

Offsetting CO₂ emissions: projects and programmes

A communication of the FOEN in its capacity as enforcement authority of the CO₂ Ordinance. Status as of 2024



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This publication is a communication of the FOEN in its capacity as an enforcement authority. Intended for applicants for decisions, it explains the FOEN's actual practices, both formal (documents that must be provided as part of an application) and material (proof required to meet the substantive legal requirements). Applicants that comply with the information contained in this publication can consider their application complete.

First point of contact for applicants / General questions

Federal Office for the Environment (FOEN)
Climate Division
3003 Bern
kop-ch@bafu.admin.ch

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Authors

Climate Division, Climate Policy Section, Compensation Office

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Table of contents

Abstracts	6	5	Reference scenario and expected emission reductions	35
Foreword	7	5.1	System boundary and emission sources	35
1 Introduction	8	5.2	Determining the reference scenario and reference development	36
2 Requirements	9	5.3	Expected emissions	39
2.1 Eligible and ineligible project types	9	5.4	Expected emission reductions	39
2.2 State of the art	10	5.5	Abroad: delimitation from the nationally determined contribution (NDC) of the partner country	40
2.3 Compliance with applicable legal provisions	10	6	Additionality	41
2.4 Principle of conservativeness	11	6.1	General principles	41
2.5 Permanence of carbon storage	11	6.2	Financial assistance	42
2.6 Start of implementation and crediting period	12	6.3	Economic feasibility analysis	42
2.7 Double counting	16	6.4	Common practice analysis	46
2.8 Specific case of projects and programmes abroad	17	7	Structure and implementation of monitoring	47
3 Authorisation application and issuance of attestations	18	7.1	Monitoring plan	48
3.1 Project or programme outline (optional)	19	7.2	Implementation of monitoring and calculation of actual emission reductions	48
3.2 Project or programme description	20	7.3	Monitoring report	50
3.3 Validation	21	8	Apportionment of effect	51
3.4 Submission of authorisation application and decision on project or programme qualification	22	8.1	Non-refundable payments to be taken into account	51
3.5 Operation and monitoring	23	8.2	Method for apportioning effect	52
3.6 Verification	24	9	In Switzerland: Interfaces	54
3.7 Submission of monitoring report and decision on issuance of attestations	25	9.1	Interface with the operation of installations with reduction obligations	54
3.8 In Switzerland: extension of the crediting period	26	9.2	Emission reductions achieved through heat supply to or by installation operators with an emission target	54
3.9 Substantial modifications	27	9.3	Emission reductions achieved by heat supply from household waste incineration plants	54
3.10 Publication of application documents	29			
3.11 Specific case of carbon storage projects and programmes	29			
4 Validation and verification – information for applicants	31			
4.1 Validation – information for applicants	32			
4.2 Verification – information for applicants	32			
4.3 Revalidation – information for applicants	34			

<u>10 Scientific support</u>	<u>55</u>
10.1 Scientific support and project or programme description	55
10.2 Scientific support and project monitoring	56
<u>Annex A</u>	<u>57</u>
<u>List of other annexes</u>	<u>61</u>
<u>List of abbreviations</u>	<u>62</u>
<u>Literature</u>	<u>63</u>
<u>Glossary</u>	<u>64</u>
<u>List of changes</u>	<u>67</u>

Abstracts

The CO₂ Act (SR 641.71) requires producers and importers of fossil fuels to offset part of the CO₂ emissions resulting from their release. To do this, they must submit attestations from offsetting projects or programmes that meet the requirements set out in Art. 5 and 5a of the Ordinance of 30 November 2012 on the Reduction of CO₂ Emissions (SR 641.711). Eligible projects or programmes must relate to the greenhouse gases listed in Art. 1 of the CO₂ Ordinance.

Hersteller und Importeure fossiler Treibstoffe sind gemäss CO₂-Gesetz (SR 641.71) dazu verpflichtet, einen Teil der durch deren Inverkehrbringen verursachten CO₂-Emissionen zu kompensieren. Dazu müssen sie insbesondere Bescheinigungen aus Kompensationsprojekten oder -programmen einreichen, die die Anforderungen nach den Art. 5 und 5a der Verordnung vom 30. November 2012 über die Reduktion der CO₂-Emissionen (SR 641.711) erfüllen. Die zugelassenen Projekte oder Programme müssen auf die in Art. 1 der CO₂-Verordnung aufgeführten Treibhausgase ausgerichtet sein.

La loi sur le CO₂ (RS 641.71) oblige les producteurs et importateurs de carburants fossiles à compenser une partie des émissions de CO₂ résultant de leur mise en circulation. Pour ce faire, ils doivent remettre des attestations provenant de projets ou de programmes de compensation remplissant les exigences posées aux art. 5 et 5a de l'ordonnance du 30 novembre 2012 sur la réduction des émissions de CO₂ (RS 641.711). Les projets ou programmes admis doivent porter sur les gaz à effet de serre mentionnés à l'art. 1 de l'ordonnance sur le CO₂.

Secondo la legge sul CO₂ (RS 641.71) i produttori e gli importatori di carburanti fossili sono tenuti a compensare una parte delle emissioni di CO₂ generate dai carburanti utilizzati. Per adempiere tale obbligo, devono emettere attestati provenienti da progetti o programmi di compensazione che soddisfano i requisiti degli art. 5 e 5a dell'ordinanza del 30 novembre 2012 sulla riduzione delle emissioni di CO₂ (RS 641.711). I progetti o programmi ammessi devono riguardare i gas serra elencati nell'art. 1 dell'ordinanza sul CO₂.

Keywords:

CO₂ Act, offsetting obligation, fossil fuels, offsetting projects and programmes, additionality, attestations

Stichwörter:

CO₂-Gesetz, Kompensationspflicht, Fossile Treibstoffe, Kompensationsprojekte und -programme, Zusätzlichkeit, Bescheinigungen

Mots-clés :

loi sur le CO₂, obligation de compenser, carburants fossiles, projets et programmes de compensation, additionnalité, attestations

Parole chiave:

legge sul CO₂, obbligo di compensazione, carburanti fossili, progetti e programmi di compensazione, addizionalità, attestati

Foreword

Switzerland has an active policy to reduce greenhouse gas emissions. By ratifying the Paris Agreement, the country has pledged to cut its greenhouse gas emissions to half of 1990 levels by 2030. Under the CO₂ Act revised and adopted by Parliament on 17 December 2021 and in force since 1 January 2022, at least three quarters of the necessary reductions for the period 2022 to 2024 must be made in Switzerland. To achieve this target, Switzerland plans to continue focusing its action on the sectors of transport, construction, industry, agriculture and waste. Based on new scientific findings published by the Intergovernmental Panel on Climate Change (IPCC), the Federal Council decided on 28 August 2019 to aim for climate neutrality by 2050. On 27 January 2021, the Federal Council adopted Switzerland's Long-Term Climate Strategy, which sets out climate policy guidelines up to 2050 and establishes strategic targets for key sectors. On 18 June 2023, the Swiss people also voted on the Federal Act on Climate Protection Goals, Innovation and Strengthening Energy Security, which definitively enshrines in law the goal of achieving carbon neutrality by 2050 and the steps required to do so. Switzerland thus intends to contribute to international efforts aimed at limiting global warming to a maximum of 1.5 °C above pre-industrial levels.

To meet their offsetting obligations, producers and importers of fossil fuels must submit attestations from emission reduction projects or programmes. In this context, the Compensation Office is responsible for enforcing the provisions relating to attestations issued for emission reductions and carbon storage. Under the revised CO₂ Act, the Federal Council sets the offsetting rate at between 5 and 40 per cent of the emissions resulting from the attestations in circulation and the proportion of measures to be implemented in Switzerland.

This revised edition of the communication replaces the version published on 1 June 2022. The revision includes clarification and additional information on enforcement practices. The communication also incorporates the amendments to the revised CO₂ Ordinance which entered into force on 1 November 2023 and 1 January 2024. Changes to the wording have also been made.

Katrin Schneeberger, Director
Federal Office for the Environment (FOEN)

Pascal Previdoli, Deputy Director
Swiss Federal Office of Energy (SFOE)

1 Introduction

Articles 5 and 6 of the Federal Act of 23 December 2011 on the Reduction of CO₂ Emissions (CO₂ Act, SR 641.71)¹ provide for the issuance of attestations for emission reductions in Switzerland and abroad. The conditions and procedure for issuing attestations are set out in Articles 5 to 14 of the Ordinance of 30 November 2012 on the Reduction of CO₂ Emissions (CO₂ Ordinance, SR 641.711, status as of 1 January 2024).²

The FOEN is responsible for enforcing the provisions concerning attestations for carbon storage³ and emission reductions⁴ in Switzerland and abroad, in agreement with the SFOE for projects and programmes implemented in Switzerland and with the State Secretariat for Economic Affairs (SECO) for projects and programmes implemented abroad (Art. 130 para. 4 CO₂ Ordinance). This communication explains the FOEN's practices as an enforcement authority in implementing Articles 5 and 6 of the CO₂ Act and the relevant provisions of the CO₂ Ordinance. It has been revised and supplemented following amendments to the CO₂ Ordinance. It aims to provide applicants with clear and consistent guidance for submitting their applications and implementing emission reduction projects and programmes.

Emission reduction attestations for projects and programmes under Articles 5 and 5a of the CO₂ Act are not considered equivalent to the emission allowances allocated in Switzerland. They may be issued to enable producers and importers of fossil fuels to fulfil their offsetting obligations (Art. 26 ff. CO₂ Act).

