

What does the indicator reflect?

This indicator reflects the CO₂ equivalent emissions of the six main greenhouse gases included in the Kyoto protocol (CO₂, CH₄, N₂O, HFCs, PCFs and SF₆) emitted as a result of the conversion and consumption of energy.[1]

Appliances Efficiency



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RELEVANCE - Why does it matter for Switzerland?

Greenhouse gas (GHG) emissions from human activities are very likely to be the main cause of the currently observed global warming. In turn, a temperature increase on earth is very likely to result in social, economic and environmental damages associated with an increase of extreme weather events, sea level rise and ocean acidification. For Switzerland, the melting of glaciers and permafrost are amongst the most critical direct environmental impacts of global warming, potentially leading to severe socio-economic impacts.

By ratifying the Kyoto protocol in 1997 Switzerland committed itself to setting internationally binding emissions reduction targets.[1] Switzerland aims to reduce GHG emissions by 20% relative to 1990 by 2020.[2]

Reducing GHG emissions is also important to the economy as a whole. For example a carbon tax of currently CHF60/tonne (up from CHF36 in 2012) applies to heating oil and gas, which corresponds to a total annual revenue for the Confederation of about CHF740 million. Future policy measures to mitigate global warming are likely to increasingly penalise the emissions of greenhouse gases.

p { margin: auto }

Energy system

- Decrease final electricity demand if rebound effects are excluded.
- Decreases final energy consumption, if re-bounce effects are excluded.
- No direct impact on the share of renewable energy sources in the energy mix.
- Likely to increase energy independence and energy security.

[Learn more](#)

Environment & Climate

- Likely to reduce Swiss CO₂ emissions, impact on global CO₂ emissions depends on embodied energy of new appliances.
- If older, but still functioning, appliances get replaced on the grounds of energy efficiency, this could increase deposited waste and environmental impacts related to end of life treatment of materials as well as mining of materials for new products

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Society & Economy

- Impact on total costs of the energy transition not well understood.
- Efficiency labels and ratings make users more aware of energy use
- May improve balance of payments by substituting oil imports by domestic electricity.
- May reduce Confederation income from the tax on electricity under the current taxation system.

[Learn more](#)

GLOBAL MARKET - What is the global potential for increasing the efficiency of new appliances?

[1] Section 2 and 3 of this IEA report should have the numbers we need. It is a pay report though (80 EUR, one PDF user). □<http://www.iea.org/W/bookshop/add.aspx?id=460>

DEFINITION / CONSTRAINTS

DEFINITION - What is Appliances Efficiency?

The indicator includes electric household appliances.

Modern household appliances often require less energy to do the same useful work. Especially appliances such as refrigerators and freezers, laundry machines and dish washers, but also TVs are available with much lower consumption than their predecessors.

Based on the energy rating (A+++ to G in EU) the consumer can compare new products based on their typical annual electricity consumption before making a purchase.

CONSTRAINTS - What are the key barriers facing the increase of Appliances Efficiency?

Replacement of old appliances by new and efficient ones is often not economically viable based on saved energy cost and current electricity prices.

'Rebound effects' may counteract the energy savings from more efficient appliances. The financial savings from lower running costs can lead to purchase of more appliances, or changes in lifestyle (e.g. wash more often).

[Learn more](#)

VALUE RANGE - What range of values can I choose?

The annual average electricity consumption of the appliances in a household [kWh/(year•household)] is the selected parameter for studying the appliances efficiency. In 2011, the appliances of household consumed an average of 2873 kWh [2]. The expected future value ranges for the average energy performance of the Swiss building stock are [2]:

- 2035 = 2429 - 2661 kWh/(year•household)
- 2050 = 2436 - 2851 kWh/(year•household)

ASSUMPTIONS - What are the assumptions considered in the calculator?

The appliances annual average electricity consumption includes the electricity used by:

- Appliances that can be found in the kitchen (stoves, oven, fridge/freezer, dishwasher and other cooking auxiliaries).
- Washing machine and dryer.
- IT and audio-visual (TV, computer, gadgets, etc.)
- Air conditioning and ventilation systems.
- Other (hair dryer, iron, vacuum cleaner, etc.)

Some appliances as the air conditioning and ventilation systems are expected to have an important expansion. Because of the expected higher temperatures more households will be equipped with this technology. This fact reduces the effect of having more efficient appliances as more appliances are installed. E.g. the average electricity consumed by the air conditioning and ventilation systems was 350 kWh/(year•household) [2], while in 2050 is expected to be 526 - 659 kWh/(year•household) [2].

[Learn more](#)

REFERENCES

[1] Energy Efficiency Market Report 2013, Market Trends and Medium-Term Prospects, <http://www.iea.org/W/bookshop/add.aspx?id=460>

[2] PROGNOSE 2012, Die Energieperspektiven für die Schweiz bis 2050, Energienachfrage und Elektrizitätsangebot in der Schweiz 2000–2050.

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#content .bloc.triple { width: 920px; } #wrapper #content .bloc.bgWhite { background: #fff; }
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#content .bloc .newsBloc h3 { font-size: 14px; margin-bottom: 10px; } #wrapper #content .bloc
.newsBloc p { font-size: 13px; line-height: 17px; margin-bottom: 10px; } #wrapper #content .bloc a {
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border-radius: 8px; width: 15px; height: 15px; text-align: center; font-size: 11px; font-weight: normal;
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.questionAnswer .bg.answer { background: #535559; } #wrapper #content .intro { margin-bottom:
60px; } #wrapper #content .intro .img { float: left; width: 460px; } #wrapper #content .intro .txt {
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#newsWrapper { background: #fff; } #wrapper #content #newsWrapper .news { padding: 20px; }
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#newsWrapper .news p { font-size: 16px; margin-bottom: 20px; } #wrapper #content
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#lexiqueWrapper .ulWrapper { text-align: center; } #wrapper #content #lexiqueWrapper .ulWrapper
ul li { display: inline-block; *display: inline; zoom: 1; border-right: 1px solid #c2c2c2; padding: 0 11px;
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#content #lexiqueWrapper .ulWrapper ul li a { color: #535559; font-family: 'ProximaNovaCond-Light';
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#c2c2c2; } #wrapper #content #lexiqueWrapper #listWrapper ul li h4 { font-family:
'ProximaNovaCond-Regular'; font-size: 24px; margin-bottom: 6px; } #wrapper #content
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.redactor_box { font-family: Arial, Helvetica, Sans Serif; font-size: 16px; color: #333333; padding:
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#535559; font-size: 32px; text-transform: uppercase; } #content.text h3, .redactor_box h3 { font-
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'ProximaNovaCond-Semibold'; font-size: 44px; color: #000; text-transform: uppercase; margin-
bottom: 10px; } #content.text h4, .redactor_box h4 { font-size: 26px; } #content.text p,
.redactor_box p { color: #333333; margin-bottom: 20px; } #content.text #wysiwyg, .redactor_box
#wysiwyg { margin-bottom: 80px; } #content.text ul li, .redactor_box ul li { margin-bottom: 10px;
line-height: 20px; display: block; padding-left: 20px; background: url(lib/tpl/ses/images/bg_bullet-
text.png) top left no-repeat; background-position: 0 8px; } #content.text table, .redactor_box table {
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li.next { width: 11px; height: 20px; } .pagination ul li.prev, .pagination ul li.nobl, .pagination ul li.next
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transform: uppercase; } #sponsorsWrapper .sponsor { float: left; margin-right: 60px; }

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