Green Growth? Tracking Progress (2015)*
- *Tools for Delivering Green Growth (2011)*
- *Towards Green Growth: A Summary for Policy Makers (2011)*
- *Towards Green Growth (2011)*
- *Towards Green Growth – Monitoring Progress: OECD Indicators (2011)*



Green growth studies and papers

- ▶ The OECD *Green Growth Studies* series aims to provide in-depth reviews of the green growth issues faced by different sectors. The OECD *Green Growth Papers* complement the OECD *Green Growth Studies* series, and aim to stimulate discussion and analysis on specific topics and obtain feedback from interested audiences.

www.oecd.org/greengrowth



The Committee Structures

The Environment Policy Committee (EPOC) implements the OECD's Environment Programme. Established in 1971, EPOC consists of senior-level delegates from capitals and meets three times every two years. The Committee holds meetings at the Ministerial level approximately every four years. At the last ministerial meeting, in September 2016, Ministers discussed climate change and the key challenges in moving forward, resource efficiency and the transition towards the circular economy, air pollution from transport, biodiversity, nitrogen and water.

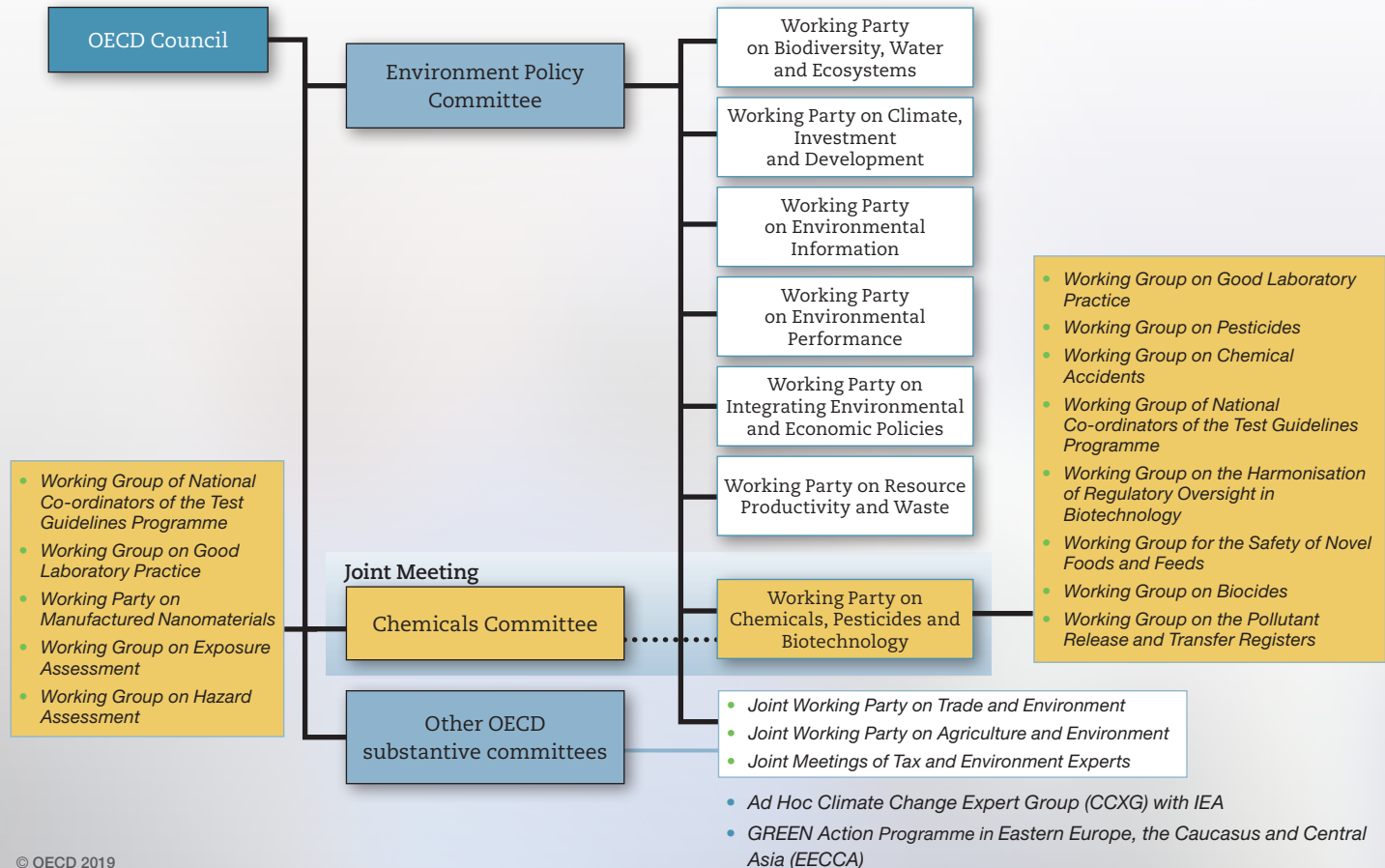
EPOC oversees work on: country reviews, indicators and outlooks, climate change, natural resource management, policy tools and evaluation, environment and development, and resource efficiency and waste, supported by EPOC's seven Working Parties. EPOC also formally co-operates with other OECD Committees, including through Joint Working Parties on Trade and Environment and on Agriculture and Environment, as well as Joint Meetings of Experts on Tax and Environment. The committee also works with other OECD committees to ensure consistency of the messages as they pertain to environment as well as ensuring horizontal links with other work in the OECD. The Chemicals Committee, like EPOC, reports directly to the OECD Council. EPOC's Working Party on Chemicals, Pesticides and Biotechnology and the Chemicals Committee together form the Joint Meeting which oversees the Environment, Health and Safety (EHS) Programme.

