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## ENVIRONMENT

### Eco-innovation Action Plan

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# ECO-INNOVATION

at the heart of European policies

Start ( <a href="/environment/ecoap/index_en.htm_en">/environment/ecoap/index_en.htm_en</a> )	Policy and Funding ( <a href="/environment/ecoap/about-action-plan_en">/environment/ecoap/about-action-plan_en</a> )	Eco-innovation in practice ( <a href="/environment/ecoap/about-eco-innovation_en">/environment/ecoap/about-eco-innovation_en</a> )	Country profiles ( <a href="/environment/ecoap/country_profiles_en">/environment/ecoap/country_profiles_en</a> )	Eco-innovation Indicators ( <a href="/environment/ecoap/indicators/index_en">/environment/ecoap/indicators/index_en</a> )	Environmental Technology Verification ( <a href="/environment/ecoap/etv_en">/environment/ecoap/etv_en</a> )	News & events ( <a href="/environment/ecoap/news-events_en">/environment/ecoap/news-events_en</a> )	Community platform ( <a href="https://ec.europa.eu/environment/ecoap/community-platform">https://ec.europa.eu/environment/ecoap/community-platform</a> )
Eco-innovation Index ( <a href="/environment/ecoap/indicators/index_en">/environment/ecoap/indicators/index_en</a> )	Inputs ( <a href="/environment/ecoap/indicators/inputs_en">/environment/ecoap/indicators/inputs_en</a> )	Activities ( <a href="/environment/ecoap/indicators/activities_en">/environment/ecoap/indicators/activities_en</a> )	Outputs ( <a href="/environment/ecoap/indicators/outputs_en">/environment/ecoap/indicators/outputs_en</a> )	Economic outcomes ( <a href="/environment/ecoap/indicators/socio-economic-outcomes_en">/environment/ecoap/indicators/socio-economic-outcomes_en</a> )			

## RESOURCE EFFICIENCY OUTCOMES

Eco-innovation can support the realization of a low-carbon, resource efficient Europe through increasing the resource efficiency performance of sectors and countries. Eco-innovation can have a twofold positive impact on resource efficiency: it can increase the generated economic value, while at the same time decreasing pressures on the natural environment.

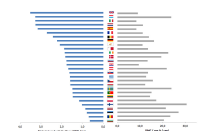
**ECO-INNOVATION RESOURCE EFFICIENCY**  
COMPOSITE MEMBER STATE RANKING, 2010-2017

	2017	2016	2015	2014	2013	2012	2011	2010
Luxembourg	1	2	1	1	2	2	1	1
Italy	2	3	4	5	9	5	8	9
Ireland	3	6	5	4	4	7	5	4
Malta	4	4	10	13	6	4	4	5
Spain	5	8	6	9	12	8	12	12
United Kingdom	6	1	2	2	1	1	2	2
Sweden	7	11	8	11	10	11	6	6
Denmark	8	5	7	6	7	6	11	11
Austria	9	9	9	7	11	9	7	7
Germany	10	14	11	8	5	12	9	8
Netherlands	11	7	3	3	3	3	3	3
France	12	10	12	10	8	10	10	10
Portugal	13	12	14	14	14	14	15	14
Belgium	14	15	13	12	13	15	13	13
Lithuania	15	17	15	16	17	18	21	22
Slovakia	16	13	20	18	22	19	19	20
Croatia	17	16	17	17	16	28	28	28
Hungary	18	20	16	15	18	17	18	18
Latvia	19	19	23	22	23	21	17	17
Slovenia	20	21	21	20	20	16	20	19
Cyprus	21	18	18	21	21	22	22	21
Romania	22	22	24	24	24	23	24	25
Greece	23	23	19	23	15	13	14	15
Finland	24	25	22	19	19	20	16	16
Czech Republic	25	24	25	25	25	24	23	23
Poland	26	26	26	26	26	25	25	26
Bulgaria	27	27	27	28	28	26	27	27
Estonia	28	28	28	27	27	27	26	26

([https://ec.europa.eu/environment/ecoap/sites/ecoap\\_stayco\\_nected/files/resource\\_efficiency\\_ranking.png?width=800&height=600](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayco_nected/files/resource_efficiency_ranking.png?width=800&height=600))

