

Switzerland

The World's Carbon Markets: A Case Study Guide to Emissions Trading

Last Updated: May, 2013

Brief History and Key Dates:

The foundation of Swiss environmental policy was established in 1985 with the Act on the Protection of the Environment (PE Act), which was later revised in 1995 and 2003. In 1999, Switzerland adopted the Act on the Reduction of CO₂ Emissions (CO₂ Act) as a supplementary environmental policy that centers on carbon dioxide (CO₂) mitigation. The goals and mechanisms outlined in these two Acts were designed to help Switzerland meet its Kyoto Protocol commitment of 8% greenhouse gas (GHG) reduction relative to 1990 for 2008-2012. The PE Act enumerates mitigation measures for non-CO₂ GHGs from waste disposal (CH₄), synthetic gases (HFC, PFC, SF₆), and GHG precursors. The CO₂ Act covers 80% of Swiss GHGs (See Figure 1).¹ In December 2011, revisions to the CO₂ Act enumerated a CO₂ reduction target of 20% below 1990 levels (52.5 MtCO₂) by 2020. The country's 2009 emissions were about 51.95 MtCO₂e. The revised CO₂ Act became active on January 1, 2013.^{2,3}

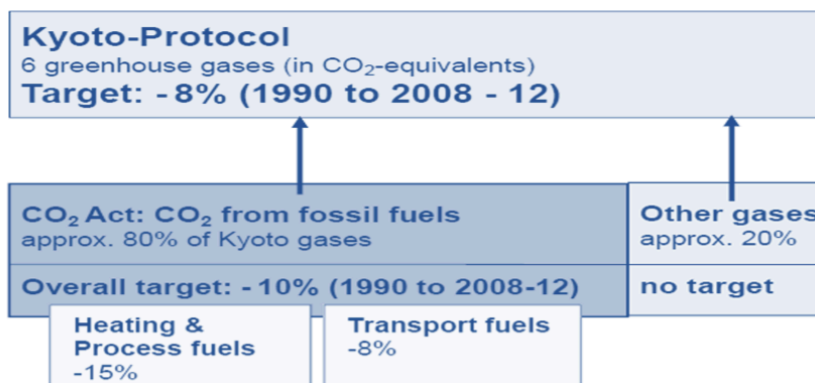


Figure 1: Components of Swiss Kyoto Target Achievement. Source: FOEN 2009⁴

For 2008-2012, the overarching goal of the 1999 CO₂ Act was to reduce CO₂ emissions by 10% below 1990 levels. Specifically, the CO₂ Act aimed for a 15% CO₂ reduction from heating and industrial process fuels and an 8% CO₂ reduction from transport fuels. Instruments outlined in the 1999 CO₂ Act included a CO₂ levy⁵ for heating, industrial process, and transportation fuels, as well as an emissions trading system (ETS) that included Kyoto Protocol flexibility mechanisms.⁶ During 2001-2009, about 1,900 companies were covered by the levy and/or ETS outlined in the 1999 CO₂ Act.⁷ The CO₂ levy and the ETS are continuing for 2013-2020, in accordance with the December 2011 CO₂ Act revisions.⁸

The Swiss ETS was introduced on January 1, 2008 as an alternative option for complying with the national CO₂ levy on heating, industrial process, and transport fuels, which also went into effect on that day. For the period 2008-2012,

firms covered by the levy had two choices: (1) pay the CO₂ levy, or (2) voluntarily set a verified absolute emissions target and associated allowance allocation and participate in the Swiss ETS, which exempted them from paying the CO₂ levy.⁹ In essence, the CO₂ levy functioned as a hard price ceiling for covered entities, and the option for ETS participation allowed firms to potentially pay a lower rate for emissions reductions than this ceiling price. For 2008 and 2009 the CO₂ levy was CHF \$12/tCO₂, and this rate increased to CHF \$36/tCO₂ for 2010-present.¹⁰ The ETS (with some mandatory participation) and a CO₂ levy has continued after 2012. December 2011 revisions to the Swiss ETS have increased its similarity to the EU ETS, thereby providing comparable market conditions for Swiss and EU industries and improving the prospect of linking with the EU ETS.¹¹

