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Report on the technical review of the eighth national communication and the technical review of the fifth biennial report of Switzerland

Parties included in Annex I to the Convention were requested by decision 6/CP.25 to submit their eighth national communication to the secretariat by no later than 31 December 2022. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the eighth national communication and relevant supplementary information under the Kyoto Protocol of Switzerland, conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

Developed country Parties were requested by decision 6/CP.25 to submit their fifth biennial report to the secretariat by no later than 31 December 2022. This report presents the results of the technical review of the fifth biennial report of Switzerland, conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention".

The review of these submissions took place in Bern, Switzerland, from 29 January to 2 February 2024.

Contents

Abbreviations and acronyms

AAU	assigned amount unit
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CER	certified emission reduction
CH_4	methane
CHF	Swiss franc(s)
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
DAC	Development Assistance Committee
ERT	expert review team
ETS	emissions trading scheme of Switzerland
EU ETS	European Union Emissions Trading System
GAW	Global Atmospheric Watch Programme
GCOS	Global Climate Observing System
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IE	included elsewhere
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MeteoSwiss	Swiss Federal Office for Meteorology and Climatology
N_2O	nitrous oxide
NA	not applicable
NC	national communication
NCCS	Swiss National Centre for Climate Services
NDC	nationally determined contribution
NE	not estimated
NF_3	nitrogen trifluoride
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2”
SDG	Sustainable Development Goal
SF_6	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC8 and BR5 of Switzerland. The review was organized by the secretariat in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention", particularly "Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" and "Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention" (annex to decision 13/CP.20), and the "Guidelines for review under Article 8 of the Kyoto Protocol" (annex to decision 22/CMP.1 and annex I to decision 4/CMP.1).

2. In accordance with decision 13/CP.20, a draft version of this report was transmitted to the Government of Switzerland, which provided comments that were considered and incorporated with revisions into this final version of the report.

3. The review was conducted from 29 January to 2 February 2024 in Bern, Switzerland, by the following team of nominated experts from the UNFCCC roster of experts: Hakan Aydoğan (Türkiye), Gilles Croquette (France), Claudia Hitaj (Luxembourg), Awassada Phongphiphat (Thailand) and Alexander Valencia (Colombia). Gilles Croquette and Awassada Phongphiphat were the lead reviewers. The review was coordinated by Jamie Howland and Anil Raut (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of Switzerland in accordance with the UNFCCC reporting guidelines on NCs,[1] the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol[2] and of the information reported in the BR5 of Switzerland in accordance with the UNFCCC reporting guidelines on BRs.[3]

1. Timeliness

5. The NC8 was submitted on 16 September 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. Switzerland submitted an amendment to its NC8 on 13 February 2024 to address issues raised during the review. Detailed information on improvements related to the submitted amendment is provided in paragraph 11 below. Unless otherwise specified, the information and values from the latest NC submission are used in this report.

6. The BR5 was submitted on 16 September 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were also submitted on 16 September 2022.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

7. Issues and gaps identified by the ERT related to the information reported by Switzerland in its NC8 are presented in tables 1–2. The information reported, including the supplementary information under the Kyoto Protocol, completely adheres to the UNFCCC reporting guidelines on NCs.

[1] Decision 6/CP.25, annex.
[2] Decision 15/CMP.1, annex, and decision 3/CMP.11, annex III.
[3] Decision 2/CP.17, annex.

8. The ERT noted that Switzerland made improvements to the reporting in its NC8 compared with that in its NC7, including by addressing an encouragement from the previous review report in the area of projections and the total effects of PaMs.

Table 1
Assessment of completeness and transparency of mandatory information reported by Switzerland in its eighth national communication

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendation*
Executive summary	Complete	Transparent	–
National circumstances relevant to GHG emissions and removals	Complete	Transparent	–
GHG inventory	Complete	Transparent	–
PaMs	Complete	Transparent	–
Projections and the total effect of PaMs	Complete	Transparent	–
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent	–
Financial resources and transfer of technology	Complete	Transparent	–
Research and systematic observation	Complete	Transparent	–
Education, training and public awareness	Complete	Transparent	–

Note: The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

Table 2
Assessment of completeness and transparency of mandatory supplementary information under the Kyoto Protocol reported by Switzerland in its eighth national communication

Supplementary information under the Kyoto Protocol	*Completeness*	*Transparency*	*Reference to description of recommendation*
National system	Complete	Transparent	–
National registry	Complete	Transparent	–
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	–
PaMs in accordance with Article 2	Complete	Transparent	–
Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	–
Information under Article 10	Complete	Transparent	–
Financial resources	Complete	Transparent	–
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	–

Note: The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

9. Issues and gaps identified by the ERT related to the information reported by Switzerland in its BR5 are presented in table 3. The information reported completely adheres to the UNFCCC reporting guidelines on BRs.

10. The ERT noted that Switzerland made improvements to the reporting in its BR5 compared with that in its BR4 by addressing all recommendations and encouragements from the previous review report in the area of the provision of financial, technological and capacity-building support to developing country Parties. Switzerland submitted, for the first time, BR CTF tables 8–9 (on the provision of support for technology development and transfer and capacity-building). In addition, in the summary table on bilateral climate finance, the Party distinguished between public and mobilized private climate finance and only reported on bilateral assistance to non-Annex I Parties.

Table 3
Summary of completeness and transparency of mandatory information reported by Switzerland in its fifth biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation*
GHG emissions and removals	Complete	Transparent	–
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	–
Progress in achievement of targets	Complete	Transparent	–
Provision of support to developing country Parties	Complete	Transparent	–

Note: The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

11. In the amendment to the NC8 submitted by the Party during the review, the information on the following had been improved:

(a) National circumstances relevant to GHG emissions and removals, by providing a definition of 'fuel tourism';

(b) PaMs, by providing information on the coordination on PaMs between the Swiss Confederation and cantons and on the costs of the feed-in tariff system;

(c) Projections and the total effects of PaMs, by including figures for the source categories in the energy sector and providing additional information on the changes in models and approaches used since the previous submission;

(d) Financial, technological and capacity-building support, by explaining that the Party's climate finance assists developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects and by describing the methodology that the Party used to identify developing country Parties that are particularly vulnerable to the adverse effects of climate change.

II. Technical review of the information reported in the eighth national communication and fifth biennial report

A. National circumstances relevant to greenhouse gas emissions and removals

1. Technical assessment of the reported information

12. The NC8 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater.

13. Switzerland's population increased by 28 per cent between 1990 and 2020, reaching 8.67 million at the end of that period. After increasing at a rate of 1 per cent per year during 2007–2016, population growth slowed to 0.75 per cent per year. Population density was 210 persons/km^2 at the end of 2020.

14. Switzerland's nominal gross domestic product was CHF 706 billion in 2020. Gross domestic product in 2019 was 54 per cent above the 1990 value. A substantial decrease attributable to the measures put in place as a result of the coronavirus disease 2019 pandemic was observed in 2020.

15. Mean final energy consumption, observed over five-year periods, was highest during 2009–2013; consumption in that period was 10 per cent higher than in 1988–1992. Final energy consumption has slightly decreased over the past decade. Its value in 2020 was markedly lower than values for other recent years owing to the effects of pandemic-related measures.

Compared with the level in 1990, final energy demand in 2019 was about 6 per cent higher for the services sector, about 4 per cent lower for industry and about 5 per cent lower for households. In contrast, the final energy demand of the transport sector significantly increased – by about 19 per cent – between 1990 and 2019. A notable temporary decrease in energy consumption in the transport sector was observed in 2015 owing to fuel tourism, which is defined as the effect of fluctuating fuel price differentials between Switzerland and its neighbouring countries, driving cross-border purchases.

16. Meteorological conditions have a significant effect on final energy demand in the country, which leads to large inter-annual variations. Such impacts on consumption are especially strong for households. The temperature in Switzerland has increased by about twice that of the global mean temperature increase compared with pre-industrial levels. The average number of days with maximum temperature ⩾25 °C has more than doubled, from roughly 25 per year in the 1960s to more than 50 in 2020. During the same period, the number of heating degree days has decreased by 15–20 per cent.

17. About 70 per cent of Switzerland's agricultural land is grassland. The number of cattle decreased by 22 per cent between 1990 and 2020, and the swine population decreased by 36 per cent over the same period. The milk yield of mature dairy cattle increased from 15.8 kg/head/day in 1990 to 23.3 kg/head/day in 2020.

18. In the NC8 Switzerland reported that forest area is expanding, with an increase of 11 per cent being observed in the fourth national forest inventory (2009–2017) since the first national forest inventory was conducted (1983–1985). Forest exploitation is concentrated in the central lowlands, which accounts for about 40 per cent of total wood harvested. The standing volume of living trees has increased over the past 30 years: volume increased by 2.9 per cent between the third (2004–2006) and fourth (2009–2017) national forest inventories. During the review, Switzerland indicated that the most recent forest inventory (2018–2022), published after the submission of the NC8, shows a different situation from that in Swiss forests up until 2017, namely, the mortality of trees has increased due to bark beetle infestation and weather extremes (high temperatures and drought). However, in recent years, growing stock has stayed more or less constant because the change in mortality has been balanced by increased standing volumes in some regions.

2. Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Greenhouse gas inventory information[4]

1. Technical assessment of the reported information

20. Switzerland reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements using GWP values from the AR4. More recent information on GHG emissions was reported in Switzerland's 2023 inventory submission, for which GWP values from the AR5 were used. Total GHG emissions[5] excluding emissions and removals from LULUCF decreased by 20.7 per cent between 1990 and 2020, while total GHG emissions including net emissions or removals from LULUCF also decreased by 20.7 per cent over the same period. Total emissions excluding emissions and removals from LULUCF peaked in 1991 and decreased thereafter.

[4] GHG emission data in this section, for which GWP values from the AR5 were used, are based on Switzerland's 2023 inventory submission, version 3, which has not been subject to review. All emission data in subsequent chapters are based on Switzerland's BR5 CTF tables, for which GWP values from the AR4 were used unless otherwise noted.

[5] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF and including indirect CO_2 emissions, unless otherwise specified.

21. There is no discernible trend in overall emissions including or excluding emissions and removals from LULUCF in 1990–2005. Only from about 2010 onward does a decreasing trend become evident. Net CO_2 eq removals contributed by LULUCF were generally smaller after 1997. The overall emission reduction seen between 1990 and 2021 is 18.2 per cent excluding LULUCF and 19.1 per cent including LULUCF. Compared with 2020, emissions increased in 2021 by 3.1 per cent after their significant decrease between 2019 and 2020. This decrease in emissions can be partially explained by the lockdown and other measures implemented as a result of the pandemic, which affected Switzerland from March 2020 onward. In particular, these measures led to reduced traffic volume, which, in turn, led to a reduction in CO_2 emissions. In 2021, the effects of the measures are still visible in the level of emissions from road transportation. However, owing to relatively cold winter months in 2021 and a significant increase in heating degree days, emissions from source category 1.A.4 (other sectors) increased, which is the main reason that emissions are higher in 2021 than in 2020.

22. Switzerland reported in its NC8 that over 1990–2020 per capita GHG emissions decreased by 37.6 per cent, from 8.1 to 5.0 t CO_2 eq.

23. Switzerland evaluates its carbon footprint, which it does from a consumption perspective that considers both imports and exports. During the review, the Party indicated that GHG emissions from this consumption perspective have slightly decreased over the past two decades (roughly 2000 to 2020), from about 17 to about 13 t CO_2 eq per capita.

24. Table 4 illustrates the emission trends by sector and by gas for Switzerland. The emissions reported in the 2023 inventory submission differ from the data reported in CTF table 1 in that GWP values from the AR5 rather than the AR4 are used.

