

**Amendment to  
Switzerland's Seventh National  
Communication and Third Biennial  
Report under the UNFCCC**

Fourth National Communication under the  
Kyoto Protocol to the UNFCCC

3 April 2019



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

## Imprint

### Publisher

Swiss Federal Office for the Environment, Bern, Switzerland,  
an office of the Swiss Federal Department of Environment, Transport, Energy and Communications.

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## 1 Introduction

This document contains an amendment to Switzerland's seventh national communication and third biennial report, which was submitted to the United Nations Framework Convention on Climate Change on 19 December 2017<sup>1</sup>. It was compiled based on the in-country review which took place from 18 to 23 March 2019 in Bern, Switzerland. Switzerland thanks the Expert Review Team for its valuable inputs and the many useful discussions.

## 2 National circumstances

There is no amendment to chapter 2 of Switzerland's seventh national communication and third biennial report.

## 3 Greenhouse gas inventory information

### Global warming potential values

#### Section 3.1 on page 59

Switzerland consistently uses the global warming potential values according to the fourth assessment report of the Intergovernmental Panel on Climate Change throughout its reporting. Accordingly, the third sentence in section 3.1 on page 59 of Switzerland's seventh national communication and third biennial report should read: "...and the global warming potential values according to the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC, 2007) based on the effect of greenhouse gases over a 100-year time horizon."

## 4 Policies and measures

### Mitigation impacts of policies and measures

#### Sections 4.6 and 4.7 on page 108ff

Chapter 4 of Switzerland's seventh national communication and third biennial report presents information regarding the mitigation impacts of all policies and measures. For the below-mentioned policies and measures – presented in section 4.6 and 4.7 on page 108ff of Switzerland's seventh national communication and third biennial report – additional information regarding the estimation methods and/or justification for not estimating the mitigation impact should be added as follows:

- Proof of ecological performance to receive direct payments, section 4.6.2 on page 110:  
"The impact of the introduction of the proof of ecological performance to receive direct payments is clearly reflected in substantial decreases of the main drivers of agricultural greenhouse gas emissions in the 1990s. Indeed, total cattle decreased by 14 per cent from 1990 to 2000, while total commercial fertiliser decreased by 23 per cent over the same time period (see also Fig. 70 on page 147)."
- Forest Act (sustainable forest management and forest area conservation), section 4.7.2 on page 113 and Forest Act (most recent changes), section 4.7.5 on page 114:  
"For some elements of the Forest Act, information on the mitigation impact is presented in Switzerland's sev-

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<sup>1</sup> The original submission of Switzerland's seventh national communication and third biennial report (as well as this amendment) is available under <http://www.bafu.admin.ch/nc-br>.

enth national communication and third biennial report. However, it is difficult or nearly impossible to define scenarios including elements like “avoiding natural disturbances” or “adaptation of forests” because these include a lot of speculative assumptions. Moreover, while the mitigation impacts of these elements are quite important for forest ecosystem functioning, they are only of minor importance for Switzerland’s national CO<sub>2</sub>-budget. Therefore, no quantitative information is provided. The active promotion of wood will have a positive impact on the pool of harvested wood products (more carbon stored), but will have a reverse impact on the carbon stored in the forest. While a quantification is challenging, it is planned to explore ways to quantify the effect in the context of the establishment of the Forest Reference Level.”

- Wood Action Plan, section 4.7.3 on page 113:  
“It is a challenge to define and model a scenario including the goal “optimised cascaded use of domestic wood” because this would include a lot of speculative assumptions. Therefore, only a descriptive and not a quantitative estimate is provided. By aiming to use wood for material purposes and afterwards for energetic purposes, the carbon stored in long-lived harvested wood products will increase and therefore the overall mitigation impact is estimated to be positive.”
- Measures within Forest Policy 2020, section 4.7.4 on page 114:  
“According to the Forest Policy 2020, the mitigation impact by substitution is estimated at 1.2 million tonnes of CO<sub>2</sub> equivalents in 2020 (see page 62 in *FOEN*, 2013, for a qualitative evaluation see sections 4.7.3 and 4.7.5 in Switzerland’s seventh national communication and third biennial report). The estimated mitigation impact of 1.2 million tonnes of CO<sub>2</sub> equivalents in 2020 results from the use of wood for materials and energy and includes the mitigation impacts achieved in other sectors, e.g. when wood replaces fossil fuels or CO<sub>2</sub>-intense materials (such as cement and steel) in energy industry, building and housing, industrial processes, etc. This may thus lead to some overlap with the individual estimates of the mitigation impacts for policies and measures affecting these other sectors, however, double counting is carefully avoided for the projections and the estimate of the aggregate effect of policies and measures (as the mitigation effect resulting from substitution of materials and fossil fuels is not accounted for in the WEM and WAM scenarios of the LULUCF sector). The envisaged increase of the consumption of sawn timber and timber products will result in a decrease of carbon stored in the forest, but will in exchange increase the amount of carbon stored in long-lived harvested wood products. While a direct quantification of the Forest Policy 2020 is not available yet, it is being elaborated in the next years in the context of the establishment of Switzerland’s Forest Reference Level that will be used for accounting under the Paris Agreement.”

