



Estimated effects of increased RES consumption since 2005 on fossil fuels and GHG emissions

Directive 2009/28/EC on the promotion and use of energy from renewable sources commits the EU to achieving a 20 % share of renewable energy sources (RES) in its gross final energy consumption by 2020 and a 10 % share of renewable energy in transport energy consumption by the same year. Article 22 of the directive requires Member States to report on national progress in the promotion and use of energy from renewable sources, biennially, starting with 31 December 2011. It specifies that the national reports shall contain, inter alia, the estimated net GHG emission savings due to the use of energy from renewable sources.

Information regarding the specific methodologies used by the countries for producing the above estimates of net GHG emission savings is not always available. To that end, the EEA and its European Topic Centre for Air Pollution and Climate Change Mitigation (ETC/ACM) produce each year a consistent set of estimated co-benefits, at the Member State and EU level, concerning the impact on fossil fuels and GHG emissions due to the increase in RES consumption since 2005. For 2017, these estimated co-benefits are based on the EEA 2017 RES share proxies and the EEA 2017 proxies on primary and final energy consumption.

Simple

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Purpose	Kilotonnes of oil equivalent (ktoe). Million tonnes of CO ₂ (MtCO ₂).				
Point of contact	Organisation	Individual	Electronic mail address	Website	Role
	European Environment Agency				Point of contact
	European Environment Agency			http://www.eea.europa.eu#organization	Publisher
	European Topic Centre on Air pollution and Climate change mitigation (ETC/ACM)			http://acm.eionet.europa.eu	Processor
Topic category	<ul style="list-style-type: none"> Environment 				
Extent					
Temporal extent					
Time period	2005 2017				
Maintenance and update frequency					
EEA Management Plan	<ul style="list-style-type: none"> 2018 1.3.1 				
EEA topics	<ul style="list-style-type: none"> Energy Climate mitigation 				
Continents, countries, sea regions of the world.	<ul style="list-style-type: none"> Austria Belgium Bulgaria Croatia 				

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Resource constraints

Use constraints	Other restrictions
Other constraints	License CC-BY 4.0 (https://creativecommons.org/licenses/by/4.0/). Copyright holder: European Environment Agency (EEA).

Resource constraints

Access constraints	Other restrictions
Other constraints	No limitations to public access

Language	English
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Additional Information	<p>This concerns the most recent set of EEA estimates on the amounts of gross avoided fossil fuels and GHG emissions, per Member State and for the EU as a whole, due to the increase in gross final RES consumption since 2005. The estimates are presented as annual data starting with 2005. The 2017 estimates are drawing on the EEA 2017 RES share proxies (http://www.eea.europa.eu/data-and-maps/data/approximated-estimates-for-the-share-1) and the EEA 2017 proxies on primary and final energy consumption (http://www.eea.europa.eu/data-and-maps/data/approximated-estimates-for-the-primary-1).</p> <p>These EEA estimated effects are not to be confused with information reported by Member States biennially as part of their renewable energy progress reports (https://ec.europa.eu/energy/en/topics/renewable-energy/progress-reports) under Directive 2009/28/EC.</p>
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Distribution Information

Distribution format	<ul style="list-style-type: none"> • ascii (.csv, .txt, .sql)
OnLine resource	https://sdi.eea.europa.eu/webdav/datastore/public/eea_t_res-impacts_p_2005-2017_v01_r00/
OnLine resource	Direct download

Resource lineage

Statement	<p>The method assumes that renewable energy (electricity, heating and cooling, and transport) replaces at the national level a set of initial energy carriers (electricity, heating and cooling, and transport fuels) that would otherwise be supplied by other energy sources. It is important to note that, because the base year of the analysis is 2005, the development of renewable energy from only that point in time is considered.</p> <p>Gross impacts on fossil fuel use and GHG emissions are calculated on an annual basis, by comparing the actual growth in renewable energy since 2005 with a counter-factual scenario in which this growth would come from non-renewable energy sources. Effectively, this assumes that the growth in renewable energy since 2005 has substituted an equivalent amount of energy that would have been supplied by a country-specific mix of conventional sources.</p>
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A generation-weighted average emission factor was chosen to calculate reference emission factors. Values for the gross final consumption of RES, including the 2017 EEA estimated values, are in accordance with the methodology under Directive 2009/28/EC. Although the EEA 2017 RES proxies (<http://www.eea.europa.eu/approximated-estimates-for-the-share>) formed the basis of a specific EEA country consultation, these values are not a substitute for data that countries officially report to Eurostat and to the European commission in the context of their legal obligations. The term 'gross avoided fossil fuels and GHG emissions' illustrates the theoretical character of the effects estimated in this way, as these contributions do not necessarily represent 'net fossil fuel and GHG reductions per se' or are based on life-cycle assessment or full carbon accounting. Taking full life-cycle emissions into account could lead to substantially different results.

Full details about the method, its scope and assumptions are provided in Chapter 3 of the Renewable energy in Europe – Approximated recent growth and knock-on effects 2015 EEA report.

Dataset based on EEA estimates and Member States consultation.

Hierarchy level	Dataset
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Metadata

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Language	English		
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	European Environment Agency		sdi@eea.europa.eu Point of contact

Type of resource

Resource type	Non geographic dataset
Name	Tabular dataset
Metadata linkage	https://sdi.eea.europa.eu/catalogue/srv/api/records/a7d5f194-d268-4be9-9a07-0f3a428c058e
Date info (Creation)	2022-09-07T07:59:44.09Z
Date info (Revision)	2025-10-09T11:07:38.878046Z

Metadata standard

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Edition	1.0

Overviews

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