Table 4
Greenhouse gas emissions by sector and by gas for Switzerland for 1990–2021

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2020*	*2021*	*1990–2020*	*2020–2021*	*1990*	*2021*
Sector									
1. Energy	41 898.57	42 240.31	43 228.63	32 659.55	34 148.16	–22.1	4.6	76.3	75.7
A1. Energy industries	2 514.20	3 168.62	3 842.55	3 271.00	3 221.02	30.1	–1.5	4.6	7.1
A2. Manufacturing industries and construction	6 568.13	6 004.89	5 860.09	4 498.55	4 593.91	–31.5	2.1	12.0	10.2
A3. Transport	14 687.70	15 954.19	16 321.71	13 563.48	13 752.42	–7.7	1.4	26.7	30.5
A4. and A5. Other	17 726.09	16 716.38	16 898.21	11 093.69	12 351.66	–37.4	11.3	32.3	27.4
B. Fugitive emissions from fuels	402.44	396.25	306.07	232.82	229.15	–42.1	–1.6	0.7	0.5
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	3 943.35	3 674.97	4 395.46	4 087.32	3 933.36	3.7	–3.8	7.2	8.7
3. Agriculture	6 801.12	6 136.66	6 182.71	5 858.68	5 897.73	–13.9	0.7	12.4	13.1
4. LULUCF	–1 763.79	5 264.60	–2 807.22	–1 426.68	–1 875.08	19.1	–31.4	NA	NA
5. Waste	2 278.34	1 772.09	1 484.46	1 171.37	1 142.13	–48.6	–2.5	4.1	2.5
6. Other[a]	12.51	15.31	15.59	12.81	14.35	2.4	12.0	0.0	0.0
Gas[b]									
CO_2	44 161.00	43 614.19	45 043.33	34 235.23	35 787.34	–22.5	4.5	80.4	79.3
CH_4	6 512.70	5 739.33	5 580.80	5 092.86	5 104.00	–21.8	0.2	11.9	11.3
N_2O	4 014.18	3 670.80	3 236.06	2 948.29	2 845.14	–26.6	–3.5	7.3	6.3
HFCs	0.02	603.90	1 244.35	1 322.70	1 241.48	5 871 165.8	–6.1	0.0	2.8
PFCs	104.77	54.34	35.67	34.44	28.37	–67.1	–17.6	0.2	0.1
SF_6	141.21	156.79	154.77	155.84	129.03	10.4	–17.2	0.3	0.3
NF_3	NA, NO	NA, NO	11.87	0.39	0.37	NA	–4.1	NA	0.0

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2020*	*2021*	*1990–2020*	*2020–2021*	*1990*	*2021*
Total GHG emissions excluding LULUCF	**54 933.88**	**53 839.34**	**55 306.85**	**43 789.74**	**45 135.72**	**–20.3**	**3.1**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**53 170.09**	**59 103.95**	**52 499.63**	**42 363.06**	**43 260.64**	**–20.3**	**2.1**	**NA**	**NA**
Total GHG emissions excluding LULUCF, including indirect CO_2	**55 344.98**	**54 068.94**	**55 456.85**	**43 906.56**	**45 248.58**	**–20.7**	**3.1**	**NA**	**NA**
Total GHG emissions including LULUCF, including indirect CO_2	**53 581.19**	**59 333.55**	**52 649.63**	**42 479.88**	**43 373.50**	**–20.7**	**2.1**	**NA**	**NA**

Source: GHG emission data: Switzerland's 2023 inventory submission, version 3.

[a] Emissions and removals reported under the sector other (sector 6) are included in total GHG emissions. Switzerland reported that emissions under the sector other are from fire damage to buildings and motor vehicles.

[b] Emissions by gas without LULUCF and excluding indirect CO_2. The Party report indirect CO_2 emissions separately in common reporting format table 6.

25. In brief, Switzerland's national inventory arrangements were established in accordance with the Federal Council decree of 8 November 2006. There have been no changes in these arrangements since the BR4.

2. Assessment of adherence to the reporting guidelines

26. The ERT assessed the information reported in the NC8 and BR5 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

27. Switzerland provided in the NC8 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1 in conjunction with decisions 3/CMP.11 and 4/CMP.11. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC8 also contains a reference to the description of the national system provided in the national inventory report of the 2022 annual submission. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2022 annual submission of Switzerland.

(b) Assessment of adherence to the reporting guidelines

28. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

29. In its NC8 Switzerland provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 in conjunction with decision 3/CMP.11 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The Party reported that an agreement linking the ETS and the EU ETS entered into force on 1 January 2020.

(b) Assessment of adherence to the reporting guidelines

30. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

C. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

31. Switzerland reported information on its economy-wide emission reduction target in its BR5. For Switzerland the Convention entered into force on 21 March 1994. Under the Convention Switzerland committed to reducing its GHG emissions by 20 per cent below the 1990 level by 2020. The target includes all GHGs included in the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories", namely CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3. It also includes all Intergovernmental Panel on Climate Change sources and sectors included in the annual GHG inventory, excluding LULUCF. The GWP values used are from the AR4. Emissions and removals from the LULUCF sector are included in the target using an activity-based accounting approach. The Party reported that it will use gross-net accounting for afforestation, reforestation and deforestation, and net-net accounting, based on its forest management reference level, for forest management. Switzerland also reported that it planned to make use of market-based mechanisms for achieving its target (see para. 56 below), including international carbon credits from the Climate Cent Foundation and its own carry-over AAUs from the first commitment period of the Kyoto Protocol.

32. In its BR5 Switzerland reported that its emission reduction target under the Convention was operationalized through the legally binding second commitment period of the Kyoto Protocol (2013–2020). This means that Switzerland's commitment under the Convention will be considered fulfilled if it achieves its target for the second commitment period of the Kyoto Protocol. Switzerland's target under the Kyoto Protocol is to reduce emissions by 15.8 per cent below the 1990 level in 2013–2020. In absolute terms, taking into account its base-year emissions for the second commitment period of the Kyoto Protocol of 53,706.73 kt CO_2 eq, the Party's total estimated emission budget for 2013–2020, including accounting for units from market-based mechanisms and the contribution of LULUCF, is 361,768.52 kt CO_2 eq,[6] equivalent to average annual emissions of 45,221.07 kt CO_2 eq in 2013–2020.

33. In addition to its 2020 target, Switzerland also has longer-term targets for 2030 and 2050. Switzerland submitted an updated version of its first NDC to the secretariat on 9 December 2020, which contains the target to reduce its GHG emissions by at least 50 per cent compared with the 1990 level by 2030, corresponding to an average annual reduction in emissions of at least 35 per cent over 2021–2030. To achieve this target, Switzerland plans to make use of internationally transferred mitigation outcomes from cooperation under Article 6 of the Paris Agreement.

34. Switzerland reported in its NC8 that, under the prolongation of the second version of its Federal Act on the Reduction of CO_2 Emissions (known as the CO_2 Act), an annual reduction in emissions of 1.5 per cent compared with the 1990 level is required for 2021–2024, with at least 75 per cent of this reduction to be achieved with domestic measures. The reduction is not broken down into sectoral targets, although the CO_2 Act allows for the Federal Council to do so. The ERT noted that the reference emission level for 2020 against which the annual 1.5 per cent reduction is to be considered is not defined in the BR5. During the review, the Party clarified that discussions on the development of the third CO_2 Act (2025) are ongoing and that

[6] Switzerland's report to facilitate the calculation of the assigned amount pursuant to Article 3, paragraphs 7–8, of the Kyoto Protocol for the second commitment period (2013–2020), available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-kyoto-protocol/second-commitment-period/initial-reports.

the minimum emission reduction to be achieved with domestic measures is still under parliamentary debate. The Federal Council has proposed that emission reductions should be predominantly achieved in Switzerland, without quantifying "predominantly" but noting that the domestic share of the emission reduction could be specified by the Federal Council in the Ordinance on the Reduction of CO_2 Emissions (known as the CO_2 Ordinance). The Council of States agreed with this proposal. The National Council, however, has suggested revising article 3 of the CO_2 Act to include in the target for 2030 a domestic contribution of at least 75 per cent of the overall emission reduction. Given there are two different proposals, the issue will be resolved following a specific procedure.

35. Switzerland aims to reduce its GHG emissions to net zero by 2050. This target is part of its long-term climate strategy to 2050, which was submitted to the secretariat on 28 January 2021. The strategy sets out 10 strategic principles for Switzerland's climate policy in the coming years. It also presents climate-related goals and emission pathways for the buildings, industry, transport, agriculture and food sectors; financial markets; synthetic gases; aviation; and the waste industry. According to the strategy, by 2050 Switzerland can reduce its GHG emissions by around 90 per cent compared with the 1990 level, in particular by applying proven technologies that eliminate the use of fossil energy carriers. Carbon dioxide capture and storage (in Switzerland or abroad) will be used to abate emissions from large point sources such as waste incineration and cement plants. The remaining 10 per cent of reductions, needed to mitigate hard-to-abate emissions mainly from the agriculture and industry sectors, will be achieved using negative-emission technologies (i.e. biological and technical processes aimed at extracting CO_2 from the atmosphere and fixing it sustainably in forests, soils, wood products or other carbon sinks). During the review, the Party clarified that the net zero target for 2050 is now included in a framework law adopted on 13 June 2023. The law includes emission reduction pathways from 2030 to 2050 (e.g. for 2041–2050, an 89 per cent reduction in emissions compared with the 1990 level); indicative sectoral targets for buildings, transport and industry for 2040 and 2050; a net zero target for 2040 for the Swiss Confederation (taking into account all emissions); and the target that all companies must achieve net zero emissions by 2050.

2. Assessment of adherence to the reporting guidelines

36. The ERT assessed the information reported in the BR5 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

D. Information on policies and measures

1. Technical assessment of the reported information

37. Switzerland provided in its NC8 and BR5 information on its PaMs[7] implemented, adopted and planned to fulfil its commitments under the Convention. Switzerland's set of PaMs is similar to that previously reported, with a few exceptions. The Party also reported on PaMs that have been discontinued since its previous submission; for instance, the obligation to offset emissions from gas-fired combined-cycle power plants is indicated as no longer in place, as such plants are now included in the ETS.

38. Switzerland reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs. Switzerland indicated that there have been no changes to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target. The Federal Office for the Environment is responsible for monitoring the progress of implementation of mitigation PaMs. The Act on Archiving regulates the archiving of all information compiled for the GHG inventories, including that on the implementation of PaMs. Switzerland underlined

[7] The UNFCCC reporting guidelines on BRs use the term "mitigation actions", whereas the UNFCCC reporting guidelines on NCs use the term "policies and measures". The terms are used interchangeably in this report to refer to the relevant information in either the NC or BR.

the role of the interdepartmental committee on climate (IDA-Klima), established in 2008, in coordinating the policymaking process at the federal level.

39. In the NC8 the Party reported that the goal of the climate strategy for Swiss agriculture adopted in 2011 is to reduce GHG emissions by one third by 2050 compared with the 1990 level through technical, operational and organizational measures and by another third through measures influencing food consumption and production. The revised strategy has a broader approach, taking into account the whole food production system. The revised goals for 2050 are to reduce GHG emissions from Swiss food production by 40 per cent compared with the 1990 level and to reduce the GHG footprint of the food consumed by the Swiss population by two thirds compared with the 2020 level. During the review, the Party informed the ERT that the revised strategy was adopted in September 2023.

40. Switzerland's assessment of the economic and social consequences of its response measures includes the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties. Switzerland reported that its actions to identify and review its own policies and practices that encourage activities that lead to greater levels of emissions are related to its cooperation on the development of low carbon technologies, capture and storage of GHG emissions, and energy efficiency in activities that use fossil fuels.

41. In its reporting on PaMs, Switzerland provided the estimated emission reduction impacts for most of its PaMs. Where estimated impacts were not provided, the Party supplied an explanation specific to individual PaMs. The PaMs for which estimated emission reduction impacts were not provided include the Carbon Offsetting and Reduction Scheme for International Aviation, the Forest Act and the SwissEnergy Programme. The Party explained that estimated impacts were not provided for some PaMs because the data needed to generate them are not available, they have uncertain programme modalities or they have mitigation impacts that are difficult to estimate. Switzerland estimated the impacts of some of its PaMs in groups. The Party explained during the review that impacts were estimated for groups of PaMs in some cases because these PaMs have effects on one another.

42. The Party described the different methodologies used for estimating the impacts of its individual or groups of PaMs. These methodologies have been completely updated since the BR4 for the energy sector, whereas for other sectors (IPPU, agriculture, LULUCF and international transport) minor updates were made. Switzerland reported supporting information further explaining the methodologies used and the changes made since the BR4. For the energy sector, Switzerland made updates to the methodologies that are linked to and consistent with the changes made to the methodologies for preparing the WEM and WAM scenarios, which are now based on projections from the Energy Perspectives 2050+ report. For the other sectors, methodologies were modified chiefly to ensure consistency with the national GHG inventory data. The Party estimated the scale of the changes in results as percentages and included figures showing these changes in both levels and trajectories up until 2035 for the WEM, WAM and WOM scenarios.

