

A 1.5°C compatible Switzerland

Aligning the Swiss 2030 climate target with the Paris Agreement for preservation of snow and glaciers

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Summary

- Switzerland did not ratify its recently submitted NDC in a June 12 referendum that rejected its updated CO₂ Act. This severely limits its ability to reach a minimum 1.5°C compatible effort level of at least a 53% emissions reduction below 1990 levels by 2030.
- Its 2030 domestic target now falls back to a 2016 recommendation by the Swiss Federal Council of a 30% reduction in domestic emissions by 2030. This trajectory of emissions reductions by 2030 would make it difficult for Switzerland to reach its stated long-term target of carbon neutrality by 2050, and would lead to warming of 3-4°C by 2100 if followed globally.
- This level of warming would lead to the complete disappearance of nearly all snowpack and glaciers in Switzerland, according to projections.
- Switzerland's 2050 net zero target is 1.5°C compatible, but without a sufficiently ambitious 2030 target, Switzerland is overall not aligned with the Paris Agreement's 1.5°C long-term temperature goal.
- The full fair share 2030 contribution by Switzerland to global emission reductions consistent with the Paris Agreement includes support to developing countries reduce emissions on top of its own domestic emission reductions and is equivalent to an emissions reduction of 127% below 1990 levels. This means that if Switzerland achieved a 53% reduction domestically it would need to do the remainder through international assistance, finance or other support for mitigation in developing countries, which would have been provided at least in part by the Climate Fund that was part of the new CO₂ Act defeated in the referendum.
- A new climate law provides an opportunity for Switzerland to both protect its domestic snow and water resources, and serve as a model for other nations by setting a 1.5°C compatible domestic emissions target of at least 53% below 1990 levels by 2030. As the Government wrote in 2018, "Switzerland's credibility depends on its ability to live up to its responsibility as a contributor to climate change and as a prosperous nation".¹

¹ FOEN (ed.) 2018: Switzerland's climate policy. Implementation of the Paris Agreement. Federal Office for the Environment, Bern. Environmental Info no. 1803: 28 p.

Context

In late 2020, [Switzerland formally updated](#) its nationally determined contribution (NDC) to achieving the Paris Agreement's 1.5°C long-term temperature goal by targeting a higher level of domestic emissions reductions by 2030. In relation to its overall target of at least 50% reduction in greenhouse gas (GHG) emissions below 1990 levels, at least 37.5% would have come from emissions reductions achieved in Switzerland, and 12.5% from overseas reductions.

This modest goal was defeated in a referendum on June 12, 2021. While the current Swiss government has reiterated its commitment to 50% overall reductions by 2030, implementation now relies on the Federal Council's 2016 recommendation to achieve a 30% reduction in domestic emissions by 2030, with the remainder to be attained through emissions reductions achieved overseas.

In August 2019, Switzerland also announced that it would ratchet up its 2050 emissions goal to ensure its alignment with the 1.5°C long-term temperature goal of the Paris Agreement, committing to achieve net zero GHG emissions by 2050. But does Switzerland's 2030 target align with this new 2050 goal and is it enough to ensure the preservation of Switzerland's glaciers?