Emission reductions eligible for attestations under Article 5 ff. of the CO₂ Ordinance can be achieved through projects or programmes.⁵ Unless stated otherwise in this document, the requirements and procedure applicable to individual projects also apply to the programmes and to the planned component activities included in programmes.

The core requirements for projects are set out and explained in section 2. The procedure for applying for project or programme authorisations and the steps leading to the issuance of attestations are described in section 3. Useful information for applicants concerning validation and verification is provided in section 4. Sections 5 to 10 explain the procedure for carrying out projects and programmes, the relevant requirements and the interfaces with other climate and energy policy instruments. Information relating specifically to projects and programmes carried out in Switzerland or abroad is given in separate paragraphs and highlighted in grey.

¹ www.fedlex.admin.ch > *Classified Compilation* > *Internal law* > *6 Finance* > *64 Taxation* > *641.71 Federal Act of 23 December 2011 on the Reduction of CO₂ Emissions (CO₂ Act)*

² www.fedlex.admin.ch > *Classified Compilation* > *Internal law* > *6 Finance* > *64 Taxation* > *641.711 Ordinance of 30 November 2012 for the Reduction of CO₂ Emissions (CO₂ Ordinance)*

³ See also the definition of 'Carbon sink enhancement' in the glossary.

⁴ Hereafter, the term 'emission reductions' also includes increases in carbon storage. For ease of reading, this is not specified on each occasion, except where the two are treated differently.

⁵ Groups of projects that are already registered can continue to be attested.

2 Requirements

Attestations can be issued for projects that reduce greenhouse gases falling within the scope of the CO₂ Act (carbon dioxide (CO₂), methane (CH₄), nitrous oxide (laughing gas, N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃)) (Art. 1 para. 2 CO₂ Act, in conjunction with Art. 1 CO₂ Ordinance).

The requirements laid down in Articles 5 and 5a of the CO₂ Ordinance set the framework conditions for offsetting projects and programmes and must be fulfilled in order for demonstrated emission reductions resulting from a project to be attested. Sections 2.1 to 2.7 set out a number of general principles. The requirements necessitating more detailed explanations are dealt with in the remainder of the document, specifically:

- Decision/ruling: Chapter 5
- Additionality: Chapter 6
- Monitoring and demonstration of emission reductions: Chapter 7
- Apportionment of effect: Chapter 8
- Interfaces: Chapter 9
- Scientific support: Chapter 10

Additional requirements may apply to programmes and these are described in the relevant sections.

2.1 Eligible and ineligible project types

According to Article 5 paragraph 1 letter a of the CO₂ Ordinance, only project types not explicitly precluded in Annex 2a (for projects carried out abroad) and 3 (for projects carried out in Switzerland) of the CO₂ Ordinance can be the subject of a positive qualification decision. Examples of ineligible project or programme types can be found in Annex L to this communication.⁶

By way of illustration, Annex L also includes a non-exhaustive list of project types, classified by category. An authorisation application for a new project type may be submitted to the Compensation Office when a project cannot be allocated to a pre-existing type. The project type must be correctly allocated in order to determine which validator and verifier (VV) is authorised to examine the project. Given that validation must take place before a project is submitted to the Compensation Office, we recommend applying for authorisation for the new project type as early as possible. In the case of projects or programmes that do not correspond to any of the types defined in Annex L, we strongly advise submitting an outline of the project (Art. 6 para. 4 CO₂ Ordinance). If it is only after validation that the project is classified differently by the Compensation Office, a new validation with an approved VV for this project type may be required.

⁶ The document is available on the FOEN website at www.bafu.admin.ch/uv-1315-e > Annex L

Specific information for CO₂ storage projects:

Biological (only authorised in Switzerland)⁷ and geological carbon storage by means of active measures is accepted as an offsetting project. However, the carbon must be stored sustainably in existing sinks so that the storage is guaranteed over the long term (see section 2.5).

Geological carbon storage projects may be submitted where they involve, for example, deep storage in the subsoil or in inorganic building materials (e. g. concrete). However, ideally these projects must not compete with those aimed at reducing emissions.

2.2 State of the art

A project must correspond to at least the state of the art (Art. 5 para. 1 let. b No 2 CO₂ Ordinance). This term refers to an advanced state of development of technological processes that are feasible or have been proven to work in practice. As a general rule, the state of the art corresponds to the requirements and calculation methods set out in the currently applicable standards, information sheets, enforcement aids and recommendations, as issued by the relevant specialist bodies. It may change over time, for example as a result of technological advances, economic factors or new scientific discoveries. Whether a project or method meets this requirement is examined as part of the validation and verification of the project or programme (see section 4).

Abroad:

The state of the art is based primarily on local conditions in the partner country. Large companies must apply the internationally recognised state of the art as far as possible. In addition, it must be possible to carry out maintenance and repairs locally.

2.3 Compliance with applicable legal provisions

Attestations are only issued if the project or programme complies with the relevant legal provisions (Art. 5 para. 1 let. b No 4 CO₂ Ordinance). To ensure that there are no conflicting objectives, the applicant should detail in their project or programme description how the applicable legal provisions are complied with.

In Switzerland:

Examples of applicable legal provisions include the Federal Act on the Protection of the Environment, the Noise Abatement Ordinance (e. g. for heat pumps), the Air Pollution Control Ordinance (e. g. for wood-fired boilers) and the Environmental Impact Assessment Ordinance.

Abroad:

The requirements set out in the bilateral agreements between Switzerland and partner countries for the implementation of Article 6 of the Paris Agreement must also be respected. The legal requirements of the partner states, for example on environmental protection, must also be described and taken into account.

⁷ Attestations cannot be issued for CO₂ biological carbon sequestration projects implemented abroad (Art. 5 para. 1 let. a CO₂ Ordinance).

2.4 Principle of conservativeness

Emission reductions must be calculated conservatively (Art. 5 para. 1 let. c No 4 CO₂ Ordinance). Accordingly, the applicant must demonstrate in particular that the calculation method and the assumptions adopted do not result in an overestimation of emission reductions. Where the parameters can only be determined or measured imprecisely, the degree of imprecision must be factored in to avoid overstating the calculated emission reductions. If the emission reductions cannot be quantified with sufficient precision for attestations to be issued, the applicant may implement scientific support measures to register the project (see section 10).

Example of how to factor in imprecision:

Emission reductions = Emission factor × measured value

Assumption: Measured value = 500; imprecision = 50 (standard deviation with a 95 % confidence interval)

The standard deviation must be deducted from the measured value to calculate the emission reductions:

Emission reductions = Emission factor × 450

Abroad:

When calculating emission reductions for projects that reduce biomass consumption, the *fraction of non-renewable biomass* (f_{NRB}) parameter determines the fraction of fuelwood and wood charcoal used in a non-renewable way.⁸ The parameter reflects a yield higher than natural renewal of woody biomass. The value of the parameter f_{NRB} is set conservatively based on the latest developments and knowledge (Art. 5 para. 1 let. c No 4 CO₂ Ordinance). The parameter can be defined as a fixed parameter for the entire crediting period, or as a dynamic parameter with re-evaluation for every subsequent monitoring period. It is an essential parameter and one which is much discussed in projects involving the use of biomass. The applicant can request information on the definition of its value from the Compensation Office.

2.5 Permanence of carbon storage

Carbon storage projects must offer sufficient guarantees of the permanence of the carbon storage. The applicant must demonstrate conclusively that the CO₂ emissions stored in biological carbon sinks (only authorised in Switzerland)⁹ or geological carbon sinks will be there for at least 30 years, regardless of the project duration (Art. 5 para. 2 CO₂ Ordinance).

⁸ United Nations Framework Convention Climate Change: Clean Development Mechanism, TOOL30 Methodological tool: Calculation of the fraction of non-renewable biomass, version 04.0. 2022. https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v1.pdf/history_view

⁹ Attestations cannot be issued for CO₂ biological sequestration projects implemented abroad (Art. 5 para. 1 let. a CO₂ Ordinance).

In Switzerland:

Where a positive decision on the suitability of a carbon storage project is made, a restriction on use is entered in the land register at the FOEN's request. This does not apply in the case of projects for storage in building materials (e. g. wood, concrete). By preventing a change in the use of land used for biological or geological storage, this requirement helps to ensure the permanence of the storage (see section 3.11.1). If necessary, the applicant must inform the owner of the land in question of this restriction.

In the specific case of a forest used as a biological sink, no attestation can be issued although the forest is left unexploited (Annex 3, CO₂ Ordinance). Furthermore, in addition to the carbon sink effect, the quality of the soil (e. g. no acidification) and the forest functions referred to in Article 1 of the Forest Act (SR 921.0) must be maintained.

Abroad:

Only geological carbon storage is accepted.

2.6 Start of implementation and crediting period

2.6.1 Start of implementation

Project or programme implementation is deemed to start on the date on which the applicant has made a significant financial commitment to third parties or itself takes organisational measures relevant to the project or programme (Art. 5 para. 3 CO₂ Ordinance). The aim here is to determine the point at which the project or programme implementation can no longer be stopped (point of no return). The measures in question may be investment measures, i.e. measures for which financial resources that will be amortised over the project duration are used at the start of implementation. For these measures, the start of implementation can therefore usually be determined precisely. It is typically the date on which purchase agreements for key components of the project or programme are signed (commitment of a substantial part of the planned investments) (see Tab. 1). They may also be non-investment measures, i.e. measures involving a sustained increase in the running costs of the project or programme. For these measures, the start of implementation depends on the size, organisation and cost structure of the project or programme (see Tab. 1).