The OECD Environment Directorate and the International Energy Agency (IEA) jointly serve as the Secretariat for the Climate Change Expert Group, undertaking studies on issues related to the negotiation and implementation of international agreements on climate change.

The OECD Environment Directorate also functions as the Secretariat for the Task Force for the Implementation of the GREEN Action Programme. The Task Force provides a forum for dialogue and co-operation for countries in Eastern Europe, Caucasus and Central Asia (EECCA).

The Environment Programme is carried out in co-operation with international and regional organisations, e.g. the World Bank, UNEP, WTO, UNECE and Secretariats for UNFCCC, CBD and the Basel Convention. Key research institutes are also important partners, as is civil society represented through business, labour and environmental NGOs. EPOC is actively engaging with key emerging economies through the Global Forum on Environment and the Global Forum on Biotechnology.

EPOC Organigramme



The Environment Directorate

The Environment Directorate is a multicultural team, encompassing some 170 international civil servants: economists, policy analysts, scientists, statisticians and administrative staff.

We are an extension to national governments' analytical capacity, providing policy-relevant analysis and policy recommendations based on reliable environmental data, outlooks and cross-country experiences. We help countries to design environmental policies that are both economically efficient and effective at achieving their environmental objectives.

We also provide a forum for governments and representatives from business and civil society for constructive dialogue on how best to develop and implement environmental policies across OECD and other countries.

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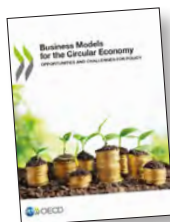
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*Saving Costs
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Key publications 2019-20

- *Accelerating Climate Action: Refocusing Policies through a Well-being Lens* (2019)
- *Biodiversity: Finance and the Economic and Business Case for Action* (2019)
- *Business Models for the Circular Economy: Opportunities and Challenges for Policy* (2019)
- *Economic Consequences of Circular Economy* (2019)
- *Environment at a Glance 2019* (2019)
- *Environmental Performance Reviews: EPR Argentina 2020; EPR Greece 2020; Luxembourg 2020; Australia 2019; EPR Turkey 2019; EPR Latvia 2019; EPR Denmark 2019*
- *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences* (2019)
- *G20 report: Update on recent progress in reform of inefficient fossil fuel subsidies that encourage wasteful consumption* (2019)
- *Making Blended Finance Work for Water and Sanitation: Unlocking Commercial Finance for SDG 6* (2019)
- *Mitigating Greenhouse Gas Emissions in Sprawled Urban Areas: The case of Auckland, New Zealand* (2019)
- *OECD Green Growth Policy Review of Indonesia 2019* (2019)
- *Pharmaceutical Residues in Freshwater: Hazards and Policy Responses* (2019)
- *Responding to Rising Seas: OECD Country Approaches to Tackling Coastal Risks* (2019)
- *Safety Assessment of Foods and Feeds Derived from Transgenic Crops, Volume 3: Common bean, cowpea, rice, apple* (2019)
- *Saving Costs in Chemicals Management: How the OECD ensures Benefits to Society* (2019)
- *The OECD and International Environmental Issues (2000 - 2016)* (2019)
- *Waste Management and the Circular Economy in Selected OECD Countries: Evidence from Environmental Performance Reviews* (2019)
- *Water, Finance and Investment in EU Countries* (2019)

Environment-related papers

▶ **Environment Policy Papers**

This series distils many of today's environment-related policy issues based on a wide range of OECD work.

<http://dx.doi.org/10.1787/23097841>

▶ **Environment Working Papers**

This series is designed to make available to a wider readership selected studies on environmental issues prepared for use within the OECD. www.oecd.org/environment/workingpapers.htm

▶ **OECD/IEA Climate Change Expert Group Papers**

This series is designed to make available to a wider readership selected papers on climate change issues that have been prepared for the OECD/IEA Climate Change Expert Group (CCXG). <https://doi.org/10.1787/2227779X>

▶ **OECD Green Growth Papers**

The OECD Green Growth Strategy, launched in May 2011, provides concrete recommendations and measurement tools to support countries' efforts to achieve economic growth and development, while at the same time ensure that natural assets continue to provide the ecosystems services on which our well-being relies. <https://doi.org/10.1787/22260935>

▶ **OECD Trade and Environment Working Papers**

Selected studies addressing the policy interface between trade and environment prepared for use within the OECD. They address such issues a trade in goods that affect the environment, and trade in environmental goods and services.

<https://doi.org/10.1787/18166881>

Selected databases

▶ Database on Policy Instruments for the Environment

Information on environmentally-related taxes, fees and charges, tradable permits systems, deposit-refund systems, environmentally motivated subsidies and voluntary approaches.

<http://www.oecd.org/environment/indicators-modelling-outlooks/policy-instrument-database/>

▶ Value of Statistical Life (VSL)

Data used in a meta-analysis of value of statistical life estimates from stated preferences surveys in environment, health and traffic risk contexts. www.oecd.org/environment/policies/vsl

▶ Transboundary Movement of Wastes Destined for Recovery Operations

Country-specific requirements for the application of the “OECD Decision on Transboundary Movements of Waste Destined for Recovery Operations”. www.oecd.org/env/waste/database

▶ eChemPortal

A Global Portal for information on properties of chemical substances. www.oecd.org/ehs/eChemPortal

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