

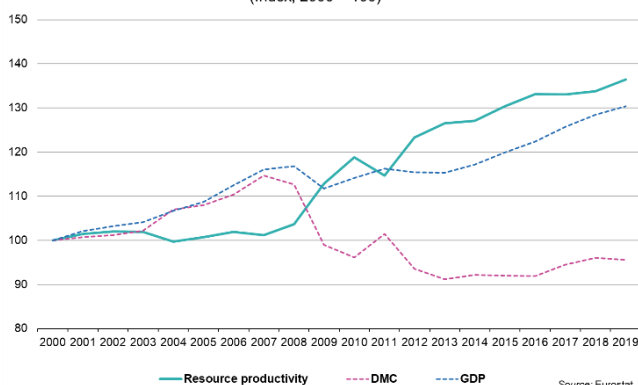
Introduction

EU **environmental policies** date back to the early 1970s, landmarked by the adoption of the first Environmental Action Programme in 1973. Beyond reducing environmental pressures, they also provide a range of **socio-economic benefits** for productivity, supply security, innovation, employment, savings, balance of trade, capital base, finances, economic cohesion etc. helping the transition to a more resilient and sustainable economy¹ in line with the EU's 2050 vision of a net carbon-free, competitive and inclusive economy, respecting ecosystems and resource limits. The OECD consistently found that environmental policy stringency correlates with better economic performance². Protecting and restoring natural capital is directly relevant for the economy, providing up to 30% of the climate solution and with around half of the GDP depending on it. **The European Green Deal**³ demonstrates that the green transition supports the planet, prosperity and people at the same time, and green recovery has also been embedded in the **EU's recovery measures** from the COVID-19 pandemic⁴ to not only revitalise the EU economies, but to 'build back better', also delivering on the green and sustainability agendas, including the **UN 2030 SDGs**⁵. EU policies need to live up to the **green oath of 'Do no harm'** of the European Green Deal, and to support the achievement of the climate and environmental objectives by 2030 and 2050.

Resource efficiency

In 2000-2019, the EU-27's **resource productivity**⁶ improved by **36.5%, equal to a 1.6% average annual growth**. In domestic material consumption (DMC), domestic extraction and imports shrank post-2008, while exports grew, improving the EU's export-orientation. Resource productivity mostly grew after 2008, as GDP started to recover quickly (by services), while DMC remained low, 90-96% of that of year 2000.⁷ The total 36.5% resource productivity growth arose from a 30.4% GDP increase and a 4.4% drop in DMC, showing an **absolute decoupling** of GDP from resource use at EU level – with half of the Member States also having absolute decoupling.

Resource productivity in the EU-27, 2000-2019
(Index, 2000 = 100)



Circular economy

The EU's **2020 Circular Economy Action Plan** (CEAP), feeding into the industrial strategy, helps fight climate change and preserve the EU's natural environment. As part of the EU Green Deal, it aims to make **circularity a defining feature of the EU's economy**, focussing on the higher stages of the waste hierarchy. It seeks to retain value in the economy by ensuring that: products placed on the EU market are designed for sustainability to last longer; are easier to reuse-, repair- and recycle; incorporate recycled material increasingly; single-use is restricted; premature obsolescence tackled and the destruction of unsold durable goods is avoided. The EU needs to accelerate the transition towards a **regenerative growth model**, keep resource consumption within boundaries, **reduce consumption footprint** and **double circular material use**.

Reducing waste generation is still a challenge. Meeting the **revised waste targets** and decoupling economic growth from waste will require significant efforts across value chains and households – with EUR 28.5 billion additional investment need in 2021-2035 for municipal-, packaging waste and key waste streams (plastics, electronics, textiles, furniture). Total waste generation is ca. 2.2 billion tonnes a year (5.0-5.2 tonnes per capita), with one citizen producing nearly half a tonne of municipal waste on average. Total waste generation excl. major mineral waste was 6.7% higher in 2018 compared to 2008. **Waste recycling** in the EU-27 is 56% overall (2016), 47.4% for municipal waste (2018), 67.5% for packaging waste and 41.7% for plastic packaging (2017 and 34.8% for e-waste (2018).