Tab. 1: Examples of proof of the start of implementation

	Project or programme type	Example of proof of the start of implementation
Investment measures	Agricultural biogas plants	Copy of the confirmation of the order to build the plant (construction and earthworks, assembly, connection to utilities), dated and signed
	Wood-chip combustion plants	Copy of the combustion plant purchase agreement, dated and signed
	Heating networks	Copy of the general contractor's contract for excavation work, dated and signed
<i>In Switzerland:</i> Non-investment measures	Programme to reduce leakage in supermarket refrigeration systems	The operating costs increase if the facilities require more frequent maintenance. Project implementation therefore starts on the date when the applicant contractually undertakes to provide this more frequent maintenance service, for the entire duration of the project.

The start date of the project's or programme's implementation determines the start date of its initial crediting period (see Fig. 1). Implementation of the project or programme must have started no earlier than three months¹⁰ before the application is submitted in accordance with Article 7 of the CO₂ Ordinance (Art. 5 para. 1 let. d CO₂ Ordinance). Proof of the implementation start date is examined as part of the validation and submitted with the application for project or programme authorisation. If implementation has not yet started when the application is submitted, the project or programme description must indicate the planned start date. The actual start of implementation, including proof thereof, must be checked during verification and submitted with the monitoring report.

In Switzerland:

Specific information for non-investment activities in progress:

Emission reduction activities already in progress may also be accepted as offsetting projects if it can be demonstrated that there is a risk of these activities ending.

This risk is demonstrated when the following three conditions are met simultaneously:

- it has not been possible to run the activities in an economically feasible way (see section 6) for at least the past six months¹¹;
- the ending of the activities is not linked in the short, medium or long term to the demolition of buildings or installations;
- the cost structure of the activities does not provide for any amortisation of investments.

To demonstrate that the above three conditions are met, proof of the threatened ending of the activities must be provided. This may take the form of supporting documents signed by authorised persons, in particular excerpts from the minutes of meetings of project or programme steering bodies (e. g. meetings of the management committee of the company operating an installation).

For this type of activity, implementation is deemed to start on the date when the applicant undertook contractually or by unilateral declaration to continue this type of activity.

Specific information for programmes:

Programme implementation is deemed to start:

- on the date when a significant financial commitment is made or organisational measures relevant to the programme structure are taken (e. g. an investment in software for managing the data from the programme's planned component activities) or,
- at the latest, when the first project is included in the programme.

From that point on – the start of its implementation – the programme is considered to be 'existing' (Art. 5 para. 3 CO₂ Ordinance).

Only planned component activities whose implementation has not yet begun before their inclusion in the programme are eligible (Art. 5a para. 1 let. d CO₂ Ordinance). Planned component activities that have already been the subject of a positive qualification decision by the FOEN as individual projects cannot be transferred to a programme. This ensures that only activities that would not have been implemented without the programme can be included in a programme that is already under way. The procedure for registering planned component activities in the programme must be specified in the programme description. Ideally, activities should be registered using a form developed for this purpose as part of the programme description. Demonstrated emission reductions for all component activities included in the programme must be documented and recorded by calendar year.

¹⁰ Three months equals 93 calendar days.

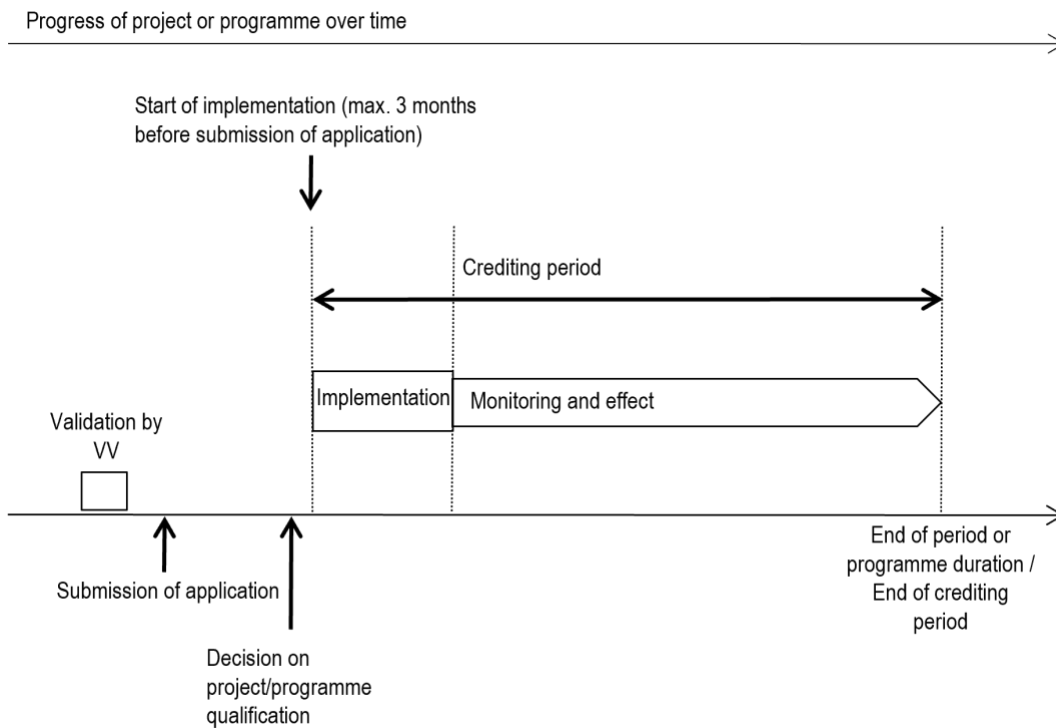
¹¹ Six months equals 186 calendar days.

2.6.2 Crediting period

The crediting period is the period during which the qualification of the project or programme under the CO₂ Ordinance is guaranteed. It can only obtain attestations on emission reductions during this period. The crediting period can be renewed provided the duration of the project or programme has begun (see section 3.8).

For the submission of new requests and new validations of projects and programmes, the crediting period is currently extended until 31 December 2030 or until the end of the duration of the project or programme, if that is prior to 31 December 2030 (Art. 8 para. 3 CO₂ Ordinance, see Fig. 1).¹²

Fig. 1: Start of implementation and crediting period



The decision on project or programme qualification and the associated crediting period guarantee that the applicant can apply the emission reduction calculation specified in the project or programme description throughout this period. The crediting period protects against amendments to the CO₂ Ordinance which would have an impact on the calculation of emission reductions. In particular, this concerns amendments to Articles 5, 5a and 5b as well as to Annexes 1 to 3a. The other legal amendments (cantonal and communal or those concerning air quality, for example) must be applied to the project from their entry into force. The applicant may voluntarily decide to update their project's reference development before the end of the crediting period. Revalidation of the project is required in the event of substantial modifications.

¹² For the post-2030 period, the CO₂ Act still has to be drafted which means the situation regarding the issuance of attestations is still currently uncertain.

Amendments to the CO₂ Ordinance not concerning the calculation of emission reductions (for example, the frequency or submission deadline for monitoring reports) must be applied before the end of the crediting period in progress.

In all cases, for each new validation request (for substantial modifications or the extension of the crediting period) the project or programme must comply with the new legal provisions now introduced and in force when the application is submitted (see section 3.8).

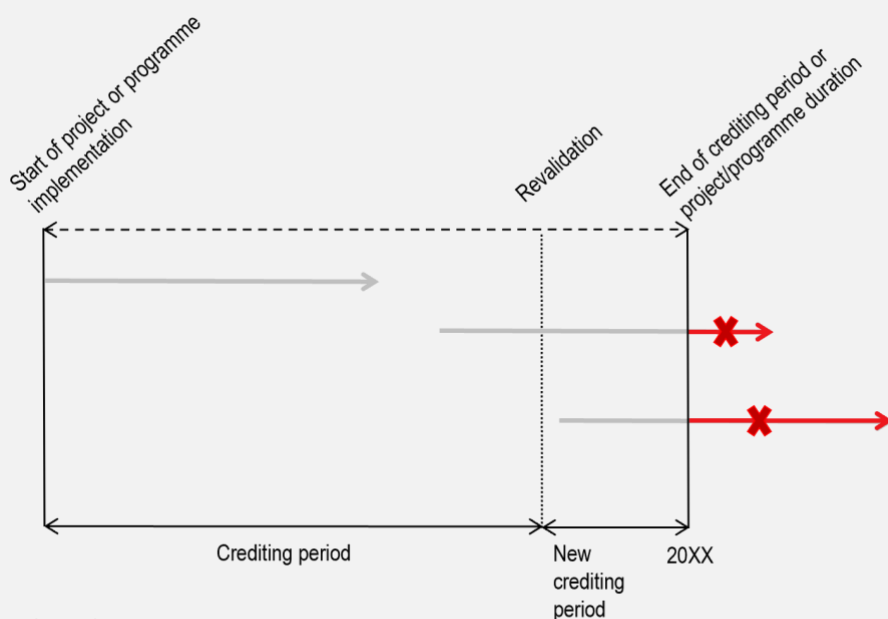
Example 1:

The introduction of Annexes 3a and 3b of the CO₂ Ordinance is also to be considered as a legal amendment which would have an impact on the calculation of emission reductions. As a result, projects authorised before Annexes 3a and 3b enter into force must only apply them in the case of revalidation. This point also applies to projects included in a programme.

Example 2:

In the case of amendment to the submission deadline for monitoring reports (Art. 9 para. 5 CO₂ Ordinance), this is an amendment to the CO₂ Ordinance that has no impact on the calculation of emission reductions. The amendment applies immediately after the end of the current monitoring period regardless of the crediting period.

