

National Report by Switzerland 2018

Enhanced Black Carbon and Methane Emissions
Reductions – Arctic Council Framework for Action

National report
by Switzerland
July 2018

Framework for Enhanced Black Carbon and Methane Reductions

Report to the Arctic Council by Switzerland on policies and success to abate emissions of black carbon and methane

General remark

The reduction of black carbon and methane emissions in the Arctic is of critical importance to tackle climate change in this region but also to address human health issues in Western/Continental Europe. Therefore, Switzerland, as an observer state, welcomes and supports the Arctic Council's initiatives on black carbon and methane emissions reduction.

This national report is for information of the Arctic Council on the progress towards the commonly agreed vision: *"We commit to take enhanced, ambitious, national and collective action to accelerate the decline in our overall black carbon emissions and to significantly reduce our overall methane emissions."*

The report contains the actual data on emissions and emission estimates for the future, which are consistent with the data submitted to the Economic Commission for Europe of the United Nations Convention on Long-Range Transboundary Air Pollution (UNECE CLRTAP) and to the United Nations Framework Convention on Climate Change.

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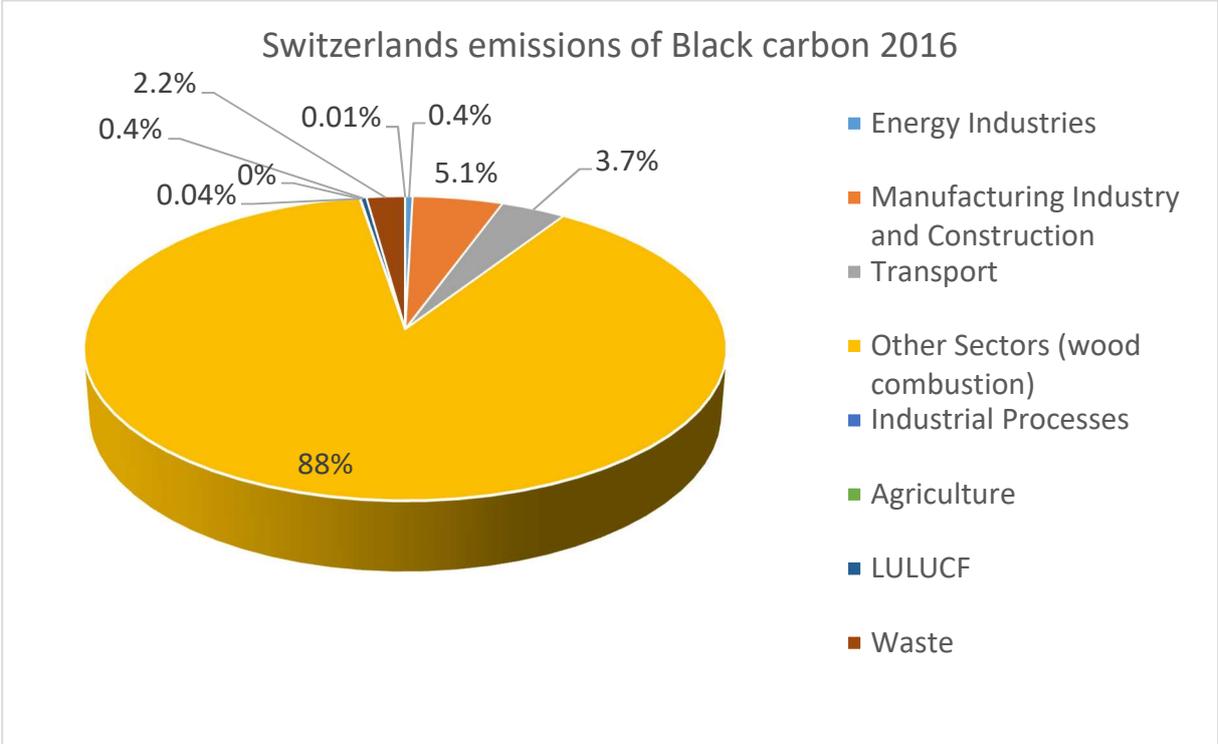
Summary of current black carbon emissions reported to CLRTAP

Emissions inventories for the years 2000 up to 2016

The emission estimates of black carbon (BC) were submitted on a voluntary basis in the framework of the CLRTAP. The calculation of the BC inventory is annually performed by the Swiss Federal Office for the Environment which is in charge of the national emissions inventories of air pollutants and greenhouse gases.