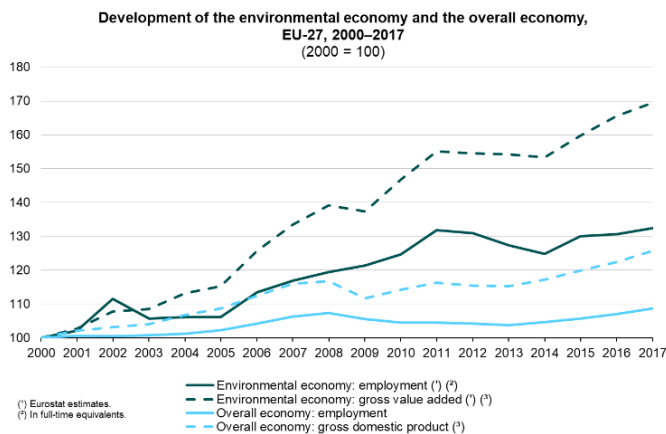
Benefits include resource- and financial savings; reduced supply risks and waste; innovation, competitiveness (first-mover advantage, corporate image etc.) gains and GDP growth; sustainable products for customers; local jobs (social integration), many in SMEs. The CEAP aims at a fair and just circular economy transition, supporting the uptake of the right skills and job quality improvements. Circular economy attracted EUR 17.5 billion **private investments** in 2016 (0.12% of GDP), provided 4 million **jobs** (1.7% of total employment) and generated EUR 147 billion **value added** (reaching around 1% of GDP). Circularity creates growth and jobs in **secondary raw materials** (SRM) markets (now 12% of raw materials demand).

Resource productivity and circular economy combined in **3 key sectors – mobility, food and built environment** capturing 60% of the EU households budget and 80% of resource consumption –, with annual resource productivity growth of 1-3%, can lead to an additional GDP growth of up to 7% by 2030 with positive impacts on employment (up to 2 million additional jobs by 2030), while reducing raw material consumption by an additional 10%, and annual CO₂ emissions by 17% compared to current patterns. An additional investment opportunity of EUR 320 billion in the 3 key sectors can

also be unlocked (EUR 30-35 billion p.a.), improving the quality of life in the EU, dropping negative externalities up to 26% by 2030.⁸

The green economy

The environmental economy grew rapidly between 2000 and 2017, **outperforming the overall economy**. Its nominal **value added** more than doubled, reaching EUR 287 billion (2.2% of GDP). Real growth (inflation-adjusted) was also significant: 69% in total, equal to 3.2% per annum on average – whereas the overall economy expanded by 26% in real terms during the period (1.4% annually). Most of the green growth took place in 2000-2011 (4% p.a.), with subsequent slow-down in the economic downturn and the increasing global competition.⁹ The **green sector's contribution to GDP increased** in the period: from 1.6% in 2000 to 2.2% by 2017. **Employment** in the environmental sector **also grew much faster** than in the overall economy – by 32% between 2000-2016 versus 9% overall. The 3.2 million green jobs (FTEs) in 2000 rose



to around 4.1 million by 2011, then stagnated post-crisis, showing again invigoration in 2017 with the number of green jobs reaching 4.15 million.

By environmental domain (across NACE), most of the **green value added** relates to energy management (doubling share since 2000, to 39%), 27% to waste-, 13% to wastewater and 17% to other environmental protection. In environmental protection it grew (with around 3% annual rate) to EUR 166 billion in 2017 (1.3% of GDP), compared to EUR 99 billion in 2000. In resource management it started lower (EUR 31 billion, 0.4% of GDP), but with a more rapid rate (over 8% per annum), it reached EUR 121 billion (0.9% of GDP) by 2017, via the expansion of renewables and energy saving.

Between 2000-2017, **green jobs mainly grew in the energy sector**: renewable technologies (wind, solar) and heat/energy saving added 0.9 million jobs, with further 319,000 additional jobs in waste management, with a fall in other environmental protection. Wastewater jobs dropped by 162,000, while water management jobs did not change. In 2017, the largest green employment domain was energy management (35%), followed by waste management (28%), other environmental protection (21%) and wastewater (13%).

R&D and Eco-Innovation

Ahead of standards and regulation enables to **reap first-mover**

and other advantages, adding to competitiveness. Eco-innovation, often in combination of new business models, increases productivity, technical capacity, attracts investment, reduces costs, improves corporate image, market success and profit through the value chain.

The **EU-27's R&D expenditure** was EUR 294.5 billion in 2018 (2.18% of GDP), driven by the business sector in recent years. Government-financed R&D – in the budget sector and beyond – was EUR 92 billion in 2019 (EU-27), with 2.3% of that directly spent on the environment, with further 27.6% also partly relevant (in transport, energy, industry, health, agriculture). Business sector's R&D makes 66.5% of the total in the EU-27, while it reaches 80% with some global competitors. In 2019, the best eco-innovation performers in the EU-27 were Luxemburg, Denmark, Finland, Sweden, Austria and Germany. Environmental R&D and eco-innovation is a driver

Environmental policy stringency, competitiveness and eco-innovation links, 2015



of sustainable growth and jobs for the EU. Environmental policy stringency correlates with **better eco-innovation performance** in some Member States (e.g. Denmark, Finland, Germany, Sweden and recently Austria joining the EU's top eco-innovators). In other Member States, such links are less explicit.¹⁰

Sustainable finance, investments and recovery

The **Sustainable Finance Action Plan**¹¹ has a key-, enabling role with 3 broad goals: i) to reorient capital flows towards sustainability, ii) to mainstreaming ESG factors into risk management and iii) to enhance transparency and long-termism in financial decisions.