Fig. 2: Effect of programmes without amendment of the provisions of the CO₂ Ordinance



Legend:

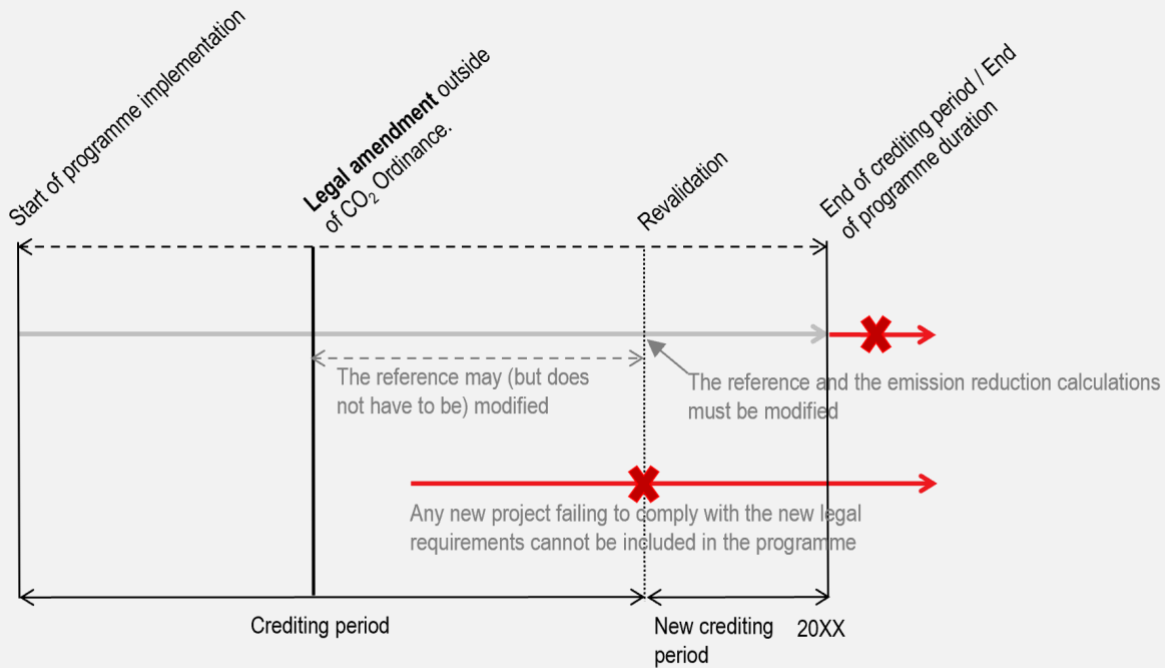
Grey arrow: attestations can be issued

Red arrow: attestations cannot be issued

Each arrow corresponds to a planned component activity (start of arrow = start of implementation of planned component activity)

If the legal provisions in force are not amended, attestations may be issued for the emission reductions achieved by the projects already implemented in a programme provided the programme's crediting period is in progress.

Fig. 3: Example of the impact of a legal amendment outside of the CO₂ Ordinance on an already registered programme



Legend:

Grey arrow: attestations can be issued

Red arrow: attestations cannot be issued

Each arrow corresponds to a planned component activity (start of arrow = start of implementation of planned component activity)

In the event of an amendment to the law in force other than the CO₂ Ordinance (e. g. Environmental Protection Act, Noise Abatement Ordinance etc.) during a programme’s crediting period, all the projects already accepted in a programme have until the next validation to comply with the new legal provisions. Attestations can be issued for emission reductions already achieved by the projects implemented in a programme up until the new validation of the programme, even if the new legal provisions would prevent it. However, the reference development must be adapted as a result during the new validation. In the case of projects already included in a programme, but which have not been implemented before the entry into force of the new legislation, the project reference must take account of this amendment, which may result in no attestation being issued for the project (more additional emission reductions compared with the reference). All new projects must comply with the new legal provisions in order to be included in the programme (Fig. 3).

2.7 Double counting

Double counting occurs where the added ecological value of emission reductions achieved under a project or programme is also put to use in another way. This may consist, for example, in making monetary use of emission reductions (raising prices, generating additional receipts) or counting them towards emission reduction targets or voluntary or legally binding offsetting targets. According to Article 10 paragraph 8 of the CO₂ Ordinance, the issuance of attestations is equivalent to offsetting the added ecological value of emission reductions. No attestations are therefore issued for emission reductions for which the added ecological value has already been offset.

The description and monitoring of projects and programmes must include measures aimed at demonstrably preventing double counting. For possible measures, see in particular sections 8 and 9.

Several cantons produce a regional assessment of their greenhouse gas emissions.¹³ The emission reductions from offsetting programmes can contribute towards the voluntary objectives set by these cantons. However, the cantons must clearly indicate that their assessment contains emission reductions related to the offsetting obligations applicable to fuel importers at national level. Any co-financing of the offsetting project by the canton must be clearly indicated and the effect must be apportioned.

The FOEN has published a factsheet describing roadmaps to net zero and offsetting projects¹⁴ which can also be used as a guideline by companies seeking to cut their greenhouse gas emissions to net zero.

2.8 Specific case of projects and programmes abroad

2.8.1 Bilateral agreements

Projects and programmes can only be implemented in states with which a bilateral agreement with Switzerland is in force (Art. 2 let. f).¹⁵

2.8.2 Contribution to sustainable development

In the project or programme description, the applicant should show how the project or programme contributes to sustainable development on the ground (Art. 5 para. 1 let. b No 5 CO₂ Ordinance). This should be demonstrated using measurable indicators provided by the partner country (e. g. indicators used for the United Nations Sustainable Development Goals¹⁶). The monitoring report must transparently and verifiably show the share of receipts from the sale of the international attestations attributable to the persons implementing the measures.

¹³ More detailed information can be found on the FOEN's website at www.bafu.admin.ch > Topics > Topic Climate > Information for specialists > Measures CO₂ Act > CO₂ compensation > Projects in Switzerland

¹⁴ The factsheet is available in German, French or Italian and can be found on the FOEN's website at www.bafu.admin.ch > Topics > Topic Climate > Information for specialists > Measures CO₂ Act > CO₂ compensation > Projects in Switzerland

¹⁵ The agreements are published on the FOEN's website at www.bafu.admin.ch > Topics > Topic Climate > Information for specialists > Measures CO₂ Act > CO₂ compensation > Projects abroad > Registered compensation projects abroad

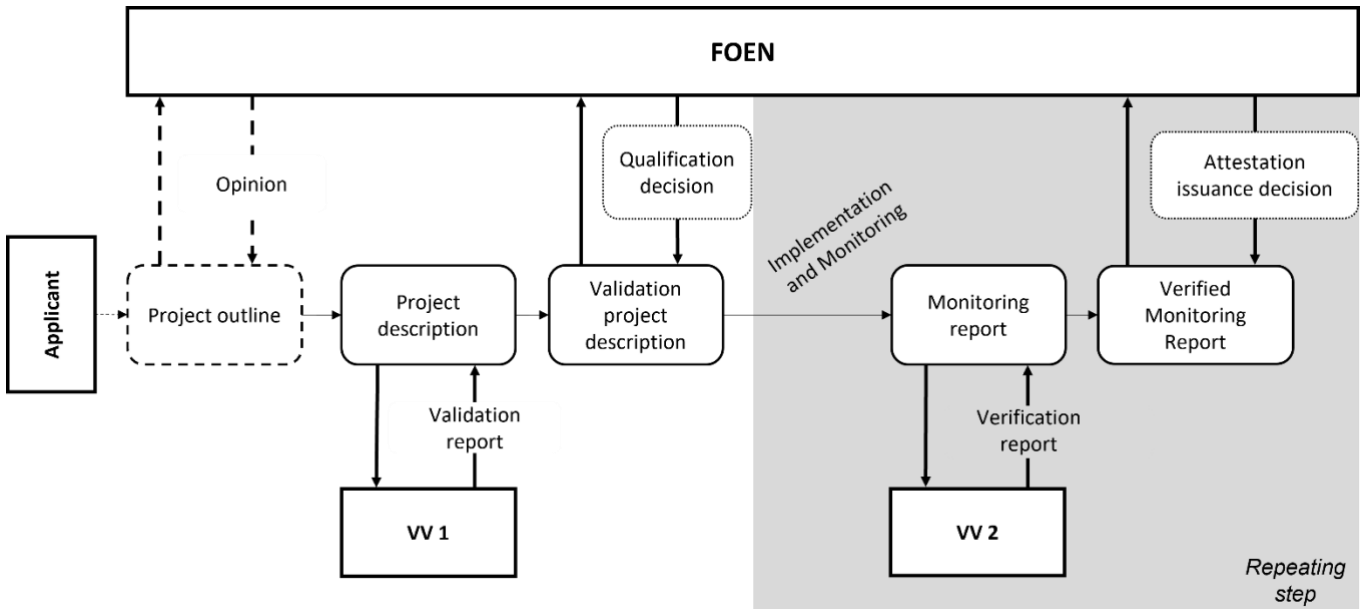
¹⁶ Can be found at <https://unstats.un.org/sdgs/indicators/indicators-list/>

3 Authorisation application and issuance of attestations

The stages of the procedure for applying for project or programme authorisation and for the issuance of attestations are shown in Figure 4 (in Switzerland) and Figure 5 (abroad) and details of the procedure, including special cases, are set out in sections 3.1 to 3.11.

Fig. 4: Diagram of the procedure for authorisation applications and issuance of attestations in Switzerland

'VV' stands for 'validator and verifier'.