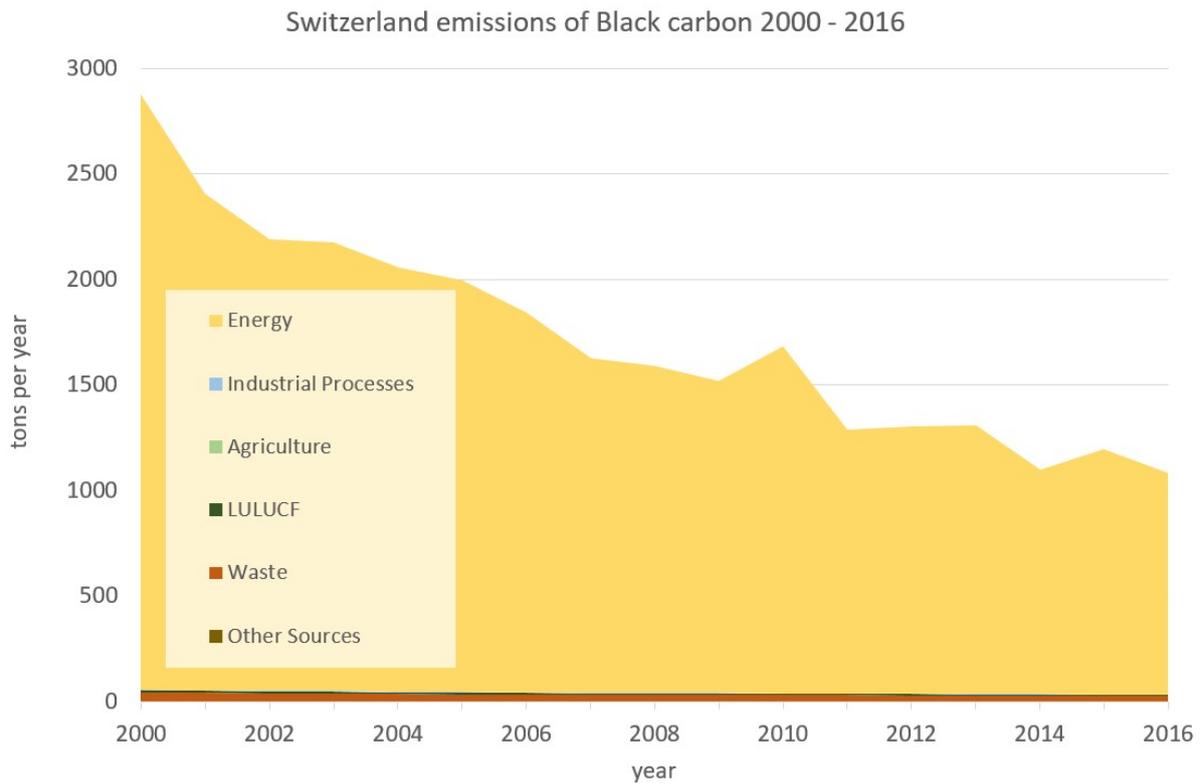
The detailed reported data are available at:
http://www.ceip.at/ms/ceip_home1/ceip_home/status_reporting/2018_submissions/

Switzerland uses the EMEP/EEA 2016 Guidebook to estimate BC emissions complemented by some national data¹. The following figure provides an overview on the sources and their respective contribution to the Swiss national emissions. Wood combustion is largely the dominant emission source (88%) of BC in Switzerland.