Summary of Key Policy Features:

CAP/TARGET: As stated above, the CO₂ levy and voluntary ETS were designed to help achieve the 1999 CO₂ Act's goal of reducing **CO₂ by 10% relative to 1990 levels by 2010**. The CO₂ Act was implemented as a means of achieving most of Switzerland's Kyoto Protocol pledge to reduce total GHG emissions **8% relative to 1990 levels for 2008-2012**.¹² For 2013-2020, Switzerland aims to reduce GHG emissions by **20% relative to 1990 by 2020**; this target corresponds to an absolute reduction target of around 10.5 MtCO_{2e} by 2020, down from 1990 emissions of 52.7 MtCO_{2e}. Estimates indicate that the CO₂ Act will lead to reductions of 8.5 MtCO_{2e}/year, 0.8 MtCO_{2e}/year of which would come from the ETS and 2 MtCO_{2e}/year of which would come from the CO₂ levy. The Federal Council may increase this 20% reduction target to up to 30%, if an international agreement were to arise.¹³

Swiss ETS targets are absolute. For 2010, the **total cap** was 3.42 MtCO₂,¹⁴ covering approximately 7% of Swiss emissions.

SCOPE/COVERAGE: The Swiss ETS **point of obligation** is company-level at the point of combustion, and, for 2008-2012, it covered firms that set absolute caps—which were approved by federal authorities—for themselves in order to receive exemption from the CO₂ Act's carbon levy. As of July 2011, about **950 companies** had set caps, and about **430 of these companies** participated directly in the Swiss ETS,¹⁵ where the **emissions threshold** for a company to qualify as a direct participant was at least 0.25 MtCO_{2e}/year.¹⁶ Small-to-medium size entities (SMEs) were allowed to purchase allowances if they exceeded their cap, but they were not allocated allowances and, thus, were not considered direct participants.¹⁷ See Figure 2.

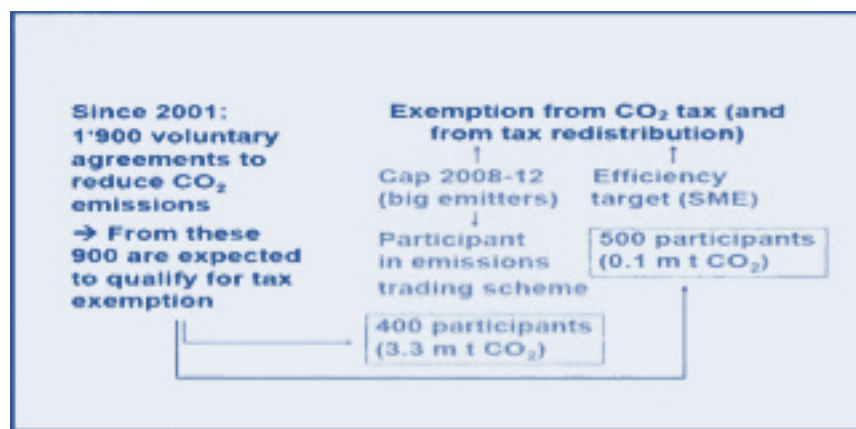


Figure 2: Breakdown of Swiss ETS Participants. Source: FOEN 2011¹⁸

For 2008-2012, the Swiss ETS covered heating and process fuels. **Sectors** with companies covered by the ETS included ceramics, paper, plastics, aluminum, glass, chemistry, metal-working and engineering, foodstuffs and lime,

foundries, printers, and haymakers. CO₂ was the only **gas** covered by the program.¹⁹ The **compliance periods** within the Swiss ETS were annual.²⁰

For 2013-2020, the Federal Council will specify economic sectors from which installations that operate with high or moderate GHG emissions may **apply to participate in the ETS**. In designating the covered economic sectors, the Federal Council must take into account: (1) the correlation between the CO₂ levy burden and the value addition of the specified economic sector, and (2) the extent to which the CO₂ levy adversely affects the specified sector's economic competitiveness. In addition, the **Federal Council may mandate compulsory ETS participation** from sectors with high GHG emissions per installation. As was the case during 2008-2012, ETS participants are exempted from the CO₂ levy for 2013-2020.²¹