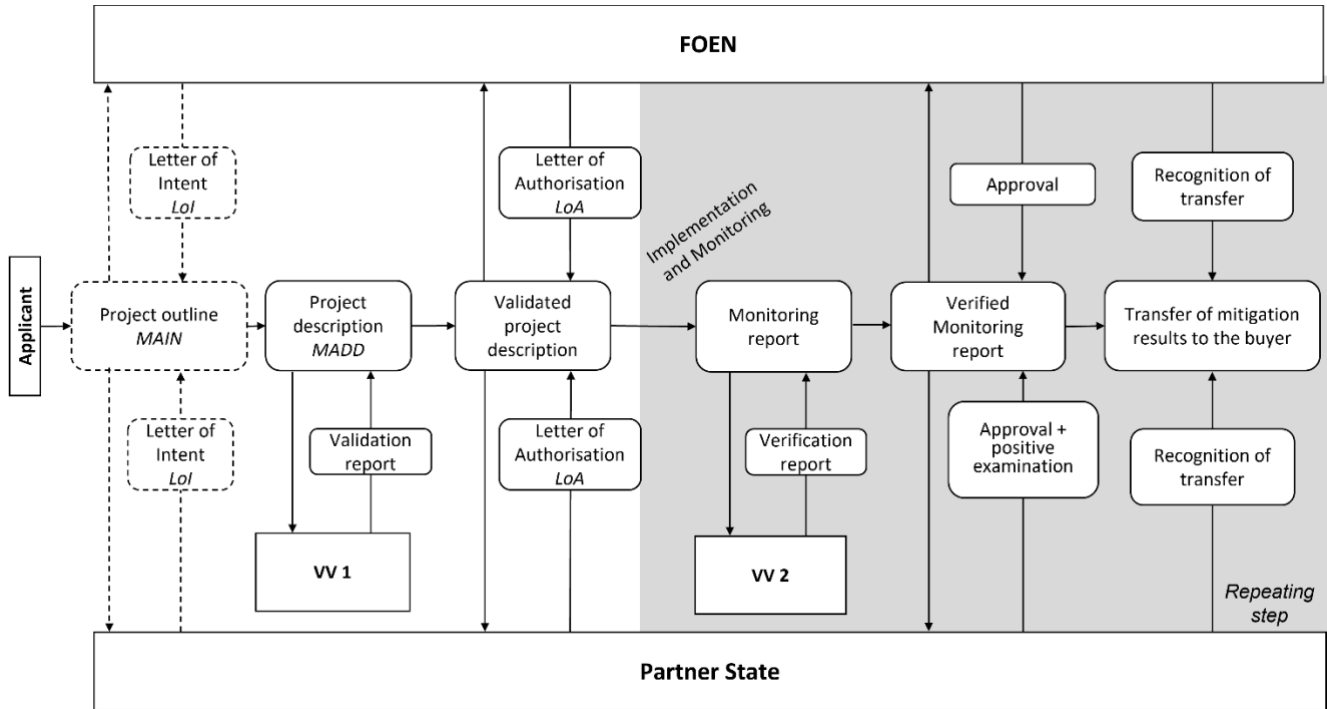


Abroad:

In the case of offsetting abroad, the applicant must follow parallel authorisation processes. Only the FOEN and the competent authority in the partner country are entitled to authorise the project or programme.

Fig. 5: Diagram of the procedure for authorisation applications and issuance of attestations abroad

'VV' stands for 'validator and verifier'.



While they do not appear in Swiss legislation, the following terms are used for activities abroad:

- Letter of intent: LoI
- Letter of authorisation: LoA
- Project outline: MAIN (Mitigation Activity Idea Note)
- Project description: MADD (Mitigation Activity Description Document)

3.1 Project or programme outline (optional)

Documents to be provided by the applicant when submitting a project or programme outline:
 MAIN of the project or programme signed electronically¹⁷

The applicant may submit an outline of their project or programme to the FOEN for preliminary assessment prior to submitting the authorisation application. Submitting an outline, in electronic form, is optional, but it is recommended for project types and methods that have not previously been authorised by the FOEN. In the preliminary assessment, the Compensation Office examines whether the project or programme presented meets the requirements of Articles 5 and 5a of the CO₂ Ordinance and, if necessary, makes recommendations or expresses reservations. This opinion does not prejudice the subsequent evaluation of the project or programme.

¹⁷ All forms are published on the FOEN website at www.bafu.admin.ch/compensation

The applicant is charged for the preliminary assessment at the rate stipulated in the Ordinance of 3 June 2005 on the Fees Charged by the FOEN (FOEN Fees Ordinance, SR 814.014, Art. 6 para. 1)¹⁸ once the Compensation Office's written response has been sent to the applicant.

Abroad:

Thanks to this preliminary assessment, the applicant receives an evaluation from the FOEN within a short time and so knows if the project or programme complies with the requirements of the bilateral agreements with partner countries.

3.2 Project or programme description

The applicant uses the binding project or programme description form provided by the FOEN.¹⁹ The information provided in the application must be complete and understandable. The applicant provides a contact person for the FOEN.

Any natural or legal person may submit an application for authorisation of an emission reduction project or programme to the FOEN (Art. 7 CO₂ Ordinance). The application must include the validated project or programme description, including the economic feasibility analysis (see section 6.3), the calculation method for determining emission reductions (see section 5) in the form of a calculation table as well as the duly signed monitoring plan (see section 0) and validation report (see section 0). The monitoring plan specifies the exact formatting requirements for the data which are to be included in the calculation table for the method used to calculate emission reductions (monitoring). The calculation table for the method used must follow the guidelines in Annex M.²⁰

Specific information for programmes:

An example of a planned component activity must be provided for each specified technology. It should include a realistic economic feasibility analysis, a hypothetical calculation of the emission reductions with realistic values, and the completed inclusion criteria forms.

The effect of the programme may be examined based on a sample of representative planned component activities determined according to the complexity of the activities and the scale of the programme. The applicant's chosen approach for determining the sample must be explained in the programme description and must be validated.

¹⁸ A list of fees is published on the FOEN website www.bafu.admin.ch/uv-1315-e > Annex B

¹⁹ All forms are published on the FOEN website at www.bafu.admin.ch/compensation

²⁰ The document is available on the FOEN website at www.bafu.admin.ch/uv-1315-e > Annex M

3.3 Validation

The applicant has the project or programme description examined, at their own expense, by an FOEN-approved VV²¹ and, in the case of projects carried out abroad, by the partner country as well. The VV must be approved for the project type concerned. The VV examines the information contained in the project or programme description and, in particular, its compliance with the requirements of Articles 5 and 5a of the CO₂ Ordinance. The VV records the results of the validation in a report ((Art. 6 para. 6 CO₂ Ordinance)). The VV can ask the applicant questions and demand changes: specifically, a clarification request (CR), a corrective action request (CAR) or a future action request (FAR). All the documents needed to examine the project or programme description must be provided by the applicant to the VV. If an outline has been submitted, this must also be made available to the VV (Art. 6 para. 4 CO₂ Ordinance). The VV's evaluation is a recommendation only.

Where the validation relates to a substantial modification (Art. 11 CO₂ Ordinance) or – in the case of projects and programmes carried out in Switzerland – to an extension of the crediting period (Art. 8b CO₂ Ordinance), the project or programme is reviewed in accordance with the requirements set out in section 4.1.

More information about validation can be found in sections 4.1 and 4.3.

In Switzerland:

The VV performs the review based on the recommendations of the Compensation Office as set out in the FOEN communication 'Offsetting CO₂ emissions: validation and verification'²².

²¹ The list of authorised VVs is published on the FOEN website <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/reduction-measures/compensation/in-switzerland/validators-verifiers.html>. The VVs meet the requirements of Art. 11a of the CO₂ Ordinance

²² The document is published on the FOEN website www.bafu.admin.ch/uv-2001-e

3.4 Submission of authorisation application and decision on project or programme qualification

To determine the qualification of a project or programme, the Compensation Office applies the provisions of the CO₂ Ordinance in force when the application is submitted.

Tab. 2: Documents to be provided by the applicant when submitting an application for project or programme authorisation

Documents	Electronically	By post
Project or programme description, duly validated and signed	x	x
Annexes of the project or programme description	x	–
Redacted project or programme description, if redaction is desired x	x	–
Signed validation report (including annexes)	x	–
Redacted validation report, if redaction is desired x	x	–
Abroad: Project or programme authorisation granted by the partner country, duly signed ²³	x	–

Formalities concerning application submission:

- The applicant submits the validated project or programme description, together with the validation report, to the FOEN (CO₂ Ordinance)²⁴ no later than three months after the start of implementation (Art. 7 in conjunction with Art. 5 para. 1 let. d CO₂ Ordinance);
- the postmark date is considered the application submission date;
- the project or programme is entered in an internal database administered by the FOEN (Art. 13 para. 2 CO₂ Ordinance).

The FOEN decides, based on the application and, where applicable, the clarifications referred to in Article 7 paragraph 3 of the CO₂ Ordinance, whether the project or programme qualifies for the issuance of attestations (Art. 8 CO₂ Ordinance). If an evaluation is not possible because an application is incomplete, the Compensation Office terminates examination of the application and the FOEN issues a rejection decision on the basis of Article 13 paragraph 2 of the Federal Act of 20 December 1968 on Administrative Procedure (SR 172.021).

The Compensation Office decides whether the project or programme qualifies and informs the applicant in a ruling. The FOEN's decision may be subject to conditions (determined by FARs), compliance with which is examined during the verification of monitoring reports. The costs of examining the application are charged to the applicant at a flat rate based on the rates set out in the FOEN Fees Ordinance.²⁵

In Switzerland:

The qualification decision refers only to the project or programme as such and not to the quantity of emission reductions recognised.

²³ The applicant may submit the partner country's authorisation at a later date, but it must be available before the FOEN's authorisation decision.

²⁴ Three months equals 93 calendar days.