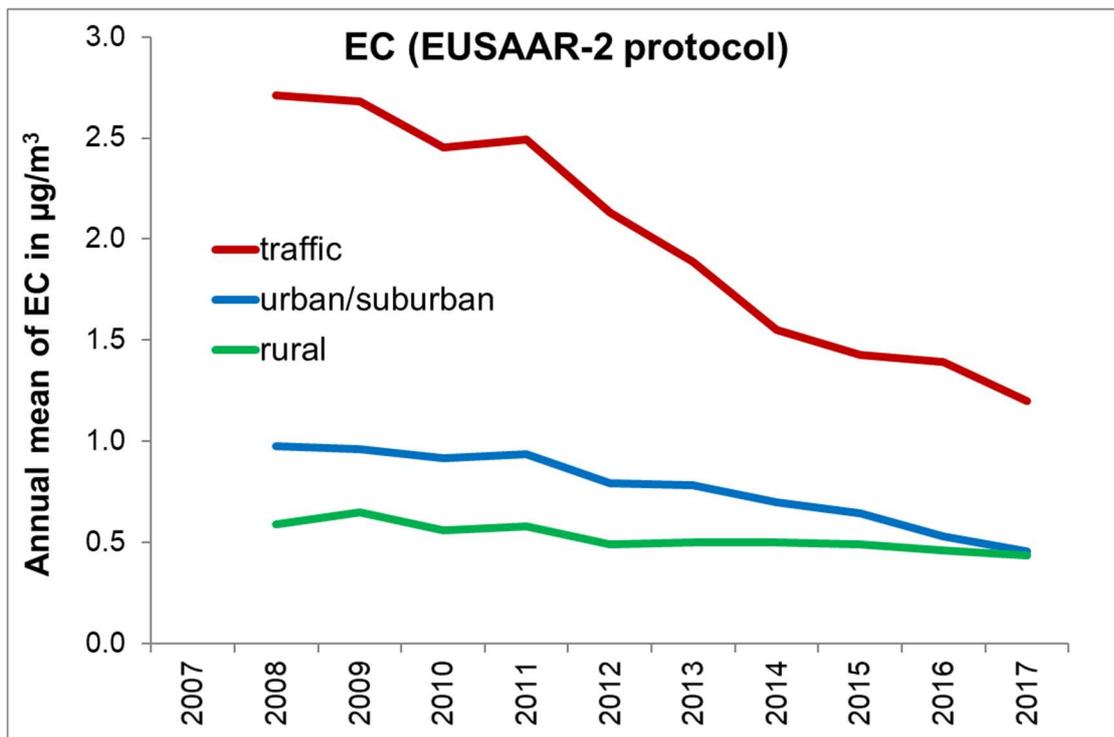
Total national emissions decreased by around 60% between 2000 and 2016. The main drivers for this decrease are the introduction of particle filter traps on the various on-road and off-road diesel engines due to the implementation of the Action Plan 2006 against PM of the Federal Council (Swiss Government), as well as measures taken to reduce emissions of various combustion installations. Further reductions of BC emissions (around 20%) are expected until 2030.

¹ Switzerland supports common reporting guidelines on Short-Lived Climate Forcers. The IPCC is currently working on the development of such guidelines that will ensure a robust scientific basis and allow comparability of national inventories.



In the graphic above the sector “Energy” covers all energy consuming activities including energy industries, manufacturing industry and construction, transport and others sectors of combustion. The biggest part of the BC emissions results of wood combustion.

The decrease of emissions appears also at the level of elementary carbon (EC) concentrations in PM_{2.5} monitored in the National Monitoring Network NABEL where the decrease is particularly strong at the near traffic stations between 2008 and 2017 (approximately 60% decrease).



Summary of current methane emissions reported to the UNFCCC

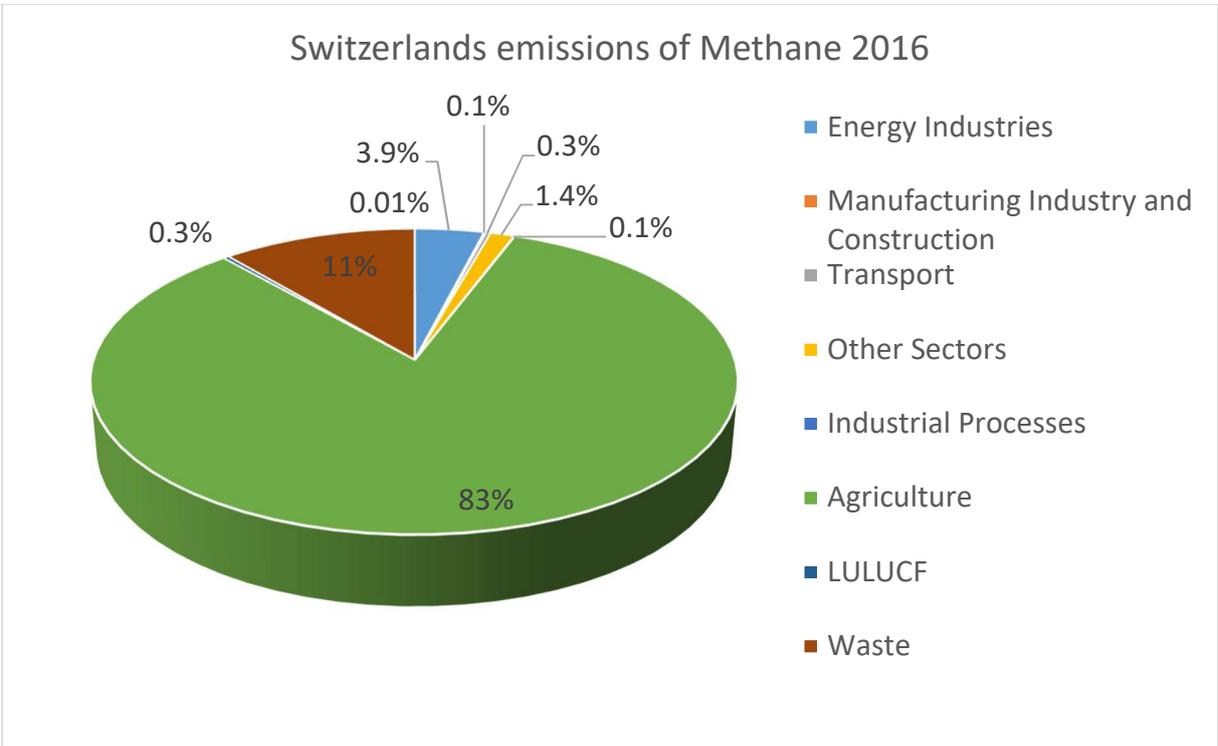
Emissions inventories for the years 2000 up to 2016