43. The second CO_2 Act (2011) provides the framework for future climate policy and for Switzerland meeting its emission reduction target through the end of 2024. The national reduction target stipulated in the second CO_2 Act is a 20 per cent decrease in domestic GHG emissions by 2020 compared with the 1990 level. The mitigation effect of the CO_2 levy on heating and process fuels is the most significant, with a projected mitigation effect of 2,250 kt CO_2 eq in 2025. Other policies that have delivered significant emission reductions are the building codes for cantons and the national buildings refurbishment programme, which are expected to reduce emissions by 1,760 and 1,490 kt CO_2 eq respectively in 2025. The ERT identified the ETS as a mitigation action of particular interest because its estimated mitigation impact is projected to be more than double in 2025 what it was in 2020. Some of the Party's PaMs, such as the national buildings refurbishment programme, are funded by revenue from the CO_2 levy on heating and process fuels. This programme, which provides subsidies to promote the use of renewable energy sources in the building industry while also making buildings more energy efficient, is financed by one third of the CO_2 levy and additional funding from the cantons.

44. Switzerland highlighted the mitigation actions that are under development, such as the third CO_2 Act, which is to come into force in 2025. With this Act, Switzerland plans to decrease total GHG emissions (relative to 1990) by at least 50 per cent by 2030 and at least 35 per cent over 2021–2030, including reductions achieved abroad. The continuation or planned strengthening of established mitigation actions will provide a foundation for significant additional action. For instance, the continuation of the CO_2 levy on heating and process fuels and the planned strengthening of PaMs in the buildings, transport and industry sectors are part of the Party's pathway to achieving net zero in the longer term. Table 5 provides a summary of the reported information on the PaMs of Switzerland.

Table 5
Summary of information on policies and measures reported by Switzerland

Sector	*Key PaMs*[a]	*Estimated mitigation impact in 2020 (kt CO_2 eq)*	*Estimated mitigation impact in 2025 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Second CO_2 Act	IE[b]	IE[b]
	ETS	600	1 380
	CO_2 levy on heating and process fuels	2 000	2 250
Energy			
Energy efficiency	National buildings refurbishment programme	1 120	1 490
Energy supply and renewable energy	Feed-in tariff system	432	505
Transport	CO_2 emission regulations for newly registered vehicles	210	550
	Partial compensation of CO_2 emissions from motor fuel use	1 300	NE
	Mineral oil tax reduction on biofuels and natural gas	IE[b]	IE[b]
IPPU	Provisions relating to substances stable in the atmosphere (HFCs, PFCs, SF_6, NF_3)	1 113	1 566
	Non-methane volatile organic compound incentive fee	380	380
	Obligations in relation to chemical conversion processes (N_2O)	NA	550
Agriculture	Proof of ecological performance to receive direct payments	700	700
	Climate strategy for agriculture	NE	NE
	Agricultural policy 2014–2017 and agricultural policy 2018–2021	300	300
LULUCF	Measures under the Forest Policy	1 200	1 200
Waste	Ban on landfilling of combustible waste	173	145
	Ordinance on the avoidance and management of waste	28	28

Note: The estimated mitigation impacts are estimates of emissions of CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

[a] Names of PaMs reproduced as reported in Switzerland's BR5.
[b] The mitigation impacts of the second CO_2 Act are accounted for under the PaMs that are part of the Act.

45. Switzerland had an interdepartmental sustainable development committee until 2018, which defined priorities for action and oversaw the implementation and monitoring of progress on sustainable development with the intention of making sustainability assessments an integral part of decision-making and policy evaluation. This committee was replaced in 2018 when the Federal Council established the 2030 Agenda Steering Committee in the framework of the 2030 Agenda for Sustainable Development. The new committee monitors the country's progress in achieving the SDGs and sets national targets and develops appropriate measures relevant to achieving them.

2. Assessment of adherence to the reporting guidelines

46. The ERT assessed the information reported in the NC8 and BR5 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

47. In its NC8 Switzerland reported that the implementation of the Kyoto Protocol is underpinned by the Federal Constitution of the Swiss Confederation. The overall responsibility for climate change policymaking lies with the 2030 Agenda Steering Committee (see para. 45 above), and a number of national institutions are involved in policy implementation.

48. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Switzerland committed to reducing its GHG emissions by 15.8 per cent below the base-year level (see para. 32 above).

49. The Party has arrangements and enforcement procedures to meet its commitments under the Kyoto Protocol, including procedures for addressing non-compliance. These include the second CO_2 Act, which contains provisions related to enforcement and evaluation. Implementation of the CO_2 Act is detailed in the CO_2 Ordinance (2012), where specific responsibilities for the implementation of measures are assigned. For example, if a sector-specific interim target is not achieved, the Federal Department of the Environment, Transport, Energy and Communications, with input from the canton authorities and affected parties, shall request the Federal Council to set additional measures.

50. Switzerland has provisions in place to make information on legislative arrangements and administrative procedures related to compliance and enforcement publicly accessible, such as publication on the website of the Federal Office for the Environment information regarding legislative arrangements, enforcement and administrative procedures.

51. Switzerland has national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources. The Forest Act, which was first adopted in 1876, and Forest Policy support the mitigation of climate change and, at the same time, the conservation of biodiversity by mandating that sustainable forest management practices are applied in achieving wood harvesting potential.

(b) Assessment of adherence to the reporting guidelines

52. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. Policies and measures in accordance with Article 2 and minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

(a) Technical assessment of the reported information

53. In the NC8 Switzerland reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties, and to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties. Switzerland reported that it conducts international trade mainly with the European Union. For this reason, and given the country's size and its share of international trade, Switzerland assumes that it does not have any substantial adverse economic, social or environmental impacts on developing countries. The Party also reported on its efforts to minimize the adverse effects of fossil fuels on climate change by helping developing countries to strengthen their economies, such as by improving energy efficiency relating to fossil fuels.

54. The NC8 includes information on how Switzerland promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels. Switzerland is engaged in the environmental expert groups of the International Civil Aviation Organization and supports harmonization and further development of international aviation environmental standards and measures. In particular, Switzerland provided assistance in the adoption process for the first CO_2 emission standard. As a member of the International Maritime Organization, the Party supports the introduction and further strengthening of obligations to reduce GHG emissions from international navigation.

(b) Assessment of adherence to the reporting guidelines

55. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

E. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry and progress in achieving the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

56. On its use of units from LULUCF activities, Switzerland reported in CTF tables 4 and 4(a) that in 2019 and 2020 it used units to offset 1.5 and 0.8 per cent respectively of its total GHG emissions. Switzerland reported that it intends to use units from market-based mechanisms under the Kyoto Protocol. It reported in its report upon expiration of the additional period for fulfilling commitments for the first commitment period of the Kyoto Protocol and confirmed during the review that it would use 10,718,219 CERs and 5,794,523 carried-over AAUs from the first commitment period to meet its target, while 1,550 AAUs from the second commitment period would not be used. Table 6 illustrates Switzerland's total GHG emissions, contribution of LULUCF and use of units from market-based mechanisms towards achieving its target.

Table 6
Summary of information on greenhouse gas emissions, use of units from market-based mechanisms and land use, land-use change and forestry by Switzerland
(kt CO_2 eq)

Year	*Emissions excluding LULUCF*	*Contribution of LULUCF*	*Use of units from market-based mechanisms*[a]	*Net emissions including LULUCF and market-based mechanisms*
1990 (base year)	53 706.73	NA	NA	NA
2013	52 902.60	–995.23	0	51 907.37
2014	48 961.54	378.49	0	49 340.03
2015	48 466.87	–1 178.09	0	47 288.78
2016	48 744.61	–1 048.22	0	47 696.39
2017	47 866.21	–939.00	0	46 927.21
2018	46 362.01	301.64	0	46 663.65
2019	46 085.24	–679.59	0	45 405.65
2020	43 398.96	–348.31	16 511.19	26 539.46
Cumulative 2013–2020	382 788.03	–4 508.32	16 511.19	361 768.52
			Emission budget 2013–2020[b]	361 768.52

Sources: Switzerland's BR5 and BR5 CTF table 4, Switzerland's report upon expiration of the additional period for fulfilling commitments for the first commitment period of the Kyoto Protocol, and information provided by the Party during the review, for which GWP values from the AR4 were used.

[a] Corresponding to the sum of 10,718,219 CERs and 5,794,523 carried-over AAUs from the first commitment period, reduced by 1,550 as Switzerland did not use this amount of AAUs from the second commitment period.

[b] Corresponds to the 2020 target reported in Switzerland's BR5.

2. Assessment of adherence to the reporting guidelines

57. The ERT assessed the information reported in the BR5 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Assessment of achievement of the quantified economy-wide emission reduction target

58. In assessing the Party's achievement of its 2020 target on the basis of the information reported in its BR5, the ERT noted that Switzerland committed to reducing its emissions to 20 per cent below the 1990 level by 2020 (see para. 31 above). This target was made operational through the Party's quantified emission limitation or reduction commitment of 84.2 per cent of the base-year emissions for 2013–2020, as defined in the Doha Amendment to the Kyoto Protocol (see para. 32 above). Between 2013 and 2020 the Party's total GHG emissions excluding LULUCF amounted to 382,788.03 kt CO_2 eq, the contribution of LULUCF amounted to 4,508.32 kt CO_2 eq (which was accounted for by the use of 4,508,317 removal units) and the use of market-based mechanisms amounted to 16,511.19 kt CO_2 eq (consisting of 10,718,219 CERs and 5,794,523 carried-over AAUs from the first commitment period, reduced by 1,550 as Switzerland did not use this amount of AAUs from the second commitment period), resulting in a net figure of 361,768.52 kt CO_2 eq, which equates to 100 per cent of the Party's assigned amount for the second commitment period of the Kyoto Protocol (361,768.52 kt CO_2 eq). The ERT concluded that, on the basis of the information reported in the BR5 and provided during the review, the total GHG emissions excluding LULUCF of Switzerland including the contribution of LULUCF and use of units from market-based mechanisms do not exceed the Party's assigned amount for the second commitment period of the Kyoto Protocol, and thus that the target has been achieved.[8] The ERT noted that after retiring the units from market-based mechanisms needed to achieve its Kyoto Protocol target for the second commitment period, Switzerland voluntarily cancelled

[8] See the report on the review of the report upon expiration of the additional period for fulfilling commitments for the second commitment period of the Kyoto Protocol of Switzerland submitted in 2023 (FCCC/KP/CMP/2023/TPR/CHE) for additional information.

the surplus of 1,550 AAUs and 9,439,598 CERs and plans to cancel some additional CERs in the course of 2024.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

59. Switzerland reported in its BR5 and NC8 updated projections for 2025–2035 relative to actual inventory data for 2020 under the WEM scenario using GWP values from the AR4. The WEM scenario reported by Switzerland includes PaMs implemented and adopted until mid-2022.

60. In addition to the WEM scenario, Switzerland reported the WAM and WOM scenarios. The WAM scenario includes planned PaMs, while the WOM scenario excludes all PaMs implemented, adopted or planned after 1990 (2011 in the case of agriculture). Switzerland provided a definition of its scenarios, explaining that its WEM scenario includes policies such as the first CO_2 Act (1999), the second CO_2 Act, the CO_2 levy on heating and process fuels, negotiated reduction commitments (for exemption from the CO_2 levy) and the ETS, and, in general, encompasses currently implemented and adopted PaMs. The WEM scenario thus reflects the current state of legislation (as of mid-2022), including any strengthening of existing PaMs foreseen under current legislation, while its WAM scenario includes, in addition to all PaMs considered under the WEM scenario, the planned strengthening of existing PaMs as well as new PaMs that have not yet been formalized but are planned in order to further improve Switzerland's contribution to climate mitigation. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs.

61. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) as well as NF_3 and indirect CO_2 for 2030–2035. The projections are also provided in an aggregated format for each sector and for the Party total using GWP values from the AR4. Switzerland reported on factors and activities affecting emissions for each sector.