²⁵ A list of fees is published on the FOEN website at www.bafu.admin.ch/tw-1315-e > Annex B

Abroad:

The decision on the qualification of a project or programme abroad (Art. 8 CO₂ Ordinance) is called ‘authorisation’ in accordance with Article 6.3 of the Paris Agreement and the bilateral agreements. The authorisation must be issued by both countries to ensure that the project or programme is definitively authorised and to provide a degree of investment security so that implementation can begin. The FOEN’s qualification decision is conditional upon the project or programme being authorised by the competent authority in the partner country. The qualification decision specifies a maximum number of attestations in accordance with the application and the partner country’s authorisation. Additionally, other conditions may be included, such as a restriction on the use of attestations, if this is stipulated by the partner country.

Specific information for programmes:

The qualification decision applies to the programme structure. Planned component activities may be included in the programme at a later date only if they meet the inclusion criteria set out in the programme description (Art. 6 para. 2 let. k CO₂ Ordinance).

The criteria for the inclusion of a project in a programme must be designed to ensure that each of the projects included in the programme meets all requirements of Art. 5 of the CO₂ Ordinance (Art. 5a No 1 let. c). The inclusion criteria are exhaustive and must ensure the assessment of each project for inclusion in a programme is equivalent to an individual project assessment. If a project clearly does not meet the inclusion criteria, it cannot be included in the programme. No exceptions are possible.

3.5 Operation and monitoring

The actual or planned start date of the monitoring and the method for demonstrating emission reductions must be included in the project or programme description (Art. 6 para. 2 let. i CO₂ Ordinance) using the required form (Art. 9 para. 9 CO₂ Ordinance).²⁶ In general, monitoring starts at the time of commissioning or when the project commences normal operation or starts to have an effect. It must be performed in accordance with the monitoring plan (see section 0).

To demonstrate the emission reduction, the applicant records the data in a monitoring report (Art. 9 para. 1 CO₂ Ordinance), as required in the monitoring plan. Demonstrated emission reductions are recorded in the monitoring report for each calendar year, regardless of the duration of the monitoring period (Art. 9 para. 5 CO₂ Ordinance). Only verified emission reductions included in the monitoring report, calculated on the basis of measured values and approved by the Compensation Office, will result in attestations, taking into account, in particular, the apportionment of effect (see section 8) and interfaces with other instruments (see section 9).

A change of applicant may be made at any time provided the Compensation Office is notified of this in writing as soon as possible. Notification must take place by means of an informal letter signed by both the old and the new applicant, including the date of the change and the applicant’s address.

²⁶ All forms are published on the FOEN website at www.bafu.admin.ch/compensation

3.6 Verification

The applicant has the project or programme monitoring report examined at their own expense by an FOEN-approved VV²⁷ and, in the case of projects carried out abroad, by the partner country as well. The verification may not be done by the VV that performed the most recent project validation (Art. 9 para. 2 CO₂ Ordinance).

During the verification, the VV examines in particular the data collected during the monitoring, the data collection process and the calculations used to demonstrate the emission reductions. If it is the first verification, the VV also verifies the compliance of the project implementation with the information contained in the project or programme description.

The VV can ask the applicant questions and demand changes (CRs, CARs, FARs). All the documents needed to examine the monitoring report must be provided by the applicant to the VV. This means, in particular, all previous decisions, any conditions imposed by the Compensation Office (FARs) and previous exchanges between the Compensation Office and the applicant (CRs and CARs, including their conclusions). The VV's evaluation is a recommendation only.

More information about verification can be found in section 4.2.

Specific information for programmes:

The VV examines whether planned component activities newly included in the programme meet all the inclusion criteria set out in the programme description (Art. 9 para. 3 CO₂ Ordinance). The VV may examine the effect of the programme based on a sample of representative planned component activities. This choice is determined by the complexity of the planned component activities and the scale of the programme and is presented and justified in detail in the verification report.

In Switzerland:

The VV performs the examination based on the recommendations of the Compensation Office as set out in the FOEN communication 'Offsetting CO₂ emissions: validation and verification'²⁸.

²⁷ The list of authorised VVs is published on the FOEN website at <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/reduction-measures/compensation/in-switzerland/validators-verifiers.html>

²⁸ The document is published (in French, German and Italian) on the FOEN website www.bafu.admin.ch/uv-2001-e

3.7 Submission of monitoring report and decision on issuance of attestations

Tab. 3: Documents to be provided by the applicant when submitting a monitoring report

Documents	Electronically	By post
Monitoring report, duly verified and signed	x	x
Annexes of the monitoring report for the project or programme	x	–
Redacted monitoring report, if redaction is desired x	x	–
Signed verification report (including annexes)	x	–
Redacted verification report, if redaction is desired x	x	–
Abroad: Project or programme authorisation granted by partner state and duly signed ²⁹	x	–

Formalities concerning monitoring report submission:

- The applicant submits to the FOEN the first verified project or programme monitoring report, together with the verification report, covering a maximum period of three years, no later than one year after the end of this period (Art. 9 para. 5 CO₂ Ordinance).
- The applicant subsequently submits to the FOEN a verified monitoring report, together with the verification report, at least every four years from the end of the previous monitoring period (Art. 9 para. 5 CO₂ Ordinance). The monitoring period may not exceed three years.
- The postmark date is considered the application submission date.
- The costs of examining the application are charged to the applicant based on the rates set out in the FOEN Fees Ordinance³⁰.

Specific information for projects and programmes with scientific support:

The verified monitoring report, the associated verification report and the results of the project support measures are submitted to the FOEN each year from the start of implementation.

Specific information for CO₂ storage projects and programmes:

The applicant must submit to the FOEN, no later than 1 June 2031, a verified monitoring report and the corresponding verification report for the 2030 monitoring period demonstrating the permanence of CO₂ storage, even if the project or programme ended earlier (see section 2.5).

The attestation issuance decision may be subject to conditions (FARs), compliance with which is examined at the time of the next verification.

²⁹ The applicant may submit the partner country's authorisation at a later date, but it must be available before the FOEN's authorisation decision.

³⁰ A list of fees is published on the FOEN website at www.bafu.admin.ch/tw-1315-e > Annex B

In Switzerland:

On the basis of the verified monitoring report and the corresponding verification report, the Compensation Office decides whether attestations should be issued. The FOEN informs the applicant in a ruling.

Abroad:

The verified monitoring report must be submitted both to the FOEN and to the competent authority in the partner country. The exact nature of the process from the submission of the monitoring report to the issuance of attestations, such as the timing of publication, may vary depending on the partner country and is determined by the bilateral agreement in force between the two countries. All monitoring reports are evaluated by the Compensation Office as well as by the partner country. Both parties inform the applicant of the outcome. International attestations are only issued in the Swiss Emissions Trading Registry once the partner country has confirmed the transfer in the national registry, in accordance with the terms of the bilateral agreement.

3.8 *In Switzerland: extension of the crediting period*

If the project or programme is still ongoing at the end of the crediting period, an extension may be granted until 31 December 2030, or until the end of the project or programme duration at the latest, provided this is prior to 31 December 2030.³¹ For this to happen, the applicant must update the project or programme description and submit it for revalidation. The updated and validated project description must be submitted to the FOEN at least six months before the end of the crediting period. Thus the new crediting period begins the day after the end of the previous period, even if the decision on project qualification is issued later. The project or programme revalidation must indicate that the requirements of Article 5 and 5a (*for programmes*) of the CO₂ Ordinance are still met (Art. 8b para. 2 CO₂ Ordinance). Barring any substantial modifications to the project or programme, there is no need to carry out a new economic feasibility analysis since the latter is valid for the entire project duration, regardless of the crediting period. Emission reductions can only be recognised for the new crediting period once the new project qualification decision issued by the FOEN has been received.

If the project authorisation application for the new crediting period was submitted less than six months before the end of the previous crediting period and the date of the new project qualification decision is after the end of the previous crediting period, the new crediting period will not start until the date of the new project qualification decision. No emission reductions can be recognised for the time between the two crediting periods.

When making a new decision on project or programme qualification, the Compensation Office is free to consider aspects that were not yet known at the time of the original validation. During revalidation, the qualification of the project or programme is reviewed as a whole and is decided on based on the provisions of the CO₂ Ordinance in force when the request to extend the crediting period is submitted. The provisions of the CO₂ Ordinance, the FOEN practices set out in this communication as well as the knowledge of the Compensation Office are incorporated into the evaluation.

³¹ Projects and programmes the duration of which extends beyond 31 December 2030 can submit a request for an extension of the crediting period if permitted by the legal framework and provided the extension requirements are still met.

3.9 Substantial modifications

3.9.1 Definition

The FOEN's qualification decision is based on the authorisation application and, where applicable, the clarifications referred to in Article 7 paragraph 3 of the CO₂ Ordinance. If the applicant makes substantial modifications to the project or programme after the application has been submitted, the FOEN may order a revalidation at the applicant's expense (Art. 11 para. 3 CO₂). A modification is substantial if it could result in a different qualification decision by the FOEN.

According to Article 11 paragraph 2 of the CO₂ Ordinance, modifications are deemed substantial if they occurred after the submission of the application, where:

- the emission reductions deviate from the expected annual emission reductions specified in the project or programme description by more than 20 %;
- the investment and operating costs deviate from the values specified in the project or programme description by more than 20 %;
- a change of technology occurs; or
- the system boundary is modified.

In addition, the following are also deemed substantial modifications if they occurred after the submission of the application:

- modifications to key elements of the project or programme (e. g. significant expansion of a district heating system);
- modifications to the criteria on the inclusion of projects in a programme;³²
- systematic modifications to the monitoring plan;
- modifications to procedures; or
- any modification affecting the financing structure due to the granting of additional assistance.