The CH₄ emission estimates were submitted to the UNFCCC. The calculation of the CH₄ inventory is annually performed by the Swiss Federal Office for the Environment which is in charge of the national emissions inventories of air pollutants and greenhouse gases.

The detailed reported data are available at:

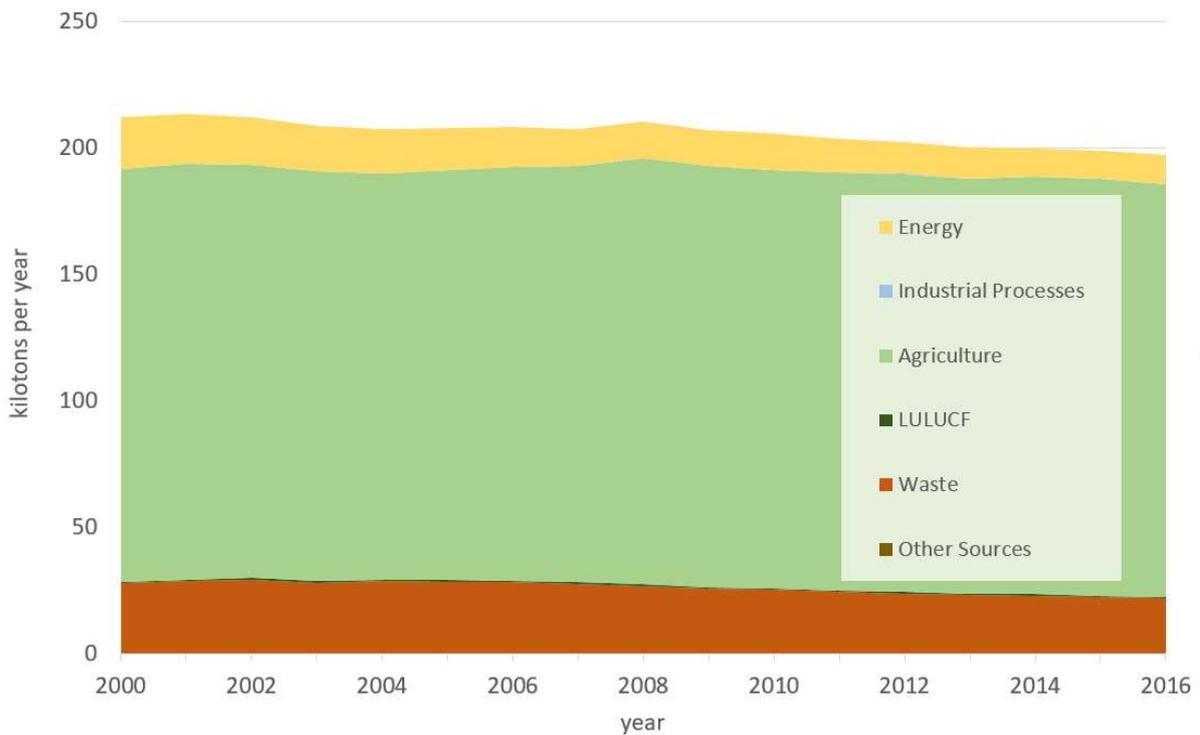
<https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018>

Switzerland uses the 2006 IPCC Reporting Guidelines to calculate CH₄ emissions complemented by some national data. The following figure provides an overview of the sources and their respective contribution to the Swiss national emissions.