(b) Methodology, assumptions and changes since the previous submission

62. The methodology used for the preparation of the projections is different from that used for the preparation of the emission projections for the NC7. During the review, Switzerland provided additional information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. Switzerland reported supporting information further explaining the methodologies and the changes made since the NC7. For the energy sector, Switzerland completely updated its WEM and WAM scenarios on the basis of projections from the Energy Perspectives 2050+ report; these scenarios thus now reflect the results of detailed energy system models (a computable general equilibrium model was previously applied). For the IPPU sector, the same methodology for process emissions was used, but the relevant activity data for industrial production were inferred from production indices contained in the Energy Perspectives 2050+ report. Regarding fluorinated gases, a minor update (mainly of input parameters) ensured consistency with the most recent GHG inventory, but emission projections remain very similar to those in the previous submission. Projections for the agriculture sector now include as inputs new scenarios as well as updated information from the Swiss Confederation, the Federal Office for Agriculture and the Federal Council. The WAM scenario for international transport now considers the planned sustainable aviation fuel policy. For the LULUCF sector, updated projections for all three scenarios (WEM, WAM and WOM) became available and were used, leading to several recalculations. The same methodological improvements were implemented as those for the technical correction of Switzerland's forest management reference level. In the context of the development of

Switzerland's forest reference level, several new forest modelling scenarios were defined and tested, from which three were used for the NC8.

63. To prepare its projections, Switzerland relied on key underlying assumptions relating to population, gross domestic product, gross heated floor area, number of people employed, full-time employment equivalent, heating degree days, average day temperature, crude oil price, natural gas price, and km travelled for passenger cars, road freight transport and buses. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. The first eight of the above-mentioned key underlying assumptions are from the energy model. The values used for 2020 are based on projections and may differ from the actual historical values.

64. Sensitivity analyses were conducted for a number of important assumptions, such as population (4.0 per cent higher growth rate compared with the baseline in 2035) and gross domestic product (7.8 per cent higher than the main scenario by 2035). Overall, the sensitivity analysis resulted in additional GHG emissions of 0.7 and 0.8 Mt CO_2 eq in 2030 and 2035 respectively compared with the respective WEM and WAM scenarios. Emissions of CO_2 account for the dominant share (about 98 per cent) of the resulting difference. The additional emissions mainly occur in industry (energy and process emissions) and transport; additional emissions from the services sector and households are negligible. In relative terms, total GHG emissions are 2.0 per cent higher under the sensitivity analysis scenario than under the respective WEM and WAM scenarios in 2035.

(c) Results of projections

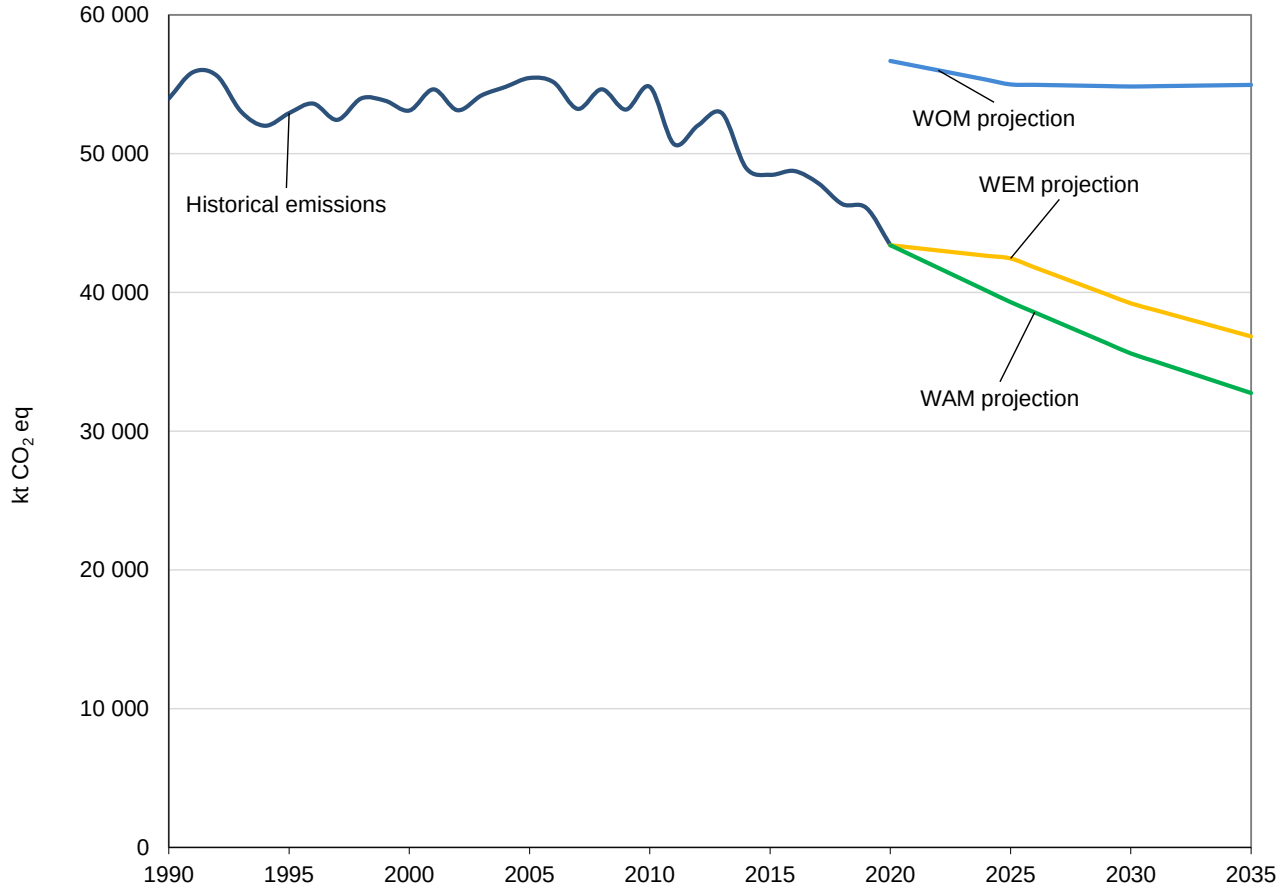
65. The projected emission levels under different scenarios are presented in table 7 and figure 1.

Table 7
Summary of greenhouse gas emission projections for Switzerland

	GHG emissions (kt CO_2 eq/year)	*Change in relation to 1990 level (%)*	*Change in relation to 2020 level (%)*
Inventory data 1990	53 966.94	NA	NA
Inventory data 2020	43 398.96	–19.6	NA
WOM projections for 2030	54 849.93	1.6	26.4
WEM projections for 2030	39 214.23	–27.3	–9.6
WAM projections for 2030	35 606.14	–34.0	–18.0
WOM projections for 2035	54 966.05	1.9	26.7
WEM projections for 2035	36 830.68	–31.8	–15.1
WAM projections for 2035	32 754.60	–39.3	–24.5

Sources: Switzerland's BR5 CTF table 6 and information provided by Switzerland during the review, for which GWP values from the AR4 were used.
Note: The projections are of GHG emissions excluding LULUCF and including indirect CO_2.

Figure 1
Greenhouse gas emission projections reported by Switzerland

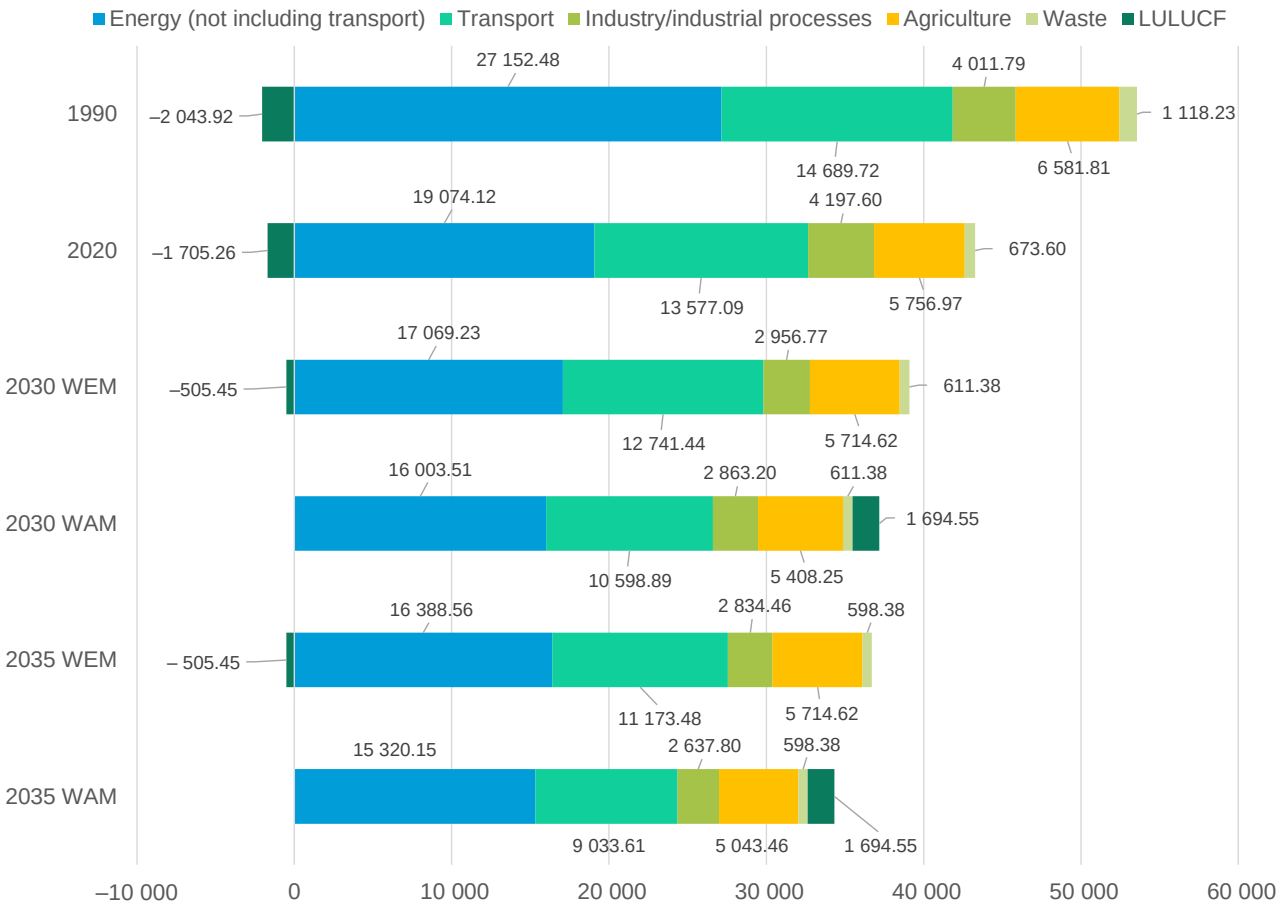


Source: Switzerland's NC8 and BR5 CTF tables 1 and 6 (total GHG emissions excluding LULUCF and including indirect CO_2), for which GWP values from the AR4 were used.

66. Switzerland's total GHG emissions excluding LULUCF and including indirect CO_2 are projected under the WEM scenario to decrease by 27.3 and 31.8 per cent below the 1990 level in 2030 and 2035 respectively. When including LULUCF, total GHG emissions including indirect CO_2 are projected under the WEM scenario to decrease by 27.3 and 31.8 per cent below the 1990 level in 2030 and 2035 respectively. Under the WAM scenario, emissions in 2030 and 2035 are projected to be lower than those in 1990 by 34.0 and 39.3 per cent respectively. The ERT noted that the WEM scenario for 2030 projects a reduction in GHG emissions of 27.3 per cent compared with the 1990 level, while the NDC has a target of 50 per cent.

67. Switzerland presented the WEM and WAM scenarios by sector for 2030 and 2035, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for Switzerland presented by sector
(kt CO_2 eq)



Sources: Switzerland's BR5 CTF table 6 and information provided by Switzerland during the review, for which GWP values from the AR4 were used.

Table 8
Summary of greenhouse gas emission projections for Switzerland presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2030		*2035*		*1990–2030*		*1990–2035*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	27 152.48	17 069.23	16 003.51	16 388.56	15 320.15	–37.1	–41.1	–39.6	–43.6
Transport	14 689.72	12 741.44	10 598.89	11 173.48	9 033.61	–13.3	–27.8	–23.9	–38.5
Industry/industrial processes	4 011.79	2 956.77	2 863.20	2 834.46	2 637.80	–26.3	–28.6	–29.3	–34.2
Agriculture	6 581.81	5 714.62	5 408.25	5 714.62	5 043.46	–13.2	–17.8	–13.2	–23.4
LULUCF	–2 043.92	–505.45	1 694.55	–505.45	1 694.55	75.3	182.9	75.3	182.9
Waste	1 118.23	611.38	611.38	598.38	598.38	–45.3	–45.3	–46.5	–46.5
Indirect CO_2 (excluding LULUCF)	412.91	120.81	120.89	121.19	121.19	–70.7	–70.7	–70.6	–70.6
Total GHG emissions excluding LULUCF and including indirect CO_2	**53 966.94**	**39 214.23**	**35 606.14**	**36 830.68**	**32 754.60**	**–27.3**	**–34.0**	**–31.8**	**–39.3**

Sources: Switzerland's BR5 CTF table 6 and information provided by Switzerland during the review, for which GWP values from the AR4 were used.

68. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy sector, amounting to projected reductions of 29.2 per cent between 1990 and 2030. The pattern of projected emissions reported for 2035 under the same scenario remains the same. The projections show a decrease in the total effect of currently implemented and adopted PaMs for the energy sector in 2025 compared with the WOM projections, owing to the different methodology used for this scenario. The trend in the emissions under the WOM scenario shows a decrease between 2020 and 2025 owing to the contribution of the different sectors (e.g. transport and other sectors) to the evolution of Switzerland's total GHG emissions.

69. Switzerland presented the WEM and WAM scenarios by gas for 2030 and 2035, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Switzerland presented by gas

	GHG emissions and removals (kt CO2 eq)					*Change (%)*			
		2030		*2035*		*1990–2030*		*1990–2035*	
Gas[a]	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2	44 148.92	31 481.45	28 311.25	29 226.12	26 059.29	–28.7	–35.9	–33.8	–41.0
CH_4	5 791.13	4 485.33	4 318.29	4 461.02	4 011.75	–22.5	–25.4	–23.0	–30.7
N_2O	3 360.45	2 360.78	2 183.41	2 363.69	2 100.37	–29.7	–35.0	–29.7	–37.5
HFCs	0.02	649.18	582.87	556.34	395.24	3 245 800.0	2 914 250.0	2 781 616.5	1 976 093.4
PFCs	116.52	28.87	23.09	29.93	20.42	–75.2	–80.2	–74.3	–82.5
SF_6	136.99	87.40	65.93	71.98	45.92	–36.2	–51.9	–47.5	–66.5
NF_3	0.00	0.41	0.41	0.41	0.41	NA	NA	NA	NA
Indirect CO_2 (excluding LULUCF)	412.91	120.81	120.89	121.19	121.19	–70.7	–70.7	–70.6	–70.6
Total GHG emissions without LULUCF	**53 966.94**	**39 214.23**	**35 606.14**	**36 830.68**	**32 754.60**	**–27.3**	**–34.0**	**–31.8**	**–39.3**

Sources: Switzerland's BR5 CTF table 6 and information provided by Switzerland during the review, for which GWP values from the AR4 were used.

[a] Switzerland included indirect CO_2 emissions in its projections. Indirect CO_2 emissions are only included in the totals.

(d) Assessment of adherence to the reporting guidelines

70. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

71. In its NC8 Switzerland presented the estimated and expected total effect of implemented and adopted PaMs in accordance with the WEM scenario, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2030 and 2035. It also presented relevant information on factors and activities for each sector for 1990–2030.

72. Switzerland reported that the total estimated effect of its implemented and adopted PaMs is 15.6 kt CO_2 eq in 2030 and 18.1 kt CO_2 eq in 2035. According to the information

reported in its NC8, PaMs implemented in the energy sector will deliver the largest emission reductions. The additional estimated effect of Switzerland's planned PaMs is 3.6 kt CO_2 eq in 2030 and 4.1 kt CO_2 eq in 2035. Table 10 provides an overview of the total effect of PaMs as reported by Switzerland.

Table 10
Projected effects of Switzerland's planned, implemented and adopted policies and measures in 2030 and 2035
(kt CO_2 eq)

	2030		*2035*	
Sector	*Effect of implemented and adopted measures*	*Effect of planned measures*	*Effect of implemented and adopted measures*	*Effect of planned measures*
Energy (without transport)	10 221.11	1 065.72	11 451.17	1 068.41
Transport	2 037.82	2 142.55	3 087.84	2 139.87
Industry/industrial processes	2 637.99	93.57	2 884.25	196.66
Agriculture	310.16	306.37	310.16	671.16
Waste management	107.73	0.00	88.27	0.00
Total	**15 635.69**	**3 608.21**	**18 135.37**	**4 076.10**

Sources: Switzerland's NC8 and information provided by Switzerland during the review, for which GWP values from the AR4 were used.
Notes: (1) The total effect of implemented and adopted PaMs is defined as the difference between the WOM and the WEM scenarios; the total effect of planned PaMs is defined as the difference between the WEM and the WAM scenarios; (2) the totals are as reported by Switzerland as relevant to its emission reduction targets and include indirect CO_2 and exclude LULUCF.

(b) Assessment of adherence to the reporting guidelines

73. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

(a) Technical assessment of the reported information

74. In the NC8 Switzerland reported that it plans to use market-based mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol to meet its Kyoto Protocol target and it described how that use is supplemental to domestic action. The ERT noted that the Party reported that the second CO_2 Act, which currently forms the legal basis for Switzerland's climate policy and actions, aims to enable the country to attain its target to reduce domestic GHG emissions by 20 per cent below the 1990 level by 2020. Nonetheless, if necessary, Switzerland plans to use market-based mechanisms to meet its target under the second commitment period of the Kyoto Protocol.

75. In the NC8 Switzerland reported that the quality requirements against which the eligibility of international carbon credits is determined are defined in its CO_2 Ordinance.

(b) Assessment of adherence to the reporting guidelines

76. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

G. Provision of financial, technological and capacity-building support to developing country Parties

1. Technical assessment of the reported information

(a) Approach and methodologies used to track support provided to non-Annex I Parties

77. In its NC8 and BR5 Switzerland reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

78. Switzerland has provided support that it considers to be "new and additional". Switzerland's public climate finance amounted to USD 340 million in 2018 and grew to USD 411 million in 2020 (an increase of 20.8 per cent). The Party reported that its development assistance has gradually shifted to a focus on climate change. Switzerland's International Cooperation Strategy 2021–2024 provides for an increase in funding for climate change mitigation and adaptation to CHF 400 million (approximately USD 426 million) per year by 2024. This accounts for around 15 per cent of Switzerland's international development cooperation. A 2011 decision of the Swiss Parliament raised the level of ODA to 0.5 per cent of gross national income by 2015. Current efforts in funding are made in the context of ongoing budget constraints due to the consequences of the pandemic. Switzerland reported that owing to the above factors, it considers its efforts and climate finance to be new and additional and adequate pursuant to Article 4, paragraph 3, of the Convention.

79. Switzerland reported on the support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and identifying the capacity-building elements of such support. Switzerland's national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked, is based on the Rio markers. Thus, a reduction factor of 50 per cent is applied for activities with an indirect impact on climate change adaptation or mitigation (significant marker) and a reduction factor of 85 per cent is applied for activities with a direct impact on climate change adaptation or mitigation (principal marker). During the review, the Party confirmed that the methodology has not changed since the BR4.

80. Switzerland's methodology and underlying assumptions used for collecting and reporting information on financial support are as follows. The Party reports its contributions to multilateral development banks as ODA at the time of depositing promissory notes and not at the time of encashment. To assess the climate relevance of its bilateral, regional and multilateral cooperation, Switzerland uses the Rio marker methodology; double counting between adaptation- and mitigation-specific activities is avoided by netting out potential overlaps between the respective Rio markers. To assess the climate-specific share of its multilateral contributions, Switzerland used the average climate-specific share of the imputed multilateral contribution published by OECD DAC. Because the climate-specific share for 2020 was not yet published by OECD DAC at the time the NC8 and BR5 were being finalized, Switzerland used the 2019 share for its 2020 data. The Party explained in CTF table 7 that other multilateral institutions for which it reported contributions in CTF table 7(a) might also carry out climate-specific activities; however, their climate-specific shares were not included in the table because no climate-specific average was published by OECD DAC. A robust methodology was used for preparing the information on mobilized private financial support; this methodology ensured that the inputs to the NC8 and BR5 are transparent and comparable. The methodology was developed by Switzerland together with other donors for an OECD report (OECD 2021) on climate finance provided by developed countries in 2013–2019. In developing the methodology, the donor group was guided by the principles that, where multiple actors are involved, the resulting finance is only counted once in tracking the progress, and that the reporting framework encourages and incentivizes the most effective use of climate finance. The Party reported information in its NC8 and BR5 on bilateral, but not multilateral, mobilized private climate finance.

(b) Financial resources

81. Switzerland reported in its NC8 and BR5 information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support committed and disbursed, allocation channels and annual contributions.

82. Switzerland described how it seeks to ensure that the resources it provides to non-Annex I Parties effectively address their adaptation and mitigation needs. The Party reported that its bilateral climate support addresses the adaptation and mitigation needs of non-Annex I Parties through a cooperative, bilateral dialogue in which the needs and priorities of the recipient countries are assessed. These dialogues are coordinated every four years by the Swiss Agency for Development and Cooperation. In terms of multilateral climate finance, the Party reported that Swiss delegates advocate for country ownership, that is inclusive country-led needs-based programming and implementation, in the various multilateral funding institutions and governing bodies of multilateral climate finance funding schemes to which Switzerland contributes. Switzerland also reported that its multilateral activities are endorsed by the recipient countries in order to ensure that they align with the recipient countries' priorities and that the funded interventions are sustainable. In addition, Switzerland explained that its climate finance assists developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects. The Swiss Agency for Development and Cooperation identifies particularly vulnerable developing country Parties in its Climate Foresight Analysis, using the INFORM Risk Index methodology. Using this methodology, the Agency finds that the majority of priority region countries identified by it are rated high or very high risk (and none are rated low or very low risk). Table 11 summarizes the information reported by Switzerland on its provision of financial support, excluding mobilized private finance. While Switzerland distinguished between public and mobilized private bilateral climate finance in table 45 of its NC8, the ERT noted that the values provided in the CTF tables as contributions through bilateral channels include mobilized private finance, and this was confirmed by the Party during the review.

Table 11
Summary of information on provision of financial support by Switzerland in 2019–2020
(Millions of United States dollars)

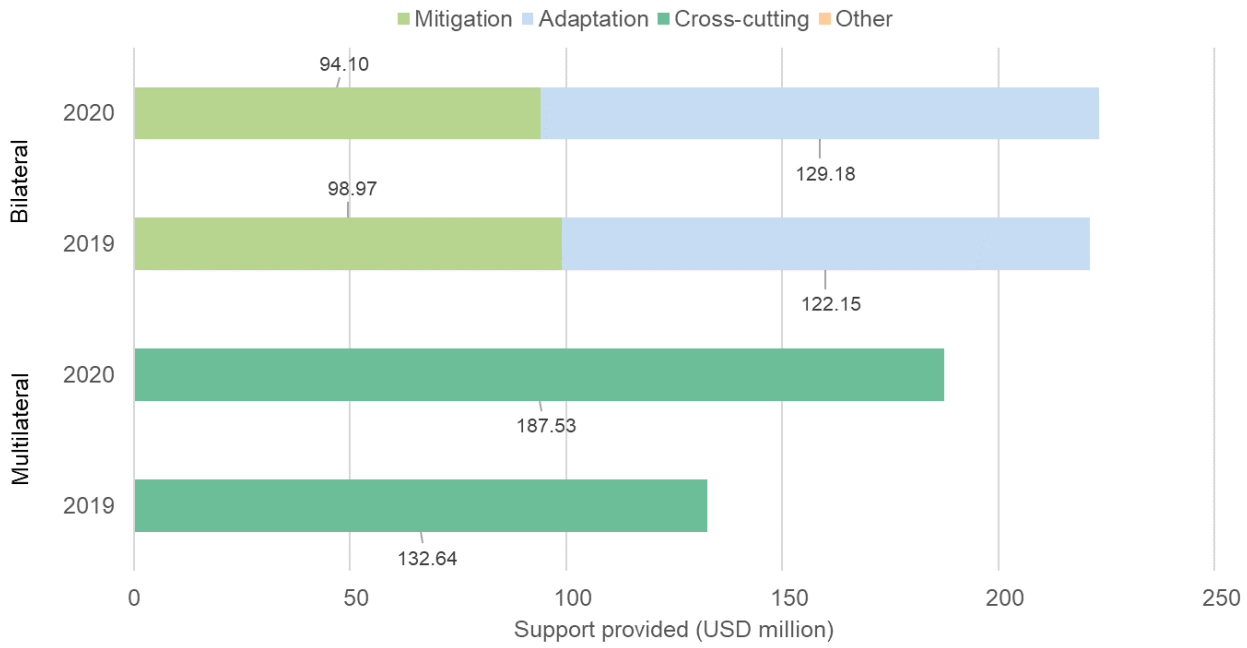
Allocation channel of public financial support	*Disbursement in 2019–2020*
ODA	6 816.27
Climate-specific contributions through multilateral channels, including:	320.16
Global Environment Facility	45.63
Least Developed Countries Fund	5.92
Special Climate Change Fund	1.63
Adaptation Fund	15.09
Green Climate Fund	36.58
Trust Fund for Supplementary Activities	0.99
Other multinational climate change funds	2.06
Financial institutions, including regional development banks	191.44
United Nations bodies	20.82
Climate-specific contributions through bilateral, regional and other channels	444.40

Sources: Switzerland's BR5 CTF tables and Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/.