Example of a substantial modification:

A local heating network is now supplied by heat from a wood-fired boiler and, in case of high demand, by an oil-fired boiler. The project is deemed to have undergone a substantial modification if the wood-fired boiler is not repaired after a fault has been detected and all the heat is then supplied using a fossil fuel. Conversely, the project has not been substantially modified if the wood-fired boiler is repaired and put back into operation and the emissions linked to the fossil fuel supply decrease again after a certain period.

³² In the case of modification to criteria on the inclusion of a project in a programme, the revalidation is restricted to the assessment and evaluation of the impact of these new criteria on compliance with the requirements of Art. 5 and 5a of the CO₂ Ordinance. The inclusion of new planned component activities in a programme is not considered a substantial modification requiring revalidation.

3.9.2 Procedure to be followed

The applicant or the VV notifies the Compensation Office of any substantial modifications occurring after the submission of the application (Art. 11 para. 1 CO₂ Ordinance) and does so no later than at the time of submission of the monitoring report following the substantial modification, duly verified in accordance with Article 9 of the CO₂ Ordinance. In the event of substantial modifications, the Compensation Office may order a revalidation (Art. 11 para. 3 CO₂ Ordinance) and issue a new decision on qualification (see section 3.4). No attestations will then be issued for the period following the substantial modification until the new qualification decision has been made, assuming the decision is positive (Art. 11 para. 3 CO₂ Ordinance). Emission reductions achieved after application of the substantial modification are calculated on the basis of the updated and revalidated project or programme description.

If the applicant can demonstrate that the substantial modification has not led to a fundamental change in the project or programme, a revalidation is not necessary and the decision on project or programme qualification remains valid. For example, substantial modifications linked to the expansion of a heating network due to new connections that could not have been foreseen would not entail a revalidation.

The applicant may set the end of the monitoring period to coincide with the date of application of the substantial modification and submit a verified monitoring report early. However, if the VV only finds out during verification of the monitoring report that the project or programme implemented differs significantly from the project or programme description submitted in the application, it will record this in the verification report.

The date of application of the substantial modification is defined and documented in the same way as the start date of implementation (see section 2.6.1). If a date cannot be clearly established, the default date will be 1 January of the calendar year in which the first documents relating to the substantial modification are available. The date a substantial modification comes into effect may also serve as its date of application if the modification has to be implemented through a new monitoring plan. In this case, the date of application of the modification may not be more than 365 days after the date of the significant financial commitment. Following a substantial modification, the crediting period begins on the date of application of the substantial modification (Art. 11 para. 6 CO₂ Ordinance). The decision on project or programme qualification is valid until 31 December 2030 or until the end of the project or programme duration at the latest, provided this is prior to 31 December 2030 (Art. 11 para. 6 CO₂ Ordinance).

When making a new decision on project or programme qualification, the Compensation Office is free to consider aspects that were not known at the time of the original validation. During revalidation, the qualification of the project or programme is reviewed as a whole and decided on based on the provisions of the CO₂ Ordinance in force when the application for substantial modification was made. The provisions of the CO₂ Ordinance, the FOEN's practices set out in this communication and the knowledge of the Compensation Office are incorporated into the evaluation. The protection provided by the crediting period against such changes ceases to apply in the event of revalidation.

3.10 Publication of application documents

The FOEN may publish all or part of the qualification decisions, project or programme descriptions, validation reports, monitoring reports and verification reports in connection with the examination of the application (Art. 14 CO₂ Ordinance), subject to trade and manufacturing secrecy and current data protection legislation.

Before publication of the aforementioned documents, the applicant is given the opportunity to state whether, in their opinion, trade secrecy and manufacturing secrecy are being respected. With a view to this process, the applicant, before even submitting the application, produces a version of the aforementioned documents in which the passages that in the applicant's opinion compromise its own trade and manufacturing secrets or those of third parties are redacted to make them illegible.

The FOEN publishes the application documents to ensure the transparency of the system and to help reduce transaction costs.

3.11 Specific case of carbon storage projects and programmes

The applicant must demonstrate the permanence of CO₂ emissions stored in carbon sinks. It may do this by, in particular, including in their project or programme description:

- the modelling of the theoretical development of the storage over time;
- a list of the parameters that must be monitored to ensure the storage develops in such a way that there is no reversal of the carbon sink effect (i.e. the carbon sink becomes a carbon source);
- the monitoring that will have to be put in place as a result; and
- the range of expected values for each of these parameters over time.

In each monitoring report, the applicant presents the data measured in accordance with the monitoring plan detailed in the project or programme description and compares these values with those expected according to the model depicting storage development over time, thereby demonstrating that a reversal of the carbon sink effect is precluded.

Abroad:

Only geological carbon storage through active measures is accepted as an offsetting project or programme abroad.

3.11.1 In Switzerland: entry in the land register

The paragraphs below do not apply to projects and programmes for storing carbon in building materials (e. g. wood, concrete).

In the event of a positive decision on project or programme qualification, the FOEN asks the relevant land registry office to add the entry 'biological carbon sink' or 'geological carbon sink' to the land register, at the applicant's expense. This means that the land can no longer be used for any other purpose for at least 30 years after the start of implementation, thereby ensuring the longevity of the project and hence the permanence of the associated CO₂ storage (Art. 8a para. 1 CO₂ Ordinance).

At the FOEN's request, the entry will be removed from the land register no earlier than 30 years after the start of the effect (Art. 8a para. 2 CO₂ Ordinance).

The applicant must inform the owner of the land concerned that registration in the land register, any changes to the record or removal thereof are made at the landowner's expense (Art. 8a para. 3 CO₂ Ordinance).

Should the land use change during the project duration, the applicant must notify the Compensation Office of this as soon as possible. In any case, the Compensation Office will be informed by the canton concerned (Art. 8a para. 4 CO₂ Ordinance). The FOEN will decide, depending on the circumstances, on the further legal steps to be taken.

3.11.2 Reversal of carbon-sink effect

The applicant must immediately notify the Compensation Office of any change liable to affect the carbon storage, for example as a result of leaking wells or, in the case of projects carried out in Switzerland, of a forest fire. In this case, the carbon storage is no longer guaranteed and the attestations issued for the quantity of CO₂ initially stored and then released can no longer be taken into account to meet the offsetting obligation. Consequently, all the project attestations corresponding to the quantity of CO₂ released into the atmosphere are marked as no longer eligible, are no longer recognised for meeting the offsetting obligation and, if already used to meet the offsetting obligation, are returned to the person with an offsetting obligation. The latter must submit new attestations the following year to meet the offsetting obligation (Art. 90 para. 3 CO₂ Ordinance).

3.11.3 Monitoring report and verification report required for the year 2030

The applicant for a CO₂ storage project or programme must submit a verified monitoring report for the year 2030, accompanied by the corresponding verification report, even if the project or programme was completed before this date (Art. 9 para. 7 CO₂ Ordinance). If these reports are not forthcoming, the Compensation Office will assume that there has been a reversal of the carbon sink effect and the procedure referred to in section 3.11.2 will apply.

4 Validation and verification – information for applicants

Validation and verification are carried out at the applicant's expense by independent experts from at least two different VVs, one performing the validation, the other the verification. The VV that performed the last validation for a crediting period cannot carry out the associated verification. The VV that carried out the last verification before the submission of the new authorisation application cannot perform the revalidation. The FOEN publishes a list of approved VVs.³³ The VV also uses the binding validation and verification report forms made available to it by the FOEN.³⁴

The following is examined during both validation and verification:

- The data used must have the lowest possible degree of uncertainty (i.e. must be as precise as possible), must be complete and must provide proof of the emission reductions.
- The parameters used to determine the reference development and the emissions generated by the project or programme must be assessed as accurately and conservatively as possible.

The VV examines the project or programme description and the monitoring reports impartially and in accordance with the CO₂ Ordinance.

In Switzerland:

The FOEN communication 'Offsetting CO₂: validation and verification'³⁵ sets out the recommendations for VVs. The FOEN also provides forms and checklists for validation and verification reports and requires these documents to be used in order to simplify the application evaluation process.

Abroad:

The VV must also be approved by the competent authority in the partner country, in accordance with the requirements of the bilateral agreement between Switzerland and that country.

³³ The list of authorised VVs is published on the FOEN website at www.bafu.admin.ch/organismes-de-validation

³⁴ All forms are published on the FOEN website at www.bafu.admin.ch/compensation

³⁵ The document is published (in French, German and Italian) on the FOEN website www.bafu.admin.ch/uv-2001-e

4.1 Validation – information for applicants

4.1.1 Validation objectives

The aim of validation is to ensure that the project or programme description complies with the requirements of the CO₂ Ordinance (in particular Art. 5 and 5a for programmes). Validation also ensures compliance with the recommendations of the Compensation Office, in particular with regard to this communication, the standard methods and the available newsletters. Validation includes an appraisal of the form and content of the project or programme description, including the annexes. The VV ensures, among other things, that all information relating to the project or programme is complete and consistent. It assesses the planned method for calculating emission reductions as well as the additionality of the project or programme. Based on its appraisal, the VV draws up a report setting out the information relating to the validation in an understandable way and, on this basis, recommends a decision to be issued by the FOEN, either qualification or rejection of the project or programme.

Abroad:

Validation also ensures the conditions set out in the bilateral agreements with partner countries are met. The VV also verifies compliance with the legal requirements of partner states.

4.1.2 Issues requiring correction identified during validation

The VV identifies any aspects of the project or programme that could have consequences for emission reductions, additionality or any other requirements contained in the CO₂ Ordinance. Where applicable, the VV documents its exchanges with the applicant in the form of CRs and CARs.

