

SDG Goal 9 Industry, innovation and infrastructure

SDG Target 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

SDG Indicator 9.4.1 CO₂ emission per unit of value added

1. Name of time series	
CO₂ emissions per real GDP	
Compliant with global metadata: yes	Global Metadata
2. Definition of time series	
<p>The time series shows the CO₂ intensity of the total economy. By indicating how much CO₂ is emitted (needed) to produce one unit of gross domestic product (GDP), the carbon intensity is a proxy for clean technology production and the developmental state of an industry.</p> <p>The time series does not include emissions from land use, land-use change and forestry.</p>	
3. Comparison with global metadata (as of 13/03/2018)	
GDP used in the calculation of the time series is given in terms of Euro and not in terms of US dollar as requested in the global metadata.	
4. Data description	
<p>The data on CO₂ are taken from the National Inventory Report submitted under the United Nations Framework Convention on Climate Change 2009 by the German Environment Agency (UBA).</p> <p>The data on GDP are calculated by the Federal Statistical Office's National Accounts as a secondary statistic. GDP is adjusted based on a price base changing every five years(constant prices). After several revisions due to new data input, final results are available four years after the first preliminary release.</p>	
5. Calculation method	
$\text{CO}_2 \text{ emissions per real GDP} = \frac{\text{Total CO}_2 \text{ emissions [g]}}{\text{Price adjusted GDP [Euro]}}$	
6. Unit of measure	g/EUR
7. Timeliness	8. Frequency
CO ₂ : t + 17 months GDP: t + 15 days	Annual
9. Last regular revision	10. Revised period
2014	2010-2014

11. Accessibility of source data
<p>Table on trend summary – Green House Gas (GHG) Inventory UBA (only available in German): “Berichte und Daten” - “Trendtabellen Treibhausgase 1990-20XX” https://www.umweltbundesamt.de/themen/klima-energie/treibhausgas-emissionen</p> <p>National accounts - Gross value added, gross domestic product – GENESIS online, table 81000-0001 https://www-genesis.destatis.de/genesis//online?operation=table&code=81000-0001&bypass=true&language=en</p>
12. Metadata on source data
<p>Submission under the United Nations Framework Convention on Climate Change and the Kyoto Protocol 2020, Chapter 1 https://www.umweltbundesamt.de/publikationen/submission-under-the-united-nations-framework-5</p> <p>Quality report "Economy", National Accounts https://www.destatis.de/EN/Methods/Quality/QualityReports/_node.html</p>

SDG Goal	9	Industry, innovation and infrastructure
SDG Target	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
SDG Indicator	9.4.1	CO₂ emission per unit of value added

13. Name of time series
CO₂ emissions per gross value added (price adjusted) in manufacturing industries
Compliant with global metadata: yes Global Metadata

14. Definition of time series
The time series shows the CO ₂ intensity of the manufacturing sector. By indicating how much CO ₂ is emitted (needed) to produce one unit of gross value added, this carbon intensity is a proxy for clean technology production and the developmental state of an industry.
15. Comparison with global metadata (as of 13/03/2018)
Gross value added used in the calculation of the time series is given in terms of Euro and not in terms of US dollar as requested in the global metadata.

16. Data description	
<p>The data on CO₂ emissions and value added of manufacturing sector have been calculated by the Federal Statistical Office of Germany as secondary statistics.</p> <p>The emissions are based on the national energy balance by the Working Group on Energy Balances (AGEB).</p> <p>Gross value added of manufacturing sector is calculated at constant 2010 price. For price adjustment, the nominal value of 2010 is taken as basis year. This value is then multiplied by the prices of 2010 adjusted index for gross value added of the reference year.</p> <p>After several revisions of the indexes due to new data input, final results are available 4 years after the first preliminary release.</p>	
17. Calculation method	
$\text{CO}_2 \text{ emissions per gross value (price adjusted) added in manufacturing industries} = \frac{\text{CO}_2 \text{ emissions in manufacturing sector [g]}}{\text{Price adjusted gross value added in manufacturing sector [Euro]}}$	
18. Unit of measure	g/EUR

19. Timeliness	20. Frequency
CO ₂ : t + 17 months Value added: t + 14 months	Annual
21. Last regular revision	22. Revised period
Not available	Not available

23. Accessibility of source data

Air emissions: Germany, years, type of air emission, homogeneous branches – GENESIS online 85111-0001

<https://www-genesis.destatis.de/genesis//online?operation=table&code=85111-0001&bypass=true&language=en>

Gross value added: Persons employed, turnover, output and value added of enterprises in manufacturing – GENESIS online, table 42251-0001

<https://www-genesis.destatis.de/genesis//online/data?operation=table&code=42251-0001&bypass=true&language=en>

Index of Gross value added:

National accounts - Gross value added (nominal/price-adjusted): industries – GENESIS online, table 81000-0103

<https://www-genesis.destatis.de/genesis//online/data?operation=table&code=81000-0103&bypass=true&language=en>

24. Metadata on source data

Emissions (only available in German):

“Methode der Luftemissionsrechnung“

<https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/UGR/energiefluesse-emissionen/Publikationen/Downloads/methode-luftemissionsrechnung-5851317199004.pdf>

Industry and manufacturing industry (only available in German):

“Branchen und Unternehmen – Industrie, Verarbeitendes Gewerbe“

<https://www.destatis.de/DE/Methoden/Qualitaet/Qualitaetsberichte/Industrie-Verarbeitendes-Gewerbe/einfuehrung.html>

Quality report "Economy", National Accounts

https://www.destatis.de/EN/Methods/Quality/QualityReports/_node.html