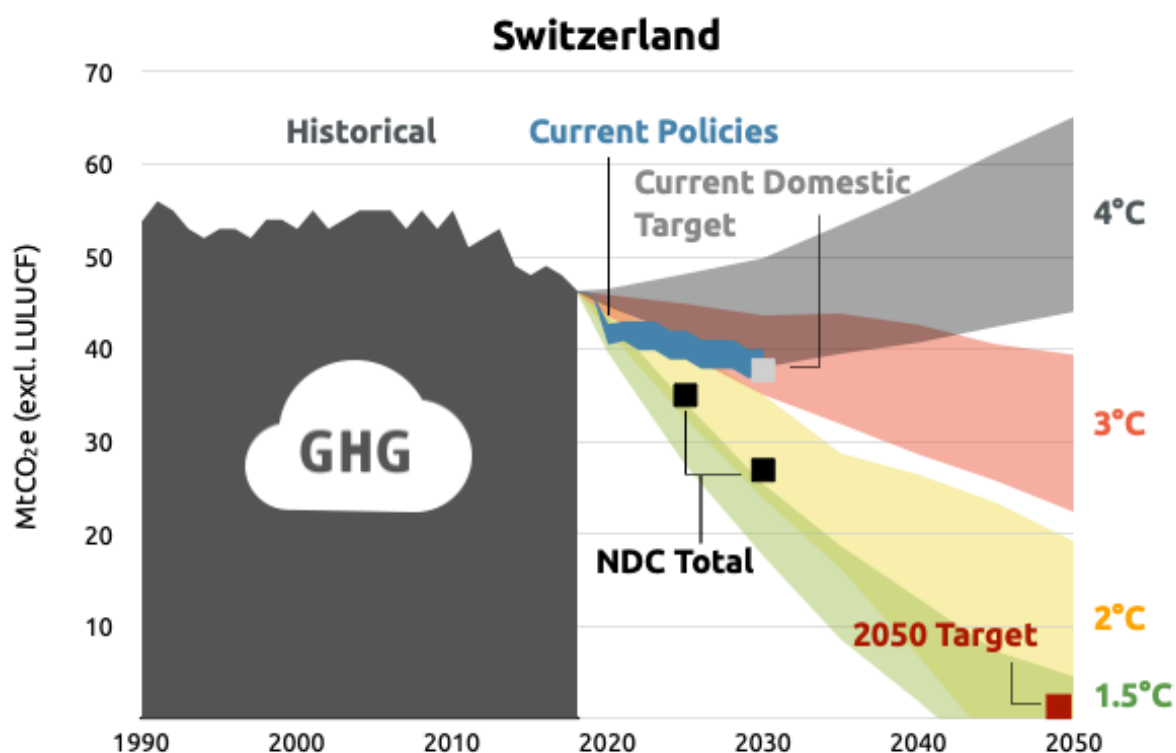


Figure 1. Switzerland current policies and targets vs. temperature ranges for domestic emissions reductions

National domestic emissions reduction commitments should be 1.5°C compatible – both over the long and medium-term to ensure the Paris Agreement's 1.5°C temperature limit is achieved. As shown in **Figure 1**, Switzerland's updated 2050 net zero target is indeed a 1.5°C compatible domestic emission reduction, but would require a sufficiently strong 2030 target to ensure alignment with its net zero goal.

In addition, as is acknowledged in Switzerland's NDC, a wealthy country's fair share contribution to meeting the Paris Agreement's goals requires in some cases a combination of both domestic emission reductions and support for action abroad to reduce emissions.

In this analysis we outline a range of 1.5°C compatible 2030 domestic emissions reduction pathways for Switzerland and use this to help interpret Switzerland's total 2030 NDC target, which is a combination of domestic emissions reductions and action abroad.

1.5°C compatible 2030 domestic emissions reductions for Switzerland

Using technically and economically feasible global mitigation pathways published by the IPCC in the Special Report on 1.5°C (SR1.5), and applying downscaling methods, it is possible to derive a range of national 1.5°C compatible domestic emissions reduction pathways for Switzerland over time. This range of downscaled pathways is presented in **Figure 1** and shows that a 2030 domestic target of at least 53% below 1990 levels would be needed to be Paris compatible (range 53-67%).

This analysis shows that Switzerland's now rejected 37.5% domestic reduction target would still have fallen far short of the 53% that is needed, and was therefore an insufficient domestic emission reduction contribution to limiting warming to 1.5°C. By failing to commit to a 1.5°C aligned target, Switzerland risks falling behind other wealthy European nations that will now have more stringent climate obligations under the EU's updated collective 2030 target (55% below 1990 levels). The UK's recently submitted NDC, with at least a 68% reduction below 1990 levels, is an example of a 1.5°C compatible domestic emissions reduction target.

A 1.5°C fair share contribution for Switzerland

For wealthy countries like Switzerland, strong domestic emissions reduction targets alone are not a full fair share contribution towards the 1.5°C global mitigation burden. As agreed in the Paris Agreement, equity considerations, which may include a country's historical contribution to cumulative emissions and its capability to act, imply that wealthy nations should also assist poorer ones in achieving emissions reductions – facilitating reductions above and beyond their own domestic contribution to global mitigation efforts.

As noted above, Switzerland's recently rejected domestic 2030 target of 37.5% below 1990 levels already falls far short of the minimum 53% domestic reduction needed to align with the Paris Agreement's 1.5°C temperature goal.