ALLOWANCE DISTRIBUTION: For 2008-2012, allowances were **distributed freely** to Swiss ETS participants. Participants received an emissions target for 2010, and this target doubled as the average yearly emissions for each year between 2008 and 2012.²² The quantity of allowances that a company received was determined by a **“bottom-up” approach**. Federal authorities verified the company's potential to reduce CO₂ emissions from both a technical and economic standpoint, based on both projected production and CO₂ emissions, and CO₂ reduction measures already implemented. As mentioned above, small and medium enterprises (SMEs) that volunteered to set an emissions target or follow an emissions reduction plan did not receive free emissions allowances. If, however, the emissions for an SME exceeded the target level, then the company was allowed to purchase allowances in order to fulfill its commitment.²³

For 2013-2020, the Federal Council will allocate allowances annually. Allocation will entail both **free distribution and auctions**, and the Federal Council will retain an appropriate number of emissions allowances each year in order to have them available for new ETS participants. According to December 2011 revisions on the CO₂ Act, the Federal Council shall regulate allowance allocation details, and “in doing so shall take account of comparable international regulations.”²⁴ This language opens the door for Switzerland to structure its allowance distribution similarly to the EU ETS.

FLEXIBILITY PROVISIONS: The Swiss ETS allows for companies to submit **international offsets** in order to meet up to 8% of their compliance requirements. ERUs, CERs, and RMUs are accepted international offsets within the Swiss ETS. Temporary certificates from carbon sink projects (RMUs, tCERs, and ICERs), such as afforestation and reforestation, are allowed, but they cannot be banked for use in future commitment periods. The Federal Office for the Environment (FOEN) may ask companies that use temporary credits to guarantee that additional offsets are purchased once temporary credits expire. AAUs are permitted from countries that have a similar ETS to Switzerland.²⁵ See Figure 3.

There are no limits for **banking** Swiss allowances or international AAUs for use in 2013-2020. The banking limit through the next commitment period for both CERs and ERUs is 2.5% of banked AAUs. However, companies may not bank RMUs, tCERs, and ICERs for use in the next commitment period.²⁶ **Banking** and **Borrowing** were allowed within the first commitment period, 2008-2012.²⁷

For 2013-2020, measures carried out abroad may achieve a maximum of 75 per cent of additional reductions in GHG emissions. Reductions that qualify as “abroad reductions” must have been achieved without support of Switzerland, and, in developing countries, they must contribute to sustainable development while having zero negative social or ecological impacts.²⁸

Emission Credit	Abbreviation	Kyoto Code	Offsettable Against Kyoto Target Limit	Tradable			Bankable
				CH	EU	Intl	
Assigned Amount Unit	AAU	1	✓/✗	✓	✓	✓	✓
Removal Unit	RMU	2	✓	✓	✓	✓	✗
Emission Reduction Unit (converted from AAU)	ERU	3	✓	✓	✓	✓	✓
Emission Reduction Unit (converted from RMU)	ERU	4	✓	✓	✓	✓	✓
Certified Emission Reduction	CER	5	✓	✓	✓	✓	✓
Temporary CER	tCER	6	✓	✓	✓	✓	✗
Long-term CER	ICER	7	✓	✓	✓	✓	✗
European Union Allowance	EUA	0	✗	✗	✓	✗	✓

Table 1: Emission Credits: Types, Offsetting, and Tradability. Source: FOEN (2007)²⁹

Switzerland and EU have initiated discussions about *linkage*. According to Aldy and Stavins (2012), this link is likely to become effective in 2014.³⁰ The Swiss are in favor of linking with the EU ETS because a larger market provides for greater cost-effective reduction potential, liquidity, price stability, and flexibility in achieving targets. Furthermore, linkage would enable Swiss companies to participate in the same market as EU business partners.³¹ According to FOEN (2011), “the Swiss Federal Council has also proposed that the Swiss ETS be adapted in the context of the ongoing complete revision of the CO₂ Act with a view to attaining a high level of compatibility with the EU ETS.”³²