83. Switzerland's climate-specific public financial support[9] totalled USD 764.57 million in 2019–2020, representing an increase of 11.3 per cent since the BR4 (2017–2018).[10] In local currency, Switzerland's climate-specific public financial support totalled CHF 737.38 million in 2019–2020, representing an increase of 9.4 per cent since the BR4 (2017–2018). With regard to future financial pledges aimed at enhancing the implementation of the Convention by developing countries, Switzerland has committed to providing CHF 400 million (approximately USD 426 million) per year by 2024. This accounts for around 15 per cent of Switzerland's international development cooperation.

84. Switzerland contributed through multilateral channels USD 320.16 million in 2019–2020. The contributions were made to specialized multilateral climate change funds, such as the Adaptation Fund (USD 15.09 million in 2019), the Global Environment Facility (USD 19.53 million in 2019 and USD 26.10 million in 2020) and the Green Climate Fund (USD 36.58 million in 2020). Switzerland's most recent prior contribution to the Adaptation Fund was USD 10.79 million in 2013 (reported in the NC7 and BR3) and to the Green Climate Fund was USD 34.22 million in 2017 (reported in the BR4). Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 12.

Figure 3
Provision of support by Switzerland in 2019–2020



Source: Switzerland's BR5 CTF tables 7, 7(a) and 7(b).

Table 12
Summary of information on channels of financial support reported by Switzerland
(Millions of United States dollars)

Allocation channel of public financial support	*Amount disbursed in 2019–2020*	*Amount disbursed in 2017–2018*	*Change (%)*[a]	*Share of total (2019–2020) (%)*
Detailed information by type of channel				
Multilateral channels				
Mitigation	0.00	0.00	–	–
Adaptation	0.00	0.00	–	–
Cross-cutting	320.16	244.09	31.2	100.0

[9] For the remainder of this chapter, the term "financial support" means climate-specific financial support, unless otherwise noted.

[10] Comparisons with data from previous years have been calculated directly without adjusting for inflation.

Allocation channel of public financial support	*Amount disbursed in 2019–2020*	*Amount disbursed in 2017–2018*	*Change (%)*[a]	*Share of total (2019–2020) (%)*
Other	0.00	0.00	–	–
Total multilateral	**320.16**	**244.09**	**31.2**	**100.0**
Bilateral channels				
Mitigation	193.07	177.61	8.7	43.4
Adaptation	251.33	265.21	–5.2	56.6
Cross-cutting	0.00	0.00	–	–
Other	0.00	0.00	–	–
Total bilateral	**444.40**	**442.82**	**0.4**	**100.0**
Total multilateral and bilateral	**764.56**	**686.91**	**11.3**	**100.0**

Sources: Switzerland's BR5 CTF tables 7, 7(a) and 7(b), and the report on the technical review of the BR4 of Switzerland for 2017–2018 data.

[a] Note that variances in contribution amounts from year to year can occur that are not reflective of trends, owing to factors such as the biennial or triennial contribution cycles of some multilateral funds, the timing of approvals for individual bilateral projects or changes in exchange rates.

85. The Party reported detailed information on the total financial support provided through bilateral and regional channels, amounting to USD 444.40 million in 2019–2020. During the reporting period, Switzerland placed a particular focus on Africa, to which it allocated 23.7 per cent of its total public bilateral climate finance in 2019 and 25.5 per cent in 2020. Asia received the next largest share of resources (22.1 per cent in 2019 and 22.5 per cent in 2020), followed by Latin America (17.9 per cent in 2019 and 15.6 per cent in 2020). During the review, Switzerland confirmed that the support reported in CTF table 7(b) went to non-Annex I Parties only.

86. The NC8 and BR5 provide information on the types, sectors and instruments of support provided. The information reported shows that in 2019–2020 the average shares of bilateral and regional financial support allocated to mitigation and adaptation projects were 43.4 and 56.6 per cent respectively. In 2019–2020 the majority of financial contributions through bilateral and regional channels were allocated to the cross-cutting sector. In the NC8 and BR5 as well as in a footnote to CTF table 7 Switzerland explained that, owing to technical issues related to its support database, data on bilateral and regional public climate finance reported in CTF table 7(b) were aggregated at the country or region level (rather than at the activity level) and were thus reported as related to multiple sectors (i.e. cross-cutting), because the Party is active in multiple sectors in each country. Similarly, for CTF table 7(a), unless a specific multilateral fund or institution focuses exclusively on one sector, Switzerland considers its contribution to the fund or institution as targeting the cross-cutting sector. Switzerland included in its submission a document listing the projects and programmes it supported in 2019–2020, indicating the sectors involved and the contributions allocated to mitigation and adaptation. Relevant sectors include agriculture, silviculture, disaster risk reduction, water, environmental policy and administration, and rural development. The Party reported that all of its public climate finance was provided in the form of grants, and it only reports bilateral and regional finance flows when they are disbursed.

87. Switzerland reported on how it uses public funds to promote private sector financial support for developing countries to increase mitigation and adaptation efforts in developing countries. The Party reported that mobilized private finance increased by 30.2 per cent, from USD 136 million in 2017–2018 to USD 177 million in 2019–2020. Much of the increase was achieved through the activities of Swiss Export Risk Insurance, which helps to mobilize private finance for exporting goods and technologies. Switzerland explained its approach to reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties. As part of its reporting to OECD, the Party participated in a donor group that provided inputs to the establishment of robust methodologies for measuring and reporting on mobilized private finance. Switzerland described the difficulty of collecting information and reporting on private finance flows leveraged by multilateral climate finance for mitigation and adaptation activities in non-Annex I Parties. In this regard, it indicated that reporting at the bilateral level on private

finance mobilized through multilateral channels would not do justice to the complexity and joint efforts of all partners involved in multilateral institutions.

88. An example of Switzerland's support is Swiss Export Risk Insurance, through which the Party mobilized USD 86.4 million in 2020, up from USD 68.5 million in 2018. Swiss Export Risk Insurance provides export insurance, which is traditionally very important for Swiss exports, to entities that are not covered by private insurance. Swiss Export Risk Insurance adopted a new climate strategy in 2021 aimed at promoting decarbonization and climate-friendly projects in foreign trade. The Party reported on the Renewable Energy, Energy and Resource Efficiency Promotion in International Cooperation platform, an interdepartmental platform that targets the development and transfer of technologies relevant to renewable energy, energy efficiency and resource efficiency. It offers seed money for climate change initiatives, as well as capacity-building support and technical advice during the early phases of project development for technology and market testing. An example project funded by such seed money is one in which rooftop solar power systems are installed for small and medium-sized businesses in India at zero upfront cost.

(c) Technology development and transfer

89. Switzerland reported on its measures and activities related to technology transfer, access and deployment benefiting developing countries, including activities undertaken by the public and private sector. The ERT welcomed the fact that Switzerland included CTF table 8, which provides a non-exhaustive list of the technology development and transfer support provided by the Party, in its submission for the first time. Examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties include Switzerland Global Enterprise, a Swiss export promotion agency that is mandated by the Swiss Confederation to make information on Swiss cleantech companies available in a publicly accessible database. Many of the companies registered in the database are active in developing countries. The Low Carbon Cement Project is another example of technology development and transfer; it involves trilateral collaboration among Cuban, Indian and Swiss universities. The aim of the project is to establish a limestone calcined clay cement as a reliable, viable and green cement, as well as to de-risk investment in it and accelerate its commercial deployment.

90. Switzerland focused the provision of its technology transfer support on promoting private sector initiatives for technology as well as public sector initiatives to reduce custom tariffs and non-tariff barriers in trade, create an enabling framework to protect intellectual property and property rights, improve access to finance, and implement pilot and demonstration projects. Projects focused on the energy (renewable energy and energy efficiency), industry (cleaner production and resource efficiency) and agriculture (e.g. groundwater management) sectors.

91. Switzerland has continued supporting many of the projects described in its NC7 and BR4. It has also implemented a new measure, the Renewable Energy Auction programme, which is financed by the State Secretariat for Economic Affairs and which supports the development of a renewable energy auction system in the Western Balkans, the Middle East and North Africa. Switzerland also described success and failure stories in relation to technology transfer, and in particular measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies.

(d) Capacity-building

92. Switzerland reported on its capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. It described measures and activities related to capacity-building support in textual and tabular format. The ERT welcomed the fact that Switzerland included CTF table 9, which provides a non-exhaustive list of the capacity-building support provided by the Party, in its submission for the first time.

93. Switzerland has supported climate-related capacity development activities relating to adaptation, mitigation and climate financing. Since the BR4 the focus of support has remained largely the same, but includes two new projects. The first is the SDG Impact

Finance Initiative, which supports innovative finance approaches to mobilizing private funding and contributes to measurable results under the SDGs in developing countries. The initiative provides capacity-building support for developing innovative impact investment funds. The second is the Disaster Risk Financing and Insurance Program, which supports selected countries in improving their financial resilience to natural disasters and their financial response capacity to disasters through policy, budgetary and market-based solutions. Through this project recipient middle-income countries build capacity in assessing and quantifying their financial exposure to natural disasters. Switzerland's support has responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership and country-driven demand. Support is designed jointly with partner countries and is based on their clear demonstration of demand and need.

2. Assessment of adherence to the reporting guidelines

94. The ERT assessed the information reported in the NC8 and BR5 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Reporting on finance, capacity-building and technology transfer information related to the Kyoto Protocol

(a) Technical assessment of the reported information

95. In its NC8 Switzerland reported its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10 of the Kyoto Protocol. Switzerland provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol.

96. Switzerland provided information on its implementation of Article 11 of the Kyoto Protocol, including offering bilateral support that is oriented towards the needs and priorities of partner countries. The Party reported that it considers its efforts and climate finance to be adequate pursuant to Article 4, paragraph 3, of the Convention, and that, through its multi-annual contributions to multilateral funds such as the Global Environment Facility, it has shown that it is committed to providing predictable climate finance. The Party described how its contributions are "new and additional" (see para. 78 above).

97. Switzerland reported on its financial contributions to the Adaptation Fund, which consisted of USD 15.09 million in 2019 (no contribution in 2020).

(b) Assessment of adherence to the reporting guidelines

98. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

H. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

99. In its NC8 Switzerland provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Switzerland provided a description of climate change vulnerability and impacts in 11 areas (agriculture, biodiversity,

cryosphere, energy, extreme weather events, forests and forestry, health, hydrological cycle and water resources, natural hazards, tourism and water management) and highlighted the adaptation response actions taken and planned at different levels of government. Switzerland reported that the projected mean temperature will further increase in all seasons and regions of the country, most prominently in the summer and at high altitudes. While summer mean precipitation will likely decrease by the end of the century and winter mean precipitation will likely increase, no clear change is projected for annual precipitation. During the review, the Party clarified that the country's most significant vulnerability concerns relate to natural hazards and extreme weather events such as heatwaves, floods and landslides, which directly affect human safety.

100. Regarding significant changes since the NC7, the NC8 reveals Switzerland's advancements in climate modelling with the CH2018 Climate Scenarios, surpassing the older CH2011 models. These enhancements include continuous data up to 2099, superior statistically scaled-down products, improved accessibility via the NCCS platform, and user-specific product options. Moreover, it is anticipated that the forthcoming CH2025 climate scenarios will be available by late 2025. In addition, the Party provided an update in its NC8 on Switzerland's adaptation strategies and their implementation, particularly in the sectors most affected by climate change.