In addition, according to the Climate Action Tracker's equity methodology, an overall 1.5°C fair share contribution for Switzerland (domestic action + emissions reductions abroad and support for developing countries) - would amount to at least a 127% reduction below 1990 levels by 2030, with a fair share contribution for emission reduction support abroad of 74% (127% - 53%) (see **Figure 2**). This is a much greater level of effort than the current 12.5% (50% - 37.5%) component of Switzerland's NDC targeting emissions reductions abroad.

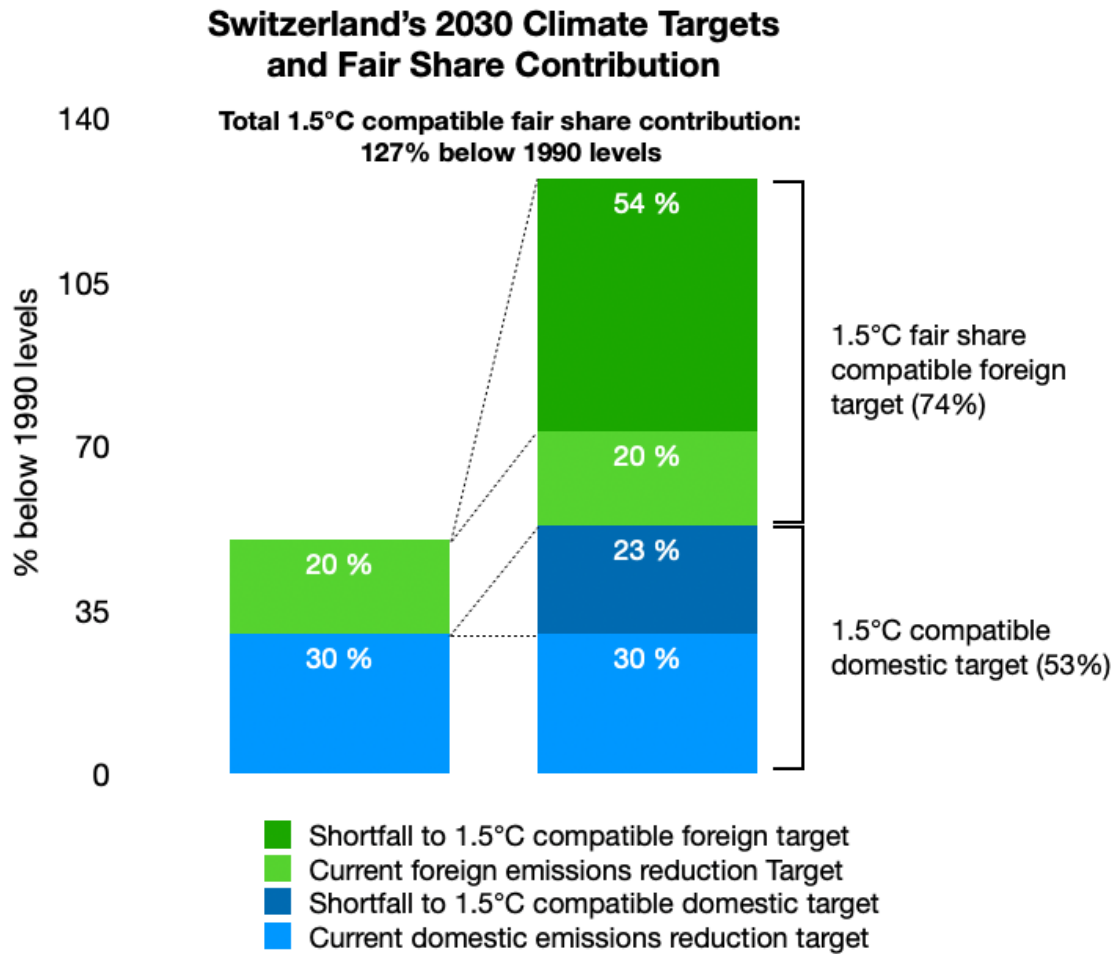


Figure 2. Switzerland's 2030 climate targets and 1.5°C compatible fair share contribution

Switzerland's 74% 1.5°C fair share contribution for emissions reductions abroad could be achieved through direct funding support or through other means of assistance to less wealthy nations such as international climate finance. In this regard, Switzerland has already committed significant resources towards the Green Climate Fund (GCF), with an initial USD100 million contribution for the period 2015-2019 followed by a further USD 150 million contribution for the period 2020-2024, some portion of which will be used toward mitigation and some part toward adaptation.

Can carbon credits as envisaged by Switzerland be used as part of its fair share emissions reductions?