MARKET REGULATION AND OVERSIGHT: Swiss ETS credits exist electronically and are listed on the FOEN-managed³³ *National Emissions Trading Registry*, which is an online accounting system that, according to FOEN (2011), “ensures the issuance, holding, transfer, acquisition, cancellation and surrender of emission credits are accurately recorded.”³⁴ After the federal government approves a company’s baseline, the agreed-upon quantity of allowances (the amount of tax-exempt emissions) appears on the Registry under the company’s name. Companies with emissions that exceed their allowance allocation buy credits on the Registry, and companies that emit below their caps either bank or sell credits. The annual submission of credits occurs via the Registry and Registry data must be published electronically, unless specially protected. The Registry also connects Swiss ETS participants to Kyoto flexibility mechanisms, and transactions involving these units are subsequently approved by the UN.

For 2008-2012, the *penalty* for companies that failed to achieve their Swiss ETS targets was retroactive payment of the carbon levy (plus interest) for each ton of CO₂ emitted since the company’s exemption.³⁵ For 20013-2020, companies that fail to surrender enough emissions allowances and/or emissions reduction certificates *must pay the Confederation CHF \$125/tCO₂e* by the following year.³⁶

COMPLEMENTARY AND SUPPLEMENTARY MEASURES: As noted above, the CO₂ Act envisions the Swiss ETS and the carbon levy as alternative compliance options. This dual-policy approach allows companies to bypass carbon levy payments if they voluntarily join the Swiss ETS. Beginning in 2013, specified companies face mandatory ETS participation.³⁷

For 2008-2012, a company was covered by the **CO₂ levy** if its emissions exceeded a set percentage of its 1990 emissions from fuel combustion. Beginning January 1 2009, a company that had emitted greater than 90% of its 1990 emissions level in 2007 was covered by the levy. In 2010, a company that emitted greater than 86.5% of its 1990 emissions in 2008, or greater than 85.5% in any subsequent year, was covered by the levy.³⁸ For 2008 and 2009, the levy was CHF \$12/tCO₂. The rate was increased to CHF \$36/tCO₂ in 2010 and will remain in place through 2012.³⁹ There were reduced levy rates for natural gas and biofuels.⁴⁰ In addition, the CO₂ Act earmarked a maximum of up to CHF \$200 million of government revenue from the CO₂ levy for the financing of CO₂ reduction measures in buildings.⁴¹

The December 2011 revisions to the CO₂ Act altered future (2013-2020) aspects of the CO₂ levy. The revisions enumerate how **revenues are returned to the population**. One-third of revenue from the CO₂ levy, but no more than CHF \$300 million/year, may be used to finance measures to reduce CO₂ emissions from buildings. In addition, a maximum of CHF \$25 million/year of revenues from the CO₂ levy may be allocated to the Technology Fund, which will use this money to guarantee loans to companies that aim to develop and market equipment and processes to reduce GHG emissions, facilitate the use of renewable energies, or encourage the economic use of natural resources.⁴²

The rate of the levy has not change from CHF \$36/tCO₂e, and the Federal Council is not allowed to raise this levy above CHF \$120/tCO₂e. The Federal Council has authority to designate economic sectors subject to the levy, taking into account: (1) the correlation between the CO₂ levy burden and the value added of the economic sector concerned; (2) the extent to which the CO₂ levy adversely affects international competitiveness; and (3) the average GHG emissions agreed on for the years 2008-2012. The noncompliance penalty is CHF \$125 for each excess tCO₂e that is emitted.⁴³

Apart from the carbon tax and the opt-in ETS compliance option, the **CO₂ Act of 1999** outlined the following supplementary measures: (1) a binding target for average CO₂ emissions from new cars; (2) the implementation of emissions reduction measures at home and abroad that allows producers of fossil propellant fuels to fulfill an obligation to cover a quarter of their emissions; and (3) enhanced climate change adaptation activity.⁴⁴ The **December 2011 CO₂ Act revisions** focus on emissions reductions from buildings, passenger cars, and sinks.⁴⁵

In order to achieve Switzerland's Kyoto Protocol commitment, the fourth Swiss national communication (2005) introduced and upheld the development of the following measures:⁴⁶

- The January 10 2005 introduction of "**climate cent**," a CHF \$0.015 tax on transport fuels levied by mineral oil importers to fund the Climate Cent Foundation. A primary objective of this foundation was to reduce 9 MtCO₂ during 2008-2012—one million tons domestically and eight million tons internationally via the purchase of project-based Kyoto-approved certificates.⁴⁷
- The **Swiss Energy program** second phase (2006-2010) was officially continued (the first phase was 2000-2005).
- The adoption of action plans for **energy efficiency** and **renewable energy**.