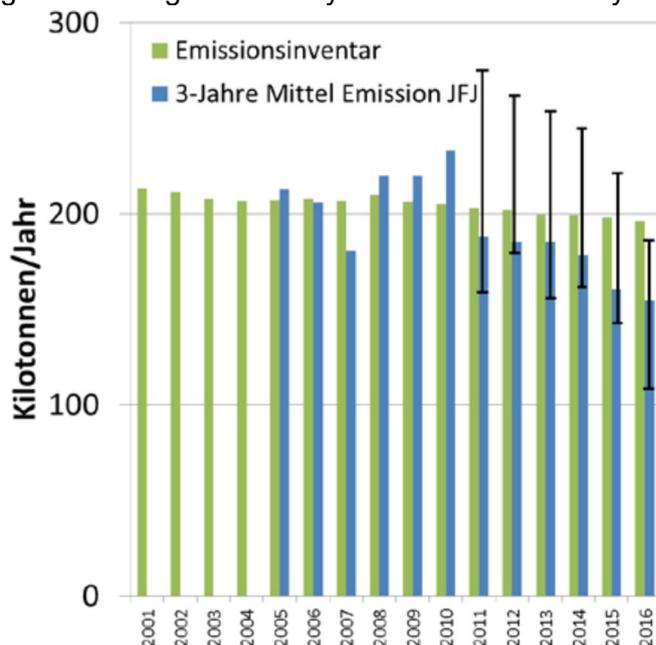
Total national emissions decreased by approximately 7% between 2000 and 2016. The main drivers for this decrease are measures taken to reduce emissions in the gas transmission network and in various combustion installations as well as declining emissions from solid waste disposal sites due to a ban on landfilling of burnable wastes. Until 2030 the estimated emissions reduction could be approximately of 10% versus 2000.

Switzerland emissions of Methane 2000 - 2016



Comparison of emission inventory with emissions calculated by inverse-modelling

In Switzerland, a monitoring project (HALCLIM) is continuously measuring atmospheric concentrations of various greenhouse gases at a remote high altitude research station Jungfrauoch (JFJ; 3450 masl). Under specific meteorological conditions, an estimate of Swiss emissions was derived from these data (see figure below). Additionally, measurements of atmospheric concentrations at various stations of a Swiss observing network were used to estimate methane emissions from 2013 onwards. Both methods resulted in emission estimates that agreed with the emissions reported in the Swiss greenhouse gas inventory within the uncertainty ranges of the different estimates.



Summary of national actions and implementation of abatement measures

In the framework of the clean air policy, the Federal Council adopted in 2006 an action plan to abate particulate matter, with a focus on soot produced by diesel motors and wood burning. Application of particle filter traps on diesel engines led to a decrease of soot concentrations at traffic-exposed monitoring stations of more than 40%. In addition to the measures applied to diesel engines, new abatement measures were introduced in the revised Ordinance on Air Pollution Control to address stationary sources. On 11 April 2018, the Federal Council adopted additional measures to reduce the levels of various pollutants including a few short-lived climate forcers such as particulate matter and CO from small wood-burning installations and construction machinery. Furthermore, in accordance with eco-design, further measures were adopted that require increased energy efficiency from heating installations.

At the international level, Switzerland is committed under the UNECE Convention on Long-range Transboundary Air Pollution Transport and in particular as Party to the Gothenburg Protocol. In line with the commitment of this protocol, Switzerland reported annually on national emissions data related to Black Carbon. A decrease of more than 40% of BC emissions is registered between 2005 and 2016. Switzerland also confirms its participation to the Climate and Clean Air Coalition that promotes action on Short-Lived Climate Forcers (SLCF). Switzerland has a robust national clean air policy and is committed to continue reducing SLCF at the national level and assist implementation of such efforts in partner countries in the framework of its international cooperation. Furthermore, Switzerland has supported financially the methodological work by IPCC on SLCF.

The Swiss agriculture will continue to foster GHG emission reductions in the future, in particular those of CH₄ and N₂O that are decreasing since 1990. In fact, the greenhouse gas intensity (greenhouse gases emitted per unit of foodstuff produced) will decrease in the Swiss agricultural sector. This is the result of the Swiss climate strategy for agriculture, i.e. the declaration of intent to reduce greenhouse gas emissions from agriculture by one third by 2050 compared to 1990 with technical, operational and organizational measures and by another third with measures influencing food production and consumption.

Switzerland supports also the work under IPCC on Short-Lived Climate Forcers in view of better understanding the climate effects of these forcers (e.g. black carbon), and to developing guidelines for reporting on national inventories.