An NDC like Switzerland's, that clearly delineates between planned domestic emissions reductions and those emission reductions that are intended to be achieved abroad, helps clarify whether a country is contributing its fair-share contribution to the global mitigation burden according to equity considerations.

For the purposes of assessing domestic mitigation against the modelled 1.5°C compatible domestic emissions pathway described, only reductions that take place at home can be included. Emissions reductions that are achieved abroad, but then imported as offsets, do not satisfy a portion of this domestic component. However, these emissions reductions can still be counted as contributing to achieving a country's fair share contribution to global mitigation efforts.

In contrast, under the Paris Agreement, the funding of emissions reductions that are internationally transferred as "internationally transferred mitigation outcomes" (ITMOs) under Article 6.2, away from activity host countries for use toward acquiring Parties' NDCs, is not considered a form of support for emissions reductions abroad by acquiring Parties. In reporting on support provided and mobilised under the Paris Agreement, Decision 18/CMA.1 requires Parties to explain "[h]ow double counting was avoided between the resources reported as provided or mobilised, and the resources used under Article 6 of the Paris Agreement by the acquiring Party for use towards the achievement of its NDC" (para. 121(m)(iii)).

It could be argued, though, that a contribution has been made to support emissions reduction achievement abroad where external support for Article 6 initiatives in developing countries delivers emissions reductions in host Parties that are not transferred or used for other international mitigation purposes, or where ITMOs resulting from Article 6 initiatives are cancelled to deliver an overall mitigation in global emissions (OMGE) (such that the underlying reductions cannot be used by any Party toward its NDC or for other international mitigation purposes).

Crucial negotiations on the Article 6 rulebook are ongoing and are scheduled to be completed at this year's Conference of Parties (COP26). These international rules will address requirements to ensure environmental integrity, transparency, and the avoidance of double counting through corresponding adjustments. They will also address the share of proceeds (SOP) to be set aside for the adaptation needs of vulnerable developing countries and the percentage cancellation to deliver an OMGE. Prior to agreement on these rules, Switzerland has entered into implementation agreements covering the international transfer of mitigation outcomes achieved from mitigation activities in Peru and Ghana.

Agreements such as Switzerland's, which precede international agreement on Article 6 rules, are potentially risky, as they may fail to reflect or require the stringent baseline, additionality and verification standards and other elements agreed, once negotiations have been completed.

To address this, Switzerland's submission states at page 12 that Switzerland will apply the guidance in the 15 December COP Presidency's text until multilateral rules are applied. Yet despite this statement, Switzerland's implementing agreements fail to address the elements of SOP and OMGE that are reflected in the COP Presidency's 15 December 2019 text under the heading "ambition in mitigation and adaptation actions".²

Both Switzerland and Peru have endorsed [The San José Principles for High Ambition and Integrity in International Carbon Markets](#). These principles, which are expressly referenced in Switzerland's December 2020 submission, commit Parties to work together with others to secure an Article 6 rulebook that, among other elements, "[d]elivers an overall mitigation in global emissions, moving beyond zero-sum offsetting approaches to help accelerate the reduction of global greenhouse gas emissions", and "[c]ontributes to quantifiable and predictable financial resources to be used by developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation".

The Switzerland-Peru and Switzerland-Ghana implementing agreements, and any future implementing agreements, should explicitly address the elements of SOP and OMGE and elaborate on the mechanics of their implementation. More generally, it will be necessary for Switzerland to move beyond the 12.5% foreign emissions reduction target in the recently rejected CO₂ Act, with greater support for emissions reductions in less wealthy nations, to meet its overall 2030 fair share contribution of a 127% reduction below 1990 levels. By doing so in conjunction with setting the domestic component of its NDC to a 1.5°C compatible level of at least 53% below 1990 levels by 2030,

² <https://unfccc.int/documents/204687> (Article 6.2 COP Presidency text);
<https://unfccc.int/documents/204686> (Article 6.4 COP Presidency text).

Switzerland could become the first developed country to commit to a 1.5°C fair share contribution to the global mitigation effort.

Near-complete loss of Swiss glaciers and snow with failure to meet the 1.5° goal

Exceeding the 1.5°C temperature goal, especially should temperatures exceed 2°C or more as would result were other countries to follow Switzerland’s lead, will result in the disappearance of nearly all glaciers and snowpack in Switzerland, according to published projections (red line, **Figure 3**).