101. Switzerland has addressed adaptation matters through the adoption of the federal Adaptation to Climate Change in Switzerland strategy in 2012, which provided further direction to government agencies on enhancing preparedness for climate change. The Federal Council adopted the first action plan for implementing the strategy in 2014 (for 2014–2019) and the second in 2020 (for 2020–2025). The second action plan consists of 75 adaptation measures, including cross-sectoral measures aimed at improving the adaptation knowledge base as well as measures covering storm and hail risks, wild card risks, and indirect risks arising from the impacts of climate-related events occurring abroad. The Federal Office for the Environment takes the lead in coordinating implementation of the adaptation strategy at the federal level. In addition, the Office promotes awareness-raising, capacity-building and solution innovation relevant to adaptation in small and medium-sized municipalities and supports them in implementing adaptation actions through a pilot programme and the development of tools for implementing adaptation actions. Since 2015 NCCS has served as a national coordination body and knowledge hub supporting the implementation of the national adaptation strategy. Moreover, Switzerland has created an online database housing a comprehensive collection of adaptation solutions specifically for municipalities. During the review, Switzerland presented more information on its framework for monitoring and evaluating the progress and outcomes of its adaptation actions, particularly at the cantonal and individual project level. The ERT considered this information as useful, as it could assist in gauging the response of people to adaptation policies. The ERT notes that the Party's reporting could be further improved by including this information in the next NC. Table 13 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Switzerland.

Table 13
Summary of information on vulnerability and adaptation to climate change reported by Switzerland

Vulnerable area	*Examples/comments/adaptation measures reported*
Hydrological cycle, water resources and water management	Vulnerability: Switzerland's run-off distribution, groundwater recharge and water level have decreased in summer and increased in winter. Almost all water courses are expected to carry more water in winter. The modelling shows that, in general, water levels of both surface water and groundwater will drop significantly in summer and autumn. All altitudes and regions will be affected by the decline, but the Alps and alpine foothills especially so. More frequent dry spells and heatwaves increase the risk of some water sources drying up, which impacts life in and around those sources. Mean water temperatures in Swiss rivers and streams have risen and are expected to continue to rise. This warming causes stress to, disease outbreaks in and, in some cases, the death of many aquatic organisms. The combined effect of warming and water scarcity is likely to lead to major changes in ecosystems. A high temperature of water sources also leads to limitations in water use for cooling purposes by industrial plants. Switzerland's groundwater resources are under pressure owing to settlements and diffuse substance inputs, particularly on the Central Plateau and in the main alpine valleys. Droughts pose

Vulnerable area	*Examples/comments/adaptation measures reported*
	additional challenges for water-consuming sectors. With increasing water demand for agricultural irrigation, some areas will be affected by water deficits and related water conflicts. Climate change will also affect electricity production from hydropower: annual production from run-of-river power plants is expected to decrease slightly, though production will increase in winter. Adaptation: Switzerland has implemented various measures to address its vulnerabilities in this area, including water-saving measures in households and industry and measures that reduce peak demand during dry periods (e.g. temporarily restricting water use for watering green areas, filling swimming pools or washing cars). Progress in implementing measures related to water management was reported in the second action plan (2020–2025) for implementing the Adaptation to Climate Change in Switzerland strategy. As stipulated in the revised Federal Act on the Protection of Waters, sufficient space needs to be provided for surface waters to safeguard their natural functions in the interest of, inter alia, flood protection and water use. Switzerland acknowledges the importance of rehabilitating water bodies and preventing water resources from being overexploited or contaminated by pollutants and fertilizers. To achieve cross-sectoral, regional management of water resources, integrated water resources management has been applied. Under this approach, water bodies are considered as a comprehensive system that needs to be managed at the catchment level. This enables efficient, goal-oriented water management with regional coordination, transparent weighting of interests and facilitated priority-setting. The Federal Office for the Environment has supported the cantons in applying integrated water resources management by issuing guiding principles and publishing three modules on drought management (covering the identification of risk areas, long-term management of water resources and management of exceptional situations). Furthermore, it has developed a platform for the early detection of and information about droughts. As part of integrated water resources management, planning for efficient water supply to agricultural irrigation must be conducted to avoid water deficits and conflicts, particularly with the public drinking water networks. The Federal Office for Agriculture supports the application of efficient irrigation technologies. The use of drought-resistant varieties and water-saving cultivation is promoted in Switzerland's agricultural policy. To secure drinking water supply, cantons have developed the means for interconnecting neighbouring water networks and for extracting water from hydrogeologically independent aquifers. For energy security, Switzerland is planning to increase its renewable electricity production via technologies other than hydropower.
Natural hazards and extreme weather events	Vulnerability: The potential for more intensive precipitation and floods will increase. In most Swiss catchments, floods now mainly occur in summer and autumn. The projected temperature increase will result in an extended flood season and an increased volume and extent of floods in the alpine region. Increasing temperature and precipitation will lead to permafrost warming, increased amounts of sediment, the 'downwasting' of glaciers and glacier retreat. These events will likely lead to rock falls, debris flows and landslides, particularly in mountainous and high-altitude areas. At lower elevations, landslides could occur more frequently in winter and spring. Adaptation: The Swiss adaptation strategy addresses floods in the Alps, on the Central Plateau and in the Jura Mountains; torrential and gravitational processes; and climate change impacts on protected forests in the alpine region. The management of risks from natural hazards strategy of 2018 and the Swiss integrated risk management strategy have been developed. The focus areas for measures in this area include monitoring natural hazard processes; gaining comprehensive knowledge of hazards and risks; developing protective structures designed to accommodate excess loads; implementing risk-based land-use planning; responding successfully to natural disasters; improving awareness, education and research; and analysing extreme events and their management. To warn authorities and the population of weather hazards, MeteoSwiss provides a severe weather warning system, which communicates in all national languages and in English on rain, snow, slippery roads, wind, heat, thunderstorms and ground frost.
Health	Vulnerability: Switzerland is experiencing a rise in the frequency and intensity of heatwaves, elevated concentration of tropospheric ozone, an increase in pollens that could lead to more allergies, and a rise in diseases transmitted by vectors.

Vulnerable area	*Examples/comments/adaptation measures reported*
	Adaptation: The Swiss adaptation strategy focuses on three areas of action: the effects of heat, food-borne and waterborne diseases, and vector-borne diseases. The adaptation measures to address these areas include updating recommendations to health-care services and the public on adequate behaviour during heatwaves, fostering synergies and coordination among stakeholders, informing employers and employees about heat-related health and emotional effects, and improving and coordinating monitoring systems for vector-borne diseases, potential vectors and infectious animal diseases. Switzerland also has public health measures, such as cantonal heat action plans, which have contributed to a decrease in heat-related mortality. Measures in urban planning to prevent or reduce urban heat islands – such as unsealing paved areas, preserving and developing green areas and water bodies, protecting and promoting the planting of urban trees, increasing shading, preserving fresh air corridors and using heat-reducing building materials – have been widely implemented under various projects.

102. Switzerland provided a detailed description of international adaptation activities, including maintaining or increasing the productive capital of land and the availability of water at the local level; reducing vulnerability to natural hazards in highly risk-prone areas at the local and regional level; supporting countries in developing their national and subnational adaptation strategies and plans; increasing capacity-building, technology transfer and innovation in adaptation in developing and middle-income countries; increasing awareness and understanding of adaptation and promoting South–South learning exchange; and actively contributing to the prevention of disasters and reduction of disaster risks (e.g. by developing methods and tools for better integrating disaster risk reduction into project planning and project management). Switzerland also provided information on bilateral cooperation with developing countries on adaptation, including the Indian Himalayas Climate Adaptation Programme, which aims to strengthen the resilience of vulnerable communities in the Himalayas and to enhance adaptation-related knowledge and capacities of research institutions, communities and decision makers. The programme helps to build capacity and enhance knowledge under three pillars: scientific and technical knowledge cooperation between Indian and Swiss scientific institutions, adaptation measures for vulnerable communities, and mainstreaming adaptation policies for improved action in the Indian Himalayan Region. Key achievements include the sensitization of 1,200 sector experts and policymakers on climate change and spring-shed management; a joint India–Switzerland research project on vulnerability, risks and hazard assessment; and the development of a common framework for integrated vulnerability and risk assessment for all Himalayan States.

2. Assessment of adherence to the reporting guidelines

103. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

I. Research and systematic observation

1. Technical assessment of the reported information

104. In its NC8 Switzerland provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions to the World Climate Research Programme, Future Earth, GAW, GCOS, the World Meteorological Organization and the Intergovernmental Panel on Climate Change. Switzerland also provided information on the identification of opportunities for and barriers to free and open international exchange of data and information on action taken to overcome such barriers.

105. Switzerland has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. Climate change research in Switzerland takes the form of individual institute or research centre (such as NCCS) projects,

national research programmes and international research programmes. The three national research centres working on climate change and its impacts are the Oeschger Centre for Climate Change Research, focusing on the climate system and its interactions with society and the economy; the Center for Climate Systems Modeling, focusing on climate and earth system modelling and the development of climate scenarios; and the Centre for Development and Environment, focusing on the complex nature of global change processes and their consequences and the development of approaches to mitigation and adaptation. Modelling activities to develop new climate change scenarios for Switzerland are conducted at a number of institutions, such as the Center for Climate Systems Modeling and MeteoSwiss. The Palaeo-Reanalysis project, funded by the European Research Council, reconstructed the global monthly climate over the past 600 years, and the Weather Reconstructions project of the Swiss National Science Foundation produced daily weather data for the past 250–350 years for Europe. The Swiss National Science Foundation also operates an urban climate monitoring network in Bern and develops geostatistical techniques to produce heat maps from the data gathered. The aim of the Sustainable Economy: Resource-friendly, Future-oriented, Innovative national research programme is to generate scientific knowledge about using natural resources sparingly, supporting welfare and increasing Swiss economic competitiveness. The aim of the Swiss Energy Research for the Energy Transition funding programme is to accelerate innovation that is crucial to implementing Switzerland's Energy Strategy 2050 and achieving the country's climate goals. Strategic guidance for research in the agriculture sector is provided by the Research Master Plan for the Agri-Food Sector 2021–2024, while SwissForestLab, an infrastructure network and research platform with a strong focus on outreach and applied research, promotes cooperative research for a deeper understanding of the functioning of forest ecosystems.

106. In terms of activities related to systematic observation, Switzerland reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Switzerland also reported on challenges related to the maintenance of a consistent and comprehensive observation system. Following a Federal Council decision of 2008 relating to GCOS Switzerland, several agreements were signed between MeteoSwiss and partner institutions concerning the observation of atmospheric and terrestrial climate variables and the operation of international data centres. Since 2018, under the ordinance on meteorology and climatology, MeteoSwiss provides temporary funding to projects that play a significant role in the implementation of the 2016 GCOS Implementation Plan and the GCOS Switzerland Strategy 2017–2026. Around 30 project agreements have been signed with Swiss institutions under the ordinance since 2018, covering a variety of essential climate variables. Since 2022 the national GAW and GCOS programmes have been closely coordinated under the joint Swiss GAW–GCOS Office at MeteoSwiss.

107. The NC8 reflects actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing countries. Switzerland provided funding for scientists from developing countries working on global climate change research. By participating in the GCOS Cooperation Mechanism, Switzerland actively supports capacity-building in emerging and developing countries. The Party reported on a nearly completed project on the re-establishment of an in situ glacier monitoring network in Central Asia. Under the project, a network of complete cryospheric observation sites, including for the monitoring of snow and permafrost variables, is being developed.

2. Assessment of adherence to the reporting guidelines

108. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

J. Education, training and public awareness

1. Technical assessment of the reported information

109. In its NC8 Switzerland provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness; primary, secondary and higher education; public information campaigns; training programmes; education materials; resource or information centres; the involvement of the public and non-governmental organizations; and its participation in international activities. The Party reported extensive information and links to further information online on Switzerland's activities in education, training and public awareness. The State Secretariat for Education, Research and Innovation is responsible for education at the national level. The Federal Office for Spatial Development coordinates activities related to education for sustainable development. Climate change has been introduced as part of the compulsory curriculum at the lower secondary level, while sustainable development is explicitly referred to by a Federal Act and related ordinance as a learning objective of vocational and professional education and training. As a result, sustainable development is part of the general studies curriculum for all apprentice and professional programmes. Switzerland reported that many resource and information centres provide information to the public. NCCS coordinates the development and implementation of climate services within the Swiss Government and provides consolidated information to support policymakers at the national and local level.