## Costs of policies and measures

### Section 4.9 on page 116ff

Section 4.9 on page 116ff of Switzerland’s seventh national communication and third biennial report presents information on costs, non-greenhouse gas mitigation benefits and interactions of policies and measures. To enhance the transparency of this section, the following three paragraphs should be added:

“Because market-based policies and measures such as the CO<sub>2</sub> levy and the emissions trading scheme play a dominant role in Switzerland’s climate policy, the administrative costs are generally moderate. For the CO<sub>2</sub> levy, the compensation for implementation expenses is defined in the CO<sub>2</sub> Ordinance (Article 132) and amounts to 1.4 per cent of the receipts (this percentage may be reduced as receipts increase). Non-market-based policies and measures such as the CO<sub>2</sub> emission regulations for newly registered vehicles or the negotiated reduction commitments (for exemption from the CO<sub>2</sub> levy) require more personal and financial resources. The number of exempt firms could increase significantly after 2021, which would lead to a proportional increase of the administrative costs. On the other hand, the Federal Council proposed to fully redistribute the earnings from the CO<sub>2</sub> levy from 2025 onward and to abolish the earmarking for the national buildings refurbishment programme and the technology fund. This would lead to a decrease of administrative costs.”

“The social costs and benefits of the policies and measures are expected to be moderate, but are not measured systematically. The most relevant measure in this context is the CO<sub>2</sub> levy. As of 2018, the rate of the CO<sub>2</sub> levy is 96 Swiss francs per tonne of CO<sub>2</sub>, resulting in annual revenues of about 1.2 billion Swiss francs. A third of the revenues (at most 450 million Swiss francs) flows into the national buildings refurbishment programme, with which the Confederation and the cantons support energy-efficient renovations. Another 25 million Swiss francs is transferred to the technology fund.

Around two thirds of the revenues are available annually for redistribution. The Confederation distributes the funds between the population and the Swiss economy in proportion to the CO<sub>2</sub> levy payed. In 2018, the redistribution to the population was 76 Swiss francs per capita and the redistribution to the Swiss economy was 148 Swiss francs per 100'000 Swiss francs settled old-age and survivor's insurance payroll of employees. If the CO<sub>2</sub> levy is further increased in the future, households living in poorly isolated buildings that still rely on fossil heating systems would be affected relatively strongly. However, the redistribution of the CO<sub>2</sub> levy on a per capita basis significantly moderates these negative effects and also counteracts the regressive nature that carbon taxes generally have.”

“Policies and measures that increase energy efficiency contribute to energy security and reduce the potential costs of shortages in energy supply. The same holds for policies and measures that lower the demand for fossil fuels. These policies and measures reduce the dependency on fossil energy imports.”

## 5 Projections and the total effect of polices and measures

### Polices and measures considered

#### Section 5.1.1 on page 125ff

Tab. 23 on page 125ff of Switzerland's seventh national communication and third biennial report lists the policies and measures considered under the different scenarios. For additional details regarding the accounting of the mitigation impact of the policy and measure “Measures within Forest Policy 2020”, see the amendment “Mitigation impacts of policies and measures” to chapter 4 above.

### Key underlying assumptions

#### Section 5.1.2 on page 126ff

Relevant information regarding key underlying assumptions are reported in section 5.1.2 on page 126ff of Switzerland's seventh national communication and third biennial report. While no further relevant key underlying assumptions are used for the projections, the following background information should be added to this section: “The projected increase in population is dominated by changes in migration, as cases of death will soon be higher than number of births (details regarding the projection of population are available on the website of the Swiss Federal Statistical Office<sup>2</sup>). The projections of other key underlying assumptions such as the gross domestic product, passenger transport, the number of passenger cars, and the number of other vehicles are directly related to the projection of population. The projection of the energy reference area – i.e. the sum of all gross floor areas, above and below ground, which must be heated in order to be used – is also closely related to the projection of population, but also reflects the increasing demand for living area per capita and fewer persons per household. The projections of international energy prices reflect the values used by the International Energy Agency and the European Union. The projection of heating degree days follows the climate scenarios established for Switzerland (see chapter 6 for additional details, in particular section 6.2.8 on page 172ff).”