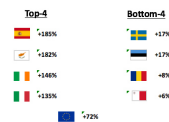
**TRENDS, COMPARISONS AND RELATED INDICATORS**

**MATERIAL PRODUCTIVITY AND ABSOLUTE MATERIAL CONSUMPTION IN EU-27 COUNTRIES, 2015**



(<https://ec.europa.eu/e>)

**MATERIAL PRODUCTIVITY CHANGES IN EU MS, 2000-2015**



([https://ec.europa.eu/environment/ecoap/sites/ecoap\\_stayconnected/files/graph\\_res\\_prod](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/graph_res_prod))

[nvironment/ecoap/sites/ecoap\\_stayconnected/files/graph\\_abs.jpg?width=800&height=600\)](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/graph_abs.jpg?width=800&height=600)

[Download data set \(https://ec.europa.eu/environment/ecoap/sites/ecoap\\_stayconnected/files/re\\_outcomes\\_b1.xlsx\)](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/re_outcomes_b1.xlsx)

Source: Eurostat (2016)

How do EU Member States perform regarding resource efficiency? Have countries with higher resource efficiency compared to others achieved lower levels of absolute resource consumption?

Material productivity values differ significantly across the EU Member States. While the United Kingdom generated around 3.5 € per kilogram of material consumption (Domestic Material Consumption, DMC) in 2013, the value was only 0.6 €/kg for Bulgaria. However, high material productivity does not automatically imply low levels of absolute material consumption per capita. For example, with 3.3 € per kilogram DMC in 2013, Luxembourg ranked second in 2015 with regard to material productivity. At the

[\\_1.jpg?width=800&height=600\)](#)

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Source: Eurostat (2016)

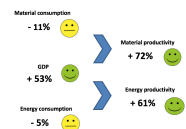
Which EU Member States have achieved the largest material productivity improvements in the past 15 years?

"In the period from 2000 to 2015, some EU Member States have achieved a considerable increase in material productivity, measures as Euro GDP per kilogram of material consumption (DMC). In countries with the highest improvements, such as Spain and Cyprus, the economic crisis led to a dramatic shrinking of material consumption, most notably in the construction sector, which explained a large part of the overall development. However, the initial levels in the year 2000 were different and the range between the lowest and highest values in the year 2015 diverged even more. For example, while Italy increased

same time, absolute material consumption was one of the highest in the EU (23.7 kg).

its material efficiency from a rather average level to a relatively high level, Cyprus increased its efficiency from a comparatively a level close to the EU average of 2.18 €/kg in 2015. Lowest growth rates across the EU-28 countries were observed for Malta (around average performance in 2015) and Romania (with 0.7 € per kg one of the low performing countries). The increase in material productivity of the average EU-28 was around 72% since the year 2000".

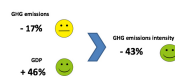
## DECOUPLING IN THE EU, 2000-2014



([https://ec.europa.eu/environment/ecoap/sites/ecoap\\_stayconnected/files/graph\\_decoupl\\_1\\_2016.png?width=800&height=600](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/graph_decoupl_1_2016.png?width=800&height=600))

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## DEVELOPMENT OF GREENHOUSE GAS EMISSION INTENSITY IN THE EU, 2000-2014



([https://ec.europa.eu/environment/ecoap/sites/ecoap\\_stayconnected/files/graph\\_ghg\\_1.jpg?width=800&height=600](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/graph_ghg_1.jpg?width=800&height=600))

[Download data set](#)  
(<https://ec.europa.eu/e>

[d/files/re\\_outcomes\\_b3\\_2016.xlsx](#))

Source: Eurostat (2017)

Has the aggregated European economy managed to de-couple economic growth from the use of energy and materials?

Europe has de-coupled economic growth from natural resource use in the past 15 years. Material productivity in the aggregated EU-28 increased by around 65% between 2000 and 2015. This development was primarily caused by a significant growth of GDP (+53%) as well as a slight decrease in absolute material consumption (-11%). Energy consumption decreased by 5% in the same time period, resulting in an energy productivity improvement of 61%. It should be noted that the material consumption indicator underlying this calculation (DMC) does not include the indirect material flows related to international trade, which are associated with production outside of Europe. Therefore, the illustrated decrease in consumption could

[nvironment/ecoap/sites/ecoap\\_stayconnected/files/re\\_outcomes\\_b4.xlsx](#))

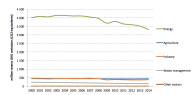
Source: Eurostat (2015)

Has the European economy managed to decrease its greenhouse gas emissions intensity?