110. The Federal Office for the Environment and MeteoSwiss also provide information to and respond to climate-related concerns raised by the public. The aim of SwissEnergy, a programme supported by the Federal Office of Energy, is to enhance energy efficiency and increase the share of renewable energy in the Swiss energy mix. Its main instruments are information-sharing and awareness-raising activities, the provision of consulting services and the provision of targeted support for education and training projects. The Climate Programme: Training and Communication was developed by the Federal Office for the Environment in close cooperation with the Federal Office of Energy. Activities under the programme are implemented in partnership with cantons, cities and municipalities, as well as with other stakeholders and interested parties. The programme supports and complements other related activities, for example SwissEnergy. In its second phase of implementation, which started in 2021, the focus of the Climate Programme is to support professionals and municipalities on their pathways to achieving Switzerland's net zero target for 2050. The éducation21 Foundation promotes and facilitates the implementation of education for sustainable development in Switzerland. It acts as a national competence centre for primary and secondary education on sustainable development. Its main target groups are teachers and school boards but the Foundation also provides support to teacher education institutions, non-governmental organizations and public authorities. The Swiss Academy of Sciences is active at the interface between science, policy and the public, supporting nationwide networking among people and institutions involved in science, policy, the economy and the media. Under the Academy's Forum for Climate and Global Change, consolidated statements from the research community, aimed at policymakers, are published.

2. Assessment of adherence to the reporting guidelines

111. The ERT assessed the information reported in the NC8 of Switzerland and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

112. The ERT conducted a technical review of the information reported in the NC8 of Switzerland in accordance with the UNFCCC reporting guidelines on NCs. The ERT concluded that the reported information completely adheres to the UNFCCC reporting guidelines on NCs and that the NC8 provides an overview of the national climate policy of Switzerland.

113. The information provided in the NC8 includes all of the elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Switzerland reported on the national system, the national registry, supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, PaMs in accordance with Article 2 of the Kyoto Protocol, domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, information under Article 10 of the Kyoto Protocol, and financial resources provided to developing country Parties. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by Switzerland.

114. The ERT conducted a technical review of the information reported in the BR5 and BR5 CTF tables of Switzerland in accordance with the UNFCCC reporting guidelines on BRs. The ERT concluded that the reported information completely adheres to the UNFCCC reporting guidelines on BRs and that the BR5 and its CTF tables provide an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of Switzerland towards achieving its target; and the Party's provision of support to developing country Parties.

115. In its NC8 Switzerland reported on its key national circumstances related to GHG emissions and removals, including that the population was 28 per cent higher in 2020 than in 1990 and the nominal gross domestic product increased by 54 per cent over the same period. Energy consumption was at its highest during 2009–2013, at a level that was 10 per cent higher than that in 1988–1992, but has slightly decreased over the last decade.

116. Switzerland's total GHG emissions excluding LULUCF and including indirect CO_2 covered by its quantified economy-wide emission reduction target were estimated to be 20.7 per cent below its 1990 level using GWP values from the AR5. Emissions peaked in 1991. There is no discernible trend in overall emissions from 1990 up until 2005, at which point a decreasing trend started to develop. The changes in total emissions were driven mainly by factors such as energy efficiency improvements in transport and buildings.

117. As reported in the BR5, under the Convention Switzerland committed to achieving a quantified economy-wide emission reduction target of 20 per cent below the 1990 level by 2020, which was made operational through its quantified emission limitation or reduction commitment of 84.2 per cent of the base-year emissions for 2013–2020 for the second commitment period of the Kyoto Protocol. The target covers CO_2 (including indirect CO_2), CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3, expressed using GWP values from the AR4, and covers all sources and sectors included in the annual GHG inventory, excluding LULUCF. Emissions and removals from the LULUCF sector are included in the target using an activity-based accounting approach. Switzerland reported its plans to make use of market-based mechanisms for achieving its target. In absolute terms, taking into account its base-year emissions for the second commitment period of the Kyoto Protocol of 53,706.73 kt CO_2 eq, the Party's total estimated emission budget for 2013–2020, including accounting for units from market-based mechanisms and the contribution of LULUCF, is 361,768.52 kt CO_2 eq, equivalent to average annual emissions of 45,221.07 kt CO_2 eq in 2013–2020.

118. In addition to its 2020 target, Switzerland also reported on its longer-term targets for 2030 and 2050. Switzerland's NDC target is to reduce GHG emissions by at least 50 per cent by 2030 compared with the 1990 level. To achieve this target, Switzerland plans to make use of internationally transferred mitigation outcomes from cooperation under Article 6 of the Paris Agreement. The determination of a minimum level of emission reductions to be achieved by domestic measures is still under parliamentary debate. By 2050 Switzerland aims to reduce its GHG emissions to net zero. This target is part of Switzerland's long-term climate strategy to 2050. Switzerland plans to reduce its GHG emissions by 2050 by around 90 per cent compared with the 1990 level, in particular with mitigation actions that eliminate the use of fossil energy carriers. Carbon dioxide capture and storage (with storage in Switzerland or abroad) will contribute to abating emissions from large point sources such as waste incineration and cement plants. The remaining hard-to-abate emissions – mainly from the agriculture and industry sectors – will need to be offset through use of negative-emission technologies.

119. Between 2013 and 2020 Switzerland's total GHG emissions excluding LULUCF amounted to 382,788.03 kt CO_2 eq, the contribution of LULUCF amounted to 4,508.32 kt CO_2 eq and the use of market-based mechanisms amounted to 16,511.19 kt CO_2 eq, resulting in a net figure of 361,768.52 kt CO_2 eq, which equals 100 per cent of the Party's assigned amount for the second commitment period of the Kyoto Protocol. The ERT concluded that the total GHG emissions excluding LULUCF of Switzerland including the contribution of LULUCF and use of units from market-based mechanisms do not exceed the Party's emission budget corresponding to the 2020 target, and therefore that the target has been achieved.

120. The GHG emission projections provided by Switzerland in its NC8 and BR5 correspond to the WEM, WOM and WAM scenarios. Under the WEM scenario, emissions in 2030 are projected to be 27.3 per cent below the 1990 level and 9.6 per cent below the 2020 level. Under the WAM scenario, emissions in 2030 are projected to be 34.0 per cent below the 1990 level and 18.0 per cent below the 2020 level.

121. Switzerland's main policy framework relating to energy and climate change is the second CO_2 Act. The Party described the mitigation actions that it has implemented to help it achieve its 2020 and longer-term targets. These PaMs include the CO_2 levy on heating and process fuels; the ETS, which is linked with the EU ETS; and the national buildings refurbishment programme.

122. Switzerland continued to provide climate financing to developing countries in line with the Parliament's decision to raise the level of ODA to 0.5 per cent of gross national income by 2015. In addition, the Party's International Cooperation Strategy 2021–2024 calls for an increase in funding for climate change mitigation and adaptation to CHF 400 million (approximately USD 426 million) per year by 2024. The Party has increased its contributions to climate finance by 11.3 per cent since the BR4; its public financial support in 2019–2020 totalled USD 764.6 million. For those years, Switzerland provided more support for adaptation. The biggest share of public bilateral and regional support in went to cross-cutting projects in Africa, Asia and Latin America. The biggest shares of multilateral support went to the World Bank, the Global Environment Facility and the Green Climate Fund. Switzerland also reported on mobilized private climate finance, which increased by 30.2 per cent, from USD 136 million in 2017–2018 to USD 177 million in 2019–2020. Switzerland explained that much of the increase was achieved through the activities of Swiss Export Risk Insurance.

123. Switzerland continued to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects in the energy sector (e.g. the Renewable Energy Auction programme) and for cleaner industrial production (e.g. the Low Carbon Cement Project). Over time, the focus has remained the same. Priority for capacity-building support was given to projects and programmes in adaptation, mitigation and mobilizing private finance. Over time, the focus has remained the same.

124. In its NC8 Switzerland provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the actions taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Switzerland reported on a significant update to its climate modelling and scenarios. The scenarios now in use, the CH2018 Climate Scenarios, are superior to the previous ones; as a result, Switzerland has better information for conducting climate change impact studies and developing adaptation strategies and plans. The Party is currently implementing the second action plan (2020–2025) of its Adaptation to Climate Change in Switzerland strategy. This second plan considers the results from a nationwide assessment of risks and opportunities and includes measures aimed at reaching out to all stakeholders via NCCS and other information platforms; pilot programmes for adaptation; and the development of online tools to support municipalities in adapting to climate change. Switzerland also reported on its activities supporting adaptation in developing countries through bilateral and multilateral agreements.

125. In its NC8 Switzerland provided information on its activities relating to research and systematic observation. It reported updates on research and systematic observation activities at both the national and the international level, including key institutes and organizations involved, national and international partners, and funding agencies. The Party's focus areas

include long-term, continuous data collection, climate and energy transition modelling and capacity-building in developing countries, with an emphasis on glacier monitoring.

126. In its NC8 Switzerland provided information on its actions relating to education, training and public awareness. Education on climate change and sustainable development has been integrated into both compulsory education and vocational and professional education and training. Information, experience-sharing mechanisms, educational tools and learning instruments are accessible via online platforms. Key national programmes and entities include NCCS, SwissEnergy, the Climate Programme: Training and Communication, the éducation21 Foundation, and the Forum for Climate and Global Change of the Swiss Academy of Sciences.

127. In the course of the review, the ERT made no recommendations for Switzerland to improve its adherence to the UNFCCC reporting guidelines on NCs, the reporting guidelines for supplementary information or the UNFCCC reporting guidelines on BRs.

Annex

Documents and information used during the review

A. Reference documents

2022 GHG inventory submission of Switzerland. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2022.

2023 GHG inventory submission of Switzerland. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2023.

BR4 of Switzerland. Available at https://unfccc.int/BR4.

BR5 CTF tables of Switzerland. Available at https://unfccc.int/BR5.

BR5 of Switzerland. Available at https://unfccc.int/BR5.

"Common tabular format for 'UNFCCC biennial reporting guidelines for developed country Parties'". Annex to decision 19/CP.18. Available at https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf.

"Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention". FCCC/SBSTA/2014/INF.6. Available at http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.pdf.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/2019/13/Add.1. Available at https://unfccc.int/documents/210471.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex to 15/CMP.1. Available at https://unfccc.int/documents/4253.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex III to decision 3/CMP.11. Available at https://unfccc.int/documents/9101.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 13/CP.20. Available at http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf.

NC8 of Switzerland. Available at https://unfccc.int/NC8.

Report on the individual review of the annual submission of Switzerland submitted in 2022. FCCC/ARR/2022/CHE. Available at https://unfccc.int/documents/626655.

Report on the review of the report upon expiration of the additional period for fulfilling commitments for the second commitment period of the Kyoto Protocol of Switzerland submitted in 2023. FCCC/KP/CMP/2023/TPR/CHE. Available at https://unfccc.int/documents/637823.

Report on the technical review of the BR4 of Switzerland. FCCC/TRR.4/CHE. Available at https://unfccc.int/documents/230803.

"UNFCCC biennial reporting guidelines for developed country Parties". Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Adrian Schilt (Swiss Federal Office for the Environment), including additional material. The following references were provided by Switzerland and may not conform to UNFCCC editorial style as some have been reproduced as received:

Federal Office for the Environment, Climate Division. 2023. *Report upon expiration of the additional period for fulfilling commitments for the second commitment period of the Kyoto Protocol by Switzerland* and *Registry Data – True-up October 2023*. Available at https://unfccc.int/sites/default/files/resource/TUP-report_Switzerland.pdf.

OECD. 2021. Climate Finance Provided and Mobilised by Developed Countries: Aggregate Trends Updated with 2019 Data, Climate Finance and the USD 100 Billion Goal. OECD Publishing, Paris. https://doi.org/10.1787/03590fb7-en.

Prognos et al. 2020. Energy Perspectives 2050+. Prognos, Basel / TEP Energy, Zurich / Infras, Zurich / Ecoplan, Bern (mandated by the Swiss Federal Office of Energy, Bern). https://www.bfe.admin.ch/bfe/en/home/policy/energy-perspectives-2050-plus.html.