### Starting point of projections

#### Section 5.2.1 on page 136ff

The bifurcation points of the WEM and WOM scenarios are indicated in Tab. 29 on page 137 of Switzerland's seventh national communication and third biennial report. While implicitly clear, the following clarification should be added to section 5.2.1 on page 136ff regarding the starting points of the WEM and WAM scenarios: “Historical data from the greenhouse gas inventory are used for all available years, i.e. until 2015. The WEM and WAM scenarios thus start after 2015, with the WAM scenario increasingly deviating from the WEM scenario as planned policies and measures (or the planned strengthening of implemented policies and measures) come into force.”

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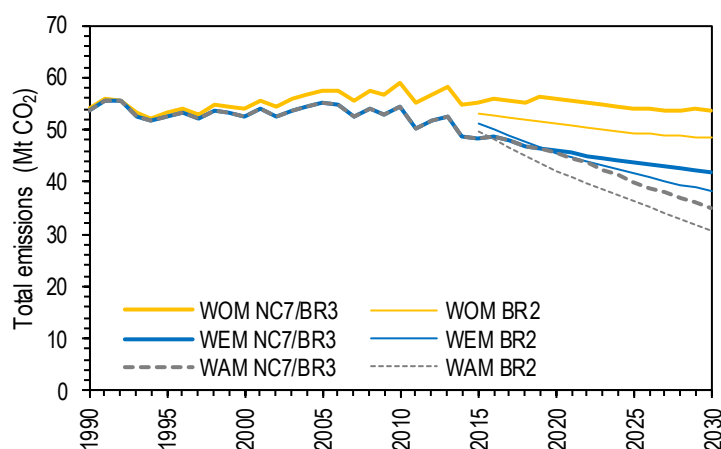
<sup>2</sup> <https://www.bfs.admin.ch/bfs/en/home/statistics/population/population-projections/national-projections.html>

## Main differences in projections

### Section 5.3.8 on page 153

The main differences in the assumptions and methods employed between the most recent projections and those in earlier submissions are discussed in section 5.3.8 on page 153 of Switzerland's seventh national communication and third biennial report. However, the following paragraph should be added to this section to also report on the differences in the resulting projections: "The overall effect of changes to the methodology used to prepare the projections is shown in Fig. 1 of this amendment. Compared to the previous submission, the most recent WEM scenario is 1.0 per cent and 9.7 per cent higher by 2020 and 2030, respectively. The most recent WOM scenario is 9.4 per cent and 11.2 per cent higher by 2020 and 2030, respectively. The most recent WAM scenario is 8.7 per cent and 14.2 per cent higher by 2020 and 2030, respectively."

**Fig. 1 > Changes in projections as reported in Switzerland's seventh national communication and third biennial report (thick lines) and Switzerland's second biennial report (thin lines). Shown are total emissions without LULUCF. Main differences result from updated projections in the transport sector, but the change from *Prognos* (2012) to the computable general equilibrium model (*EPFL and Infrac*, 2016) affected the full set of projections in the energy sector.**