Between 2000 and 2014, the greenhouse gas emission intensity of the aggregated EU-28 economy decreased significantly. In the year 2014, 43% less greenhouse gases were emitted to produce one unit of GDP in the EU. This development was driven both by a reduction of territorial GHG emissions (-17%) and an increase in GDP (+46%). As emphasised for the material consumption indicator, the GHG emissions embodied in European imports are not included in this calculation.

also be due to a shift of production and associated environmental pressures to other countries, as the EU is a net importer of raw materials.

### SECTORAL COMPOSITION OF GREENHOUSE GAS EMISSIONS IN THE EU, 2000-2014



([https://ec.europa.eu/environment/ecoap/site/s/ecoap\\_stayconnected/files/graph\\_ghg\\_2.jpg?width=800&height=600](https://ec.europa.eu/environment/ecoap/site/s/ecoap_stayconnected/files/graph_ghg_2.jpg?width=800&height=600))

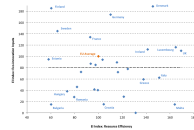
[Download data set \(https://ec.europa.eu/environment/ecoap/site/s/ecoap\\_stayconnected/files/re\\_outcomes\\_b4.xlsx\)](https://ec.europa.eu/environment/ecoap/site/s/ecoap_stayconnected/files/re_outcomes_b4.xlsx)

Source: Eurostat (2015)

Which sectors contribute most to EU's greenhouse gas emissions?

The energy sector, which also includes greenhouse gases emitted for transport

### ECO-INNOVATION INPUTS AND RESOURCE EFFICIENCY



([https://ec.europa.eu/environment/ecoap/site/s/ecoap\\_stayconnected/files/graph\\_eis\\_1\\_2016.png?width=800&height=600](https://ec.europa.eu/environment/ecoap/site/s/ecoap_stayconnected/files/graph_eis_1_2016.png?width=800&height=600))

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Is there a correlation between eco-innovation inputs and outcomes in terms of resource efficiency?

Across all EU-28 countries, there is only a minor correlation between eco-innovation inputs as measured by the Eco-

activities, were by far the largest contributor to overall GHG emissions in the EU-28 (almost 80% of all GHG emissions in 2014). However, emissions from the energy sector declined by almost 20% in the past 15 years due to changes in the energy mix and technological advances. Both agriculture and industry contributed around 10% each to the GHG emissions. Waste management activities were responsible for around 3% of EU's GHG emissions in 2014. All other sectors also showed a slightly declining trend over time.

Innovation Scoreboard (Eco-IS) and the component of resource efficiency outcomes. As a general tendency, the graph illustrates that countries with a higher score in the component of eco-innovation inputs also perform better with regard to resource efficiency. However, the pattern is diverse across the EU countries. Some of them, such as Finland, receive a high score for eco-innovation inputs, but the resource efficiency performance is only modest. One explanation for the latter is the structure of the economy, which has important primary sectors, for example related to wood and paper industries. On the other hand, Malta is an example of a country with relatively low eco-innovation inputs, but high resource efficiency outcomes. As a small island, Malta imports most of its raw materials, energy and products from abroad and the associated environmental pressures are accounted in the foreign production country.

## MORE INFORMATION

- The 2010 annual report of the Eco Innovation Observatory 'The Eco-Innovation Challenge; Pathways to a resource efficient Europe', [http://www.eco-innovation.eu/index.php?option=com\\_content&view=article&id=200&Itemid=258](http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=200&Itemid=258))
- EIO 2011, 'Water Innovation' thematic report [http://www.eco-innovation.eu/index.php?option=com\\_content&view=article&id=284%3Awater-innovation&catid=79%3Athematic-reports&Itemid=212](http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=284%3Awater-innovation&catid=79%3Athematic-reports&Itemid=212))
- EIO 2012, EIO-Construction Report 'Resource-efficient construction' [http://www.eco-innovation.eu/index.php?option=com\\_content&view=article&id=201%3Aresource-efficient-construction&catid=79%3Athematic-reports&Itemid=212](http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=201%3Aresource-efficient-construction&catid=79%3Athematic-reports&Itemid=212))

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