The Fifth National Communication proposes the following post-2012 action:⁴⁸

- Intensified focus on **reducing transport emissions**: (1) the introduction of CO₂ limits from new cars; (2) domestic and international projects to reduce emissions from specific parts of the transport sector; and (3) the option to introduce a CO₂ levy on transport fuels.
- Full compensation of emissions from combined cycle power plants.
- Further **climate change adaptation** measures.

RESULTS: Each year over 2008-2010, ETS emissions were lower than targeted levels (see Table 2). According to FOEN (2011), “this outperformance demonstrates that the companies take their responsibilities towards the federal authorities seriously and in some cases have invested early in carbon reduction measures.”⁴⁹

	2008	2009	2010
Emission Target (Allocated emission allowance)	3.3 MtCO ₂	3.1 MtCO ₂	3.42 MtCO ₂
CO₂ Emissions (effective)	2.9 MtCO ₂	2.6 MtCO ₂	2.85 MtCO ₂
Over-performance (surplus emission allowances)	0.4 MtCO ₂	0.5 MtCO ₂	0.57 MtCO ₂

Table 2: Overview of ETS Performance 2008-2010. Source: Department of the Environment, Transport, Energy and Communications⁵⁰

What Distinguishes This Policy?

UNIQUE ASPECTS:

1. For 2008-2012, the ETS worked as a **voluntary opt-in program that provided an alternative way to comply with a carbon levy**. This is not how the vast majority of emissions trading systems have been designed. For 2013-2020, the Swiss ETS **will move from a customized system to a standardized (EU-style) system**, as Switzerland continues linkage negotiations with the EU.
2. Entities face absolute caps, but the system as a whole does not stipulate an absolute cap. This is a byproduct of the **“bottom-up” allowance allocation methodology**.
3. The Swiss ETS is relatively **small in size**—3.42 MtCO₂ in 2010. By contrast, the Tokyo ETS covers approximately 13 MtCO₂e annually,⁵¹ and the EU ETS (Phase II) covers approximately 2,083 MtCO₂e/year; so, the Swiss ETS’s emissions coverage is 26.3% that of the Tokyo ETS and approximately 0.16% that of the EU ETS.

CHALLENGES:

1. Modifying certain program characteristics in order to **link with the EU ETS**.
2. The **small size** of this market results in less cost-effective reduction potential, liquidity, price stability, and flexibility in achieving targets.

Author Acknowledgements:

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EDF and IETA would like to thank Ruben Lubowski, Pedro Piris-Cabezas, Jos Cozijnsen, Jennifer Andreassen, Joe Billick, Clayton Munnings, and Juerg Fuessler (INFRAS) for their contribution to Development of Emissions Trading Around the World.

Disclaimer: The authors encourage readers to please contact them with any corrections, additions, revisions, or any other comments, including any relevant citations. This will be invaluable in strengthening and updating the case studies and ensuring they are as correct and informative as possible.

¹ FOEN (2009). "Switzerland's Fifth National Communication under the UNFCCC." Available at http://unfccc.int/resource/docs/natc/che_nc5.pdf

² FOEN (March 2011). "First formal round of negotiations held with EU for linking of emissions trading systems." Available at

<http://www.bafu.admin.ch/dokumentation/medieninformation/00962/index.html?lang=en&msg-id=38021>

³ FOEN (December 2011). "Federal Act on the Reduction of CO₂ Emissions (CO₂ Act)." The Federal Assembly of the Swiss Confederation. Available at

⁴ *Supra*, Note 1.

⁵ According to FOEN, "the term 'levy' has been used in order to distinguish the CO₂ levy from a conventional tax, since the revenue from the levy is not channeled into the national budget, but is returned in its entirety to the population (via reduction of health insurance premiums), to businesses that pay it (in the form of a cut in old-age pension contribution), and to the buildings program." Source: *Supra*, Note 3.