If today’s high levels of emissions continue, a 90-98% loss may occur already by 2100³. Even at today’s level of Paris Agreement commitments, reaching about 2.7°C in 2100, just 15% of Swiss glaciers are projected to survive by 2300 (blue line). Only emissions levels consistent with 1.5°C of warming will preserve a significant amount of these glaciers, though we should be prepared for steep and continued losses through about 2060 even at the 1.5°C limit.

Snow amounts in winter will also decrease far below today’s levels at 2°C and higher levels of warming, with precipitation falling instead as rain except at the very highest altitudes.

Even today, at about 1.1°C of warming, glaciers in Switzerland are retreating rapidly, with snow cover becoming less reliable. As temperatures increase further, short or “intermittent” winters, with snow and rain alternating amidst periodic spikes in warm temperatures, are anticipated to become the norm. Even with snowmaking equipment, few of today’s ski areas will be able to survive such swings in temperatures above freezing.

Such patterns will greatly impact the viability also of most rural and farming communities in Switzerland, which rely on snowpack for consistent water supply for agricultural activities, resources that will become even more important in a warming climate more subject to higher temperatures and periods of intermittent drought. At global mean temperatures above 2°C, the Alps will become more similar to mountain ranges in the sub-tropics, with almost no year-round ice or snow.

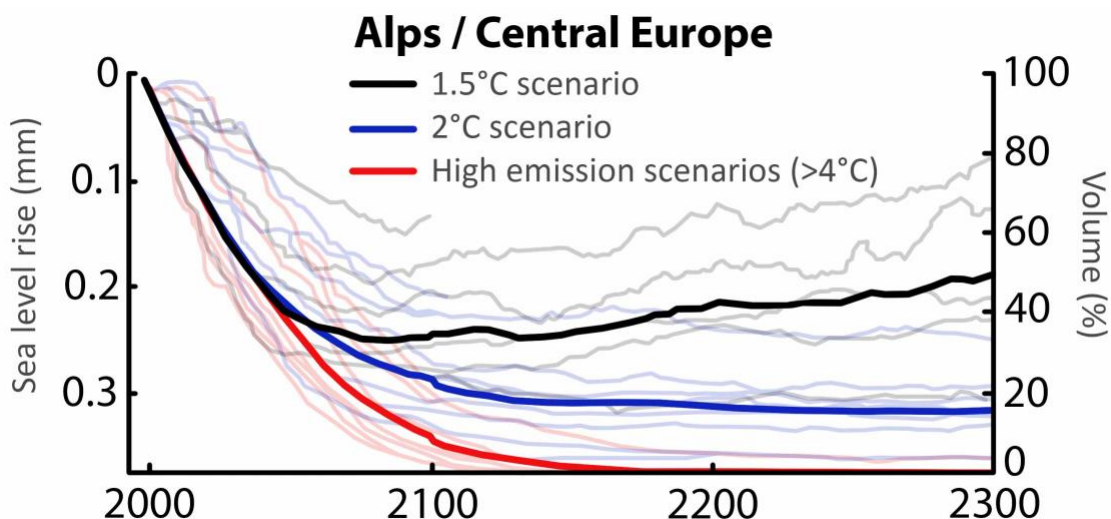


Figure 3. Projections of all glaciers in the European Alps up to the year 2300, based on Marzeion et al (2012)⁴

³ Žebre M. et al. (2021). 200 years of equilibrium-line altitude variability across the European Alps (1901-2100). *Climate Dynamics*, 56, 1183-1201.

⁴Marzeion B. et al. (2012). Past and future sea-level change from the surface mass balance of glaciers. *The Cryosphere*, 6, 1295-1322.

It is important to note however that despite continued steep losses for much of this century, adherence to the 1.5°C goal eventually results in stabilization of Swiss glaciers by 2100, as shown by the black line in Figure 2, above. Emissions pathways consistent with 1.5°C of warming even begin to show some recovery of Alpine glaciers by 2300, with slow but steady re-growth; although complete recovery would take many centuries.

Glaciers and snow today provide significant amounts of both energy, and economic benefits to Switzerland from tourism. Because of the impact of temperatures above the 1.5° goal on its natural resources and culture, Switzerland has a special interest in ensuring this goal is realised by leading through example, with domestic reductions consistent with a 1.5°C maximum temperature level; as well as significant contributions to poorer nations to assist them in reaching similar 1.5°C consistent reductions.