## Sensitivity analysis

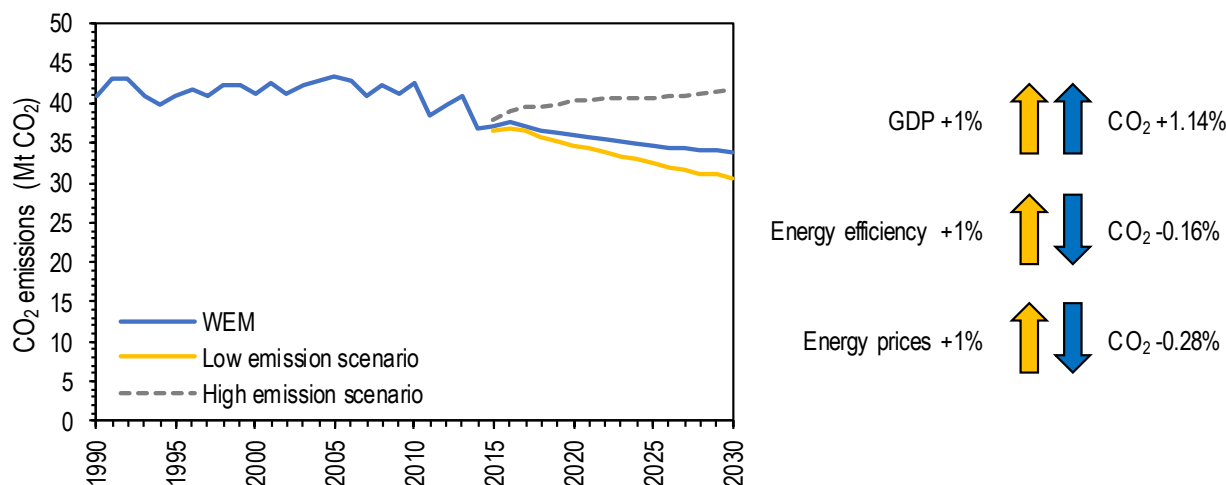
### Section 5.3.9 on page 153ff

The sensitivity analysis of Switzerland's greenhouse gas emissions scenarios for the energy sector are discussed in detail in chapter 5 of *EPFL and Infrac* (2016). To make the information available to a broad readership, this report was written in English rather than in one of the official languages of Switzerland. Nevertheless, to provide a complete summary of the main results directly in Switzerland's seventh national communication and third biennial report, the following paragraph should be added to section 5.3.9 on page 153ff: "For the low and high scenario, the altered key underlying assumptions were selected as shown in Tab. 1 of this amendment and the resulting emission scenarios are shown in Fig. 2 of this amendment. *EPFL and Infrac* (2016) had to restrict the sensitivity analysis to a very limited number of scenarios (i.e. resulting emission pathways calculated with a set of altered key underlying assumptions), rather than performing analyses in which all the main assumptions of the models are altered over a range of plausible values. This is because back-casting different paths requires recalibration of the model, a task which cannot be performed for ranges of plausible values (for more details see section 5.1 of *EPFL and Infrac*, 2016)."

**Tab. 1 > Key underlying assumptions under the low and high emission scenarios (sensitivity analysis).**

Key underlying assumption	Low emission scenario	Reference	High emission scenario
Gross domestic product in 2030	96%	100%	104%
International price of oil	100%	100%	50%
International price of gas	100%	100%	50%
Technological progress	75%	100%	125%
Bottom-up estimates	70%	100%	130%

**Fig. 2 > Sensitivity analysis (CO<sub>2</sub> emissions from the energy sector, based on EPFL and Infrac, 2016). Left: Low and high emission scenarios produced by combining the altered key underlying assumptions in such a way that the new sets of key underlying assumptions either favour high emissions or low emissions (see Tab. 1). Also shown is the WEM scenario. Right: Stimulated changes in CO<sub>2</sub> emissions from the energy sector by a change of one per cent in a particular key underlying assumption.**



## 6 Vulnerability assessment, climate change impacts and adaptation measures

### Freezing level (climate change impacts)

#### Section 6.2.2 on page 163ff

The first two sentences in section 6.2.2 on page 163ff of Switzerland's seventh national communication and third biennial report should read: "In wintertime, the seasonal freezing level (altitude, where surface air temperature is zero degree Celsius) has risen from approximately 600 metres in the 1960s to approximately 900 metres in the 1990s (about 200 meters per degree Celsius of warming) (*Scherrer and Appenzeller, 2006*). Applying this relationship to the expected future warming in winter (see *CH2011, 2011* for temperature scenarios), the freezing level will further rise by about 280 metres until 2060 in case of a mitigation scenario (temperature rise of about +1.4 degrees Celsius, best estimate) and by about 460 metres in case of a non-intervention scenario (temperature rise of about +2.3 degrees Celsius, best estimate)."

### Financial, technological and capacity-building support for adaptation

#### Chapter 6 on page 157ff

The following paragraph should be added to chapter 6 on page 157ff of Switzerland's seventh national communication and third biennial report (e.g. as a separate section at the end of the chapter) to refer the reader to the information Switzerland reports regarding action taken to implement Article 4.1(b) and (e) with regard to adaptation: "Switzerland has undertaken a broad range of cooperative actions to support developing countries in reducing their vulnerability to the unavoidable consequences of climate change, while also minimizing social and economic costs and thereby preparing them for adaptation to climate change impacts. This information is reported in chapter 7 of Switzerland's seventh national communication and third biennial report, in particular on page 199 to 202 (under the heading "Adaptation"). There, some examples of the climate change adaptation support to developing countries including support through cooperative action are highlighted."

## 7 Financial, technological and capacity-building support

There is no amendment to chapter 7 of Switzerland's seventh national communication and third biennial report.