The **Sustainable Europe Investment Plan / European Green Deal Investment Plan (SEIP/EGDIP)** aims to draw up EUR 1 trillion of sustainable investments by 2030, through **Invest EU**, the **EU Taxonomy** and other tools. Based on the revamped 2021-2027 MFF, the **Next Generation EU (NGEU) recovery fund** constitutes the EU's main recovery tool in response to COVID-19 crisis. The NGEU amounts to EUR 750 billion, with 672.5 billion under the **Recovery and Resilience Facility (RRF)**, for which the contribution to the green transition is a pre-requisite to receive EU funding.

The **additional investment need** for the green transition was estimated to be EUR 470 billion per annum, confirming that the green transition investment gap covers not only the 2030 climate and energy targets (EUR 240 billion p.a.), but **also** sustainable transport

(EUR 100 billion p.a.) and the **environmental objectives** (EUR 130 billion p.a.).¹² Climate adaptation, not counted, may also cost EUR 35-62 billion (narrower scope) or EUR 158-518 billion (wider scope) a year.¹³ The EU-27's **environmental protection expenditure** was EUR 269 billion in 2019, including EUR 51.5 billion on capital. Current amounts have increased with time, but remained at around 2% of GDP despite more ambitious environmental policies, likely due to innovation and efficiencies in responding to legislation. **Post-2008-** and 2015, **environmental protection investments fell**, especially in manufacturing, without recovery to date.¹⁴ **Annual green bond issuance** grew to USD 258.9 billion in 2019, driven by growth in Europe. European issuance amounted to around USD 117 billion in 2019, growing by $\frac{3}{4}$, upon previous year.¹⁵

Market-based instruments

Economic or market-based instruments (MBIs) aim to correct market failures through pricing (by the polluter-pays principle), also allowing lower cost for regulators, less reporting, incentives for innovation, revenue generation and supporting jobs **by environmental tax reforms** (ETR), while ensuring budget neutrality and win-win situation for environment and the economy.

Environment-related taxes reported in the EU include energy-, transport-, pollution- and resource taxes. Energy taxes are EU-level taxes, with a comprehensive system based on the Energy Taxation Directive, that the EU Green Deal committed to **revise**.

Since early 2000s, the EU's **environmental taxes** have been **relatively stable**, at around 2.5% of GDP and 6-7% of total tax revenues. In 2018, they were 2.4 and 6% respectively, with a total environmental tax revenue of EUR 324.6 billion (EU-27). Since the 2000s, environmental taxes are **dominated by energy tax**, with 77.8% of the total in 2018, with 19.1% relating to transport and 3.3% to pollution/resources. Energy tax mostly arise from transport fuel, 2/3 on EU average, up to 90% in some countries¹⁶.

Fossil fuel **subsidies** in the EU were stable in 2008-2016 at EUR 54-60 billion a year, with increasing renewable energy subsidies: in 2016, the EU's total energy-related subsidies were EUR 169 billion, with 76 billion for renewables, a 3-fold increase over 2008.¹⁷ Beyond climate and energy, subsidies **in other sectors** also present challenges to achieve air/water/land/biodiversity objectives e.g. farming (CAP)-, or low-cost housing subsidies – leading to land-take, urban sprawl and biodiversity/ecosystem degradation. **Emission trading** allows for emission cuts at lower economic costs through innovation, while trading systems can also generate budget revenues, if allowances are distributed at auctions. The **EU ETS** is the world's largest carbon trading system. Future evolution of carbon trading will likely include links among major schemes with allowance recognition.

Fully **efficient fuel prices** (factoring in environmental costs), could induce that global CO₂ emissions would be 28% lower, fossil fuel-related air pollution deaths 46% lower, tax revenues 3.8% higher (of GDP), with net economic benefits equal to 1.7% of global GDP.¹⁸

- 1 The economic benefits of environmental policy. GHK, SERI, IVM, Transport & Mobility Leuven, 2009.
- 2 See for instance: How stringent are environmental policies, OECD 2016.
- 3 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
- 4 https://ec.europa.eu/info/strategy/recovery-plan-europe_en
- 5 <https://sdgs.un.org/goals>
- 6 Resource productivity on DMC basis refers to GDP/DMC, while on RMC basis to GDP/RMC.
- 7 Resource productivity statistics. Statistics Explained, 2018, 2019, 2020. Eurostat.
- 8 Growth within: A circular economy vision for a competitive Europe. EMF and McKinsey, 2015. and Achieving 'Growth within', SystemIQ, SUN, EMF, 2017.
- 9 Environmental economy – employment and growth, Statistics Explained, Eurostat, 2018, 2019, 2020.
- 10 Source: EEA. <https://www.eea.europa.eu/data-and-maps/figures/demanding-environmental-policy-is-associated>
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- 12 https://ec.europa.eu/info/sites/info/files/economy-finance/assessment_of_economic_and_investment_needs.pdf
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- 18 Global Fossil Fuel Subsidies Remain Large. IMF WP/19/89, 2019.

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