⁶ *Supra*, Note 1.

⁷ Government of Switzerland (May 2011). "Swiss Climate Policy – an overview." Federal Department of the Environment, Transport, Energy, and Communications (DETEC) and Federal Office of the Environment (FOEN). Available at http://www.up.ethz.ch/education/carbon_mitigation/c-mitigation_ch_climatepolicy_fs11.pdf

⁸ *Supra*, Note 3.

⁹ *Supra*, Note 1.

¹⁰ Meyer, Rolf (July 2009). "Emissions Trading in Switzerland." Bern Mobil. Available at

http://www.uitp.org/advocacy/climate_change_docs/CO2_emission_trading_CH.pdf

¹¹ *Supra*, Note 3.

¹² *Supra*, Note 2.

¹³ *Supra*, Note 3.

¹⁴ Government of Switzerland (July 2011). "Exempt companies involved in emissions trading." Available at

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¹⁵ FOEN (July 2011). "CO₂-tax exempt companies exceed CO₂-targets also in 2010." Available at

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¹⁷ FOEN (January 2010). "Emissions trading for companies." Available at <http://www.bafu.admin.ch/emissionshandel/05545/index.html?lang=en>

¹⁸ *Supra*, Note 7.

¹⁹ *Supra*, Note 16.

²⁰ *Supra*, Note 15.

²¹ *Supra*, Note 3.

²² Mace, M.J., Ilona Millar, Christoph Schwarte, Jason Anderson, Derik Broekhoff, Robert Bradley, Catherine Bowyer, and Robert Heilmayr (May 2008). "Analysis of the legal and organizational issues arising in linking the EU Emissions Trading Scheme to other existing and emerging emissions trading schemes." FIELD. IEEP. WRI. Available at http://www.field.org.uk/files/Linking%20emission%20trading%20oschemes_o.pdf

²³ Parliament of Australia (November 2010). "Swiss emissions trading scheme." Available at

http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Browse_by_Topic/ClimateChange/responses/economic/emissions/international/swiss

²⁴ *Supra*, Note 3.

²⁵ FOEN (November 2007). "Emission Credits, Offsetting and Trading." Available at

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²⁶ *Supra*, Note 25.

²⁷ *Supra*, Note 22.

²⁸ *Supra*, Note 3.

²⁹ *Supra*, Note 25.

³⁰ Aldy, Joseph and Robert Stavins (May 2012). "Post-Durban Climate Policy Architecture Based on Linkage of Cap-and-Trade Systems." *The Chicago Journal of International Law*.

³¹ FOEN (November 2010). "Linking the Emissions Trading System Swiss-EU." Available at

<http://www.bafu.admin.ch/emissionshandel/10923/index.html?lang=en>

³² *Supra*, Note 2.

³³ FOEN (December 2010). "The National Emissions Trading Registry." Available at <http://www.bafu.admin.ch/emissionshandel/05564/index.html?lang=en>

³⁴ *Supra*, Note 33.

³⁵ Hood, Christina (November 2010). "Reviewing Existing and Proposed Emissions Trading Systems." OECD/IEA. Available at http://www.iea.org/papers/2010/ets_paper2010.pdf

³⁶ *Supra*, Note 3.

³⁷ *Supra*, Note 3.

³⁸ *Supra*, Note 17.

³⁹ *Supra*, Note 14.

⁴⁰ *Supra*, Note 1.

⁴¹ *Supra*, Note 2.

⁴² *Supra*, Note 3.

⁴³ *Supra*, Note 3.

⁴⁴ *Supra*, Note 2.

⁴⁵ *Supra*, Note 3.

⁴⁶ *Supra*, Note 1.

⁴⁷ *Supra*, Note 10.

⁴⁸ *Supra*, Note 1.

⁴⁹ *Supra*, Note 15.

⁵⁰ *Supra*, Note 14.

⁵¹ Bureau of the Environment, Tokyo Metropolitan Government (March 2010). "Tokyo Cap-and-Trade Program: Japan's first mandatory emissions trading scheme." Available at http://www.kankyo.metro.tokyo.jp/en/attachement/Tokyo-cap_and_trade_program-march_2010_TMG.pdf