## 8 Research and systematic observation

### Space-based observing programmes

#### Section 8.3 on page 228ff

To enhance Switzerland's reporting on systematic observation, in particular by information regarding space-based observing programmes, the following paragraph should be added to section 8.3 on page 228ff of Switzerland's seventh national communication and third biennial report: "Further, through its membership in the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), Switzerland contributes to a global infrastructure for monitoring climate from space. Through various projects and initiatives, EUMETSAT also provides comprehensive support to developing countries, particularly in Africa."

### Support for developing countries to establish and maintain observing systems

#### Section 8.3.5 on page 234ff

Information on support for developing countries to establish and maintain observing systems, and related data and monitoring systems is provided in section 8.3.5 on page 234ff of Switzerland's seventh national communication and third biennial report. To further enhance the reported information, the following paragraph should be added at the end of this section: "While the CATCOS project has come to an end in 2016, twinning activities by Swiss and international partners have continued post-project, e.g. through the activities as mentioned above. Also, MeteoSwiss has continued to identify opportunities for international capacity-building activities."

### Archiving of data (systematic observation)

#### Section 8.3.5 on page 234ff

To report on information regarding opportunities for and barriers to free and open international exchange of data and information as well as action taken to overcome barriers, the following paragraph should be added to section 8.3.5 on page 234ff of Switzerland's seventh national communication and third biennial report: "At the national level, Swiss GCOS data are obtained, quality-controlled, and then archived by the responsible institutions in a variety of data holding systems to ensure their long-term availability. Swiss GCOS data are also submitted to the designated international data centres, as highlighted in *MeteoSwiss* (2015). This report also showed that in some cases, there is still room for improvement, in particular for data in the terrestrial domain of GCOS. A priority of the Swiss GCOS Office as the national focal point for GCOS is to constantly improve the availability of Swiss GCOS data internationally. In the near future, an update of the 2015 report is planned to re-assess the situation in terms of the availability of Swiss GCOS data in international data centres. These efforts are based on the GCOS Switzerland Strategy 2017–2026, in particular Strategic Priority 1.5 (ensure that standardized observations of all Essential Climate Variables (ECV) are archived and made freely available to all interested users)."

## 9 Education, training and public awareness

There is no amendment to chapter 9 of Switzerland's seventh national communication and third biennial report.

## Annex B Third biennial report

### Description of quantified economy-wide emission reduction target

#### Section B.3.1 on page 253ff

Section B.3.1 on page 253ff of Switzerland's seventh national communication and third biennial report states that "Switzerland's quantified economy-wide emission reduction target under the UNFCCC is – in a consistent manner – implemented under the Kyoto Protocol, making Switzerland's emission reduction commitment internationally binding". The section further states that "Switzerland entered into a quantified emission limitation or reduction commitment of 84.2 per cent of the base year (1990) level for the second commitment period of the Kyoto Protocol (2013–2020). This quantified emission limitation or reduction commitment implements and details in a consistent manner Switzerland's quantified economy-wide emission reduction target of 20 per cent below the emissions of the year 1990, to be reached by 2020." To further elaborate on the meaning of the above-mentioned statements, the following paragraph should be added to section B.3.1 on page 253ff of Switzerland's seventh national communication and third biennial report:

“Consistently implementing the quantified economy-wide emission reduction target under the UNFCCC under the quantified emission limitation or reduction commitment under the Kyoto Protocol means that Switzerland will assess the fulfilment of the quantified economy-wide emission reduction target under the UNFCCC by accounting against its quantified emission limitation or reduction commitment under the second commitment period of the Kyoto Protocol. By reaching its quantified emission limitation or reduction commitment under the second commitment period of the Kyoto Protocol, Switzerland will also consider the quantified economy-wide emission reduction target under the UNFCCC as fulfilled.”

## Base year emissions

### Section B.3.2 on page 254

Section B.3.2 on page 254 of Switzerland's seventh national communication and third biennial report states that Switzerland's base year emissions are defined in Switzerland's Second Initial Report under the Kyoto Protocol (in particular in the update following the in-country review by an expert review team coordinated by the UNFCCC secretariat, see also FCCC/IRR/2016/CHE). To enhance the transparency of the reporting, the actual value of base year emissions should be added to this paragraph as follows: “The relevant base year emissions are 53'706'729 tonnes of CO<sub>2</sub> equivalents and the assigned amount for the second commitment period of the Kyoto Protocol is 361'768'524 tonnes of CO<sub>2</sub> equivalents.”

## References

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