If elements of the project or programme description cannot yet be assessed definitively at the time of the validation, the VV suggests to the FOEN that the applicant clarify them later by means of FARs. The FOEN's decision lists any FARs associated with the project or programme. These are the only binding FARs and may differ from those recommended by the VV.

To close the validation and allow the Compensation Office to process the project or programme authorisation application, all issues raised by the VV (CARs and CRs) must have been closed. Conversion of CARs and CRs into FARs is not permitted. The applicant must implement the requirements imposed by the VV in full. If it fails to do so, the FOEN may reject the application.

4.2 Verification – information for applicants

4.2.1 Verification objectives

The primary aim of verification is to ensure that the monitoring report meets the requirements of the CO₂ Ordinance (Art. 6 para. 5 CO₂ Ordinance). It also ensures that the monitoring has been implemented in accordance with the monitoring plan included in the validated project or programme description, in particular with regard to the technology, installations, equipment and devices used and the calculation of emission reductions. Verification also includes the formal appraisal of the monitoring report (including annexes) and its content, particularly in terms of consistency and completeness. Upon completion of the appraisal, the VV recommends to the FOEN whether or not to issue attestations, and if so how many.

The applicant must be able to justify each parameter used for monitoring by means of documentation and must furnish the VV with all the documents required for this purpose, including the last qualification decision issued. The VV verifies whether the existing FARs have been correctly implemented and informs the Compensation Office of the outcome. It also makes a proposal to the Compensation Office about how the FARs should be dealt with during the next monitoring period.

In Switzerland:

Using a list provided by the FOEN, the VV examines whether a company exempt from the CO₂ levy is within the system boundary of the offsetting project. If so, the corresponding emission reductions must be reported separately in the monitoring report (see section 9).

4.2.2 Assessment of deviations

A key part of the verification is the assessment of substantial modifications to and deviations from the project or programme description and its monitoring plan during implementation (see section 7). There are various kinds of deviation:

- a) deviations that cast doubt on the project's additionality as identified during validation (e. g. differences in the design or investment amount between the project or programme description and the project, programme or a programme's planned component activities);
- b) deviations in the apportionment of effect or in the parameters affecting this;
- c) deviations resulting in an adjustment to the eligible emission reductions (e. g. if the measuring devices fail during certain periods or are not operating correctly, or in the event of changes to the monitoring concept);
- d) deviations of a technical nature which mean that the project, or the technology used in the project, is not state of the art or is not eligible under Annexes 2a or 3 of the CO₂ Ordinance regardless of any changes that this entails in terms of emission reductions or investment or operating costs;
- e) formal deviations which may affect the evaluation under Articles 5 and 5a of the CO₂ Act (e. g. changes to the inclusion criteria).

The VV determines whether the deviations, if any, affect the project or programme's compliance with the requirements of Articles 5 and 5a of the CO₂ Ordinance. If the verifier issues an CR or CAR, the applicant may propose corrections to address these deviations. The VV will then make a recommendation on whether to approve the proposed adjustments and corrections and will examine whether the resulting emission reductions can be correctly evaluated.

The VV notifies the FOEN of any deviations that constitute substantial modifications within the meaning of Article 11 of the CO₂ Ordinance; in this case, the procedure described in section 0 applies.

4.2.3 Issues requiring correction identified during verification

The VV identifies all aspects of the monitoring that affect the calculations or emission reductions. It specifies the necessary corrective or clarification measures and asks the applicant to implement them. In its report, the VV compiles a full list of the CRs, CARs and FARs that it has issued. Among other things, it may decide whether a site visit should take place (Art. 6 para. 5 and Art. 9 para. 3^{bis} CO₂ Ordinance).

To complete the verification and allow the FOEN to process the application for the issuance of attestations, all issues raised by the VV (CARs and CRs) must have been settled. Conversion of CARs and CRs into FARs is not permitted. The applicant must implement the requirements imposed by the VV. The FOEN may reject the application if the applicant fails to comply fully with these requirements.

The Compensation Office only decides on the issuance of attestations once the verification is complete. The FOEN decides, based on the application and, where applicable, the clarifications referred to in Article 7 paragraph 3 of the CO₂ Ordinance, whether the project or programme qualifies for the issuance of attestations.

4.3 Revalidation – information for applicants

A revalidation may be necessary if the project or programme has undergone substantial modifications (see section 3.9) or, in the case of projects and programmes carried out in Switzerland, when the applicant wishes to extend the crediting period (see section 3.8). A revalidation does not differ substantially from an original validation as described in Article 6 of the CO₂ Ordinance (see section 4.1).

First, the applicant updates the validated project description to reflect the current state of knowledge. In particular, it adapts the assumptions about framework conditions and the methods used to demonstrate achieved emission reductions to the current requirements of the CO₂ Ordinance and the recommendations contained in this communication. The description must also take account of legal amendments outside of the CO₂ Ordinance (see section 2.6.2).

The applicant then commissions an FOEN-approved VV to carry out a revalidation. The revalidation cannot be performed by the VV that carried out the last verification before submission of the new authorisation application. The applicant submits the updated project description, duly validated by the VV, together with the validation report, to the FOEN, as described in section 3.4. The FOEN decides whether or not the project or programme qualifies on the basis of this new validation report and the updated project or programme description (Art. 8b para. 2 CO₂ Ordinance for extensions of the crediting period; Art. 11 para. 3 CO₂ Ordinance for substantial modifications).

A verification carried out in parallel, relating to a monitoring period within the new crediting period, may be completed as soon as the new qualification decision has been made. As part of the verification, the VV examines whether any changes to the project or programme description have been taken into account during monitoring.

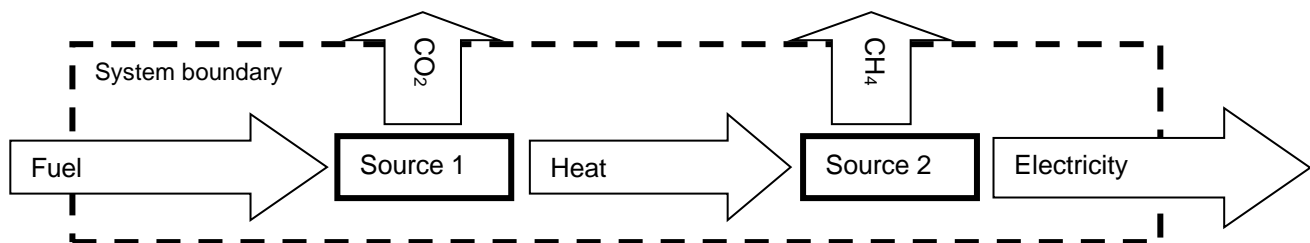
5 Reference scenario and expected emission reductions

The applicant begins by defining the project's system boundary (see section 5.1), then determines the reference scenario (see section 5.2) as well as the emissions expected to be generated by the project (see section 5.3) and the expected emission reductions (see section 5.4) and includes these in the project or programme description.

5.1 System boundary and emission sources

The evaluation of expected emission reductions for the project, as well as the reference development, are conditioned by the system boundary defined (see Fig. 4). This boundary encompasses all direct and indirect emission sources that can be unequivocally attributed to the project. The system boundary is the same for emissions generated by the project and the reference development. The choice of system boundary must be justified and represented graphically in the project or programme description. For the programmes, the system boundary must be defined at project or project type level (if there are several project types in a programme).

Fig. 6: Schematic representation of a system boundary



Direct emission sources:

Firstly, the applicant lists all the emission sources that may be directly influenced by the project and the reference development, for example:

- emissions within the geographical scope of the project (e. g. from combustion processes);
- emissions from all relevant technical elements that are part of the project (e. g. well-defined components of a technical installation);
- emissions from all components affected by alterations to the project that involve investment (e. g. measures taken simultaneously at different company sites).

Indirect emission sources:

Secondly, the applicant lists the emission sources, within the system boundary, which are not directly linked to the project or the reference development but may nevertheless be caused or mitigated by the project (e. g. emissions from transporting substrates for biogas plants).

Leakage:

'Leakage' means a change in emissions outside the system boundary which cannot be directly attributed to the project but can nevertheless be traced back to it. The impact of leakage on the level of emissions can be both positive (additional emission reductions) and negative (additional emissions). These changes in the level of emissions must be quantified and included in the calculation of emission reductions, provided that they are not negligible and are produced within the country (e. g. emissions resulting from the use of fossil energy sources elsewhere in place of the biomass used in the project to generate renewable energy). If the leaks are significant, the project may be rejected (Art. 5 para. 1 let. f of the CO₂ Ordinance).

The following CO₂eq guidance and tools of the United Nations Framework Convention on Climate Change (UNFCCC)³⁶ can be used to determine CO₂eq emissions caused by leakage:

- 'General Guidance on Leakage in biomass project activities', version 3 of 28 May 2009
- 'Tool to calculate project or Leakage CO₂ emissions from fossil fuel combustion', version 3 of 22 September 2017
- ACM0003: 'Partial substitution of fossil fuels in cement or quicklime manufacture', version 8 of 8 November 2013

5.2 Determining the reference scenario and reference development

The reference scenario is determined only once, at the time of the project or programme authorisation application. It serves as a basis for the applicant to determine the expected reference development. During monitoring, the latter is generally updated based on actual measurements, as provided for in the monitoring plan drawn up as part of the project or programme description (see section 7).

The reference scenario is the most likely of the various plausible alternatives to the project scenario. The reference scenario and the project pursue the same objective.³⁷ The possible developments of the reference scenario are described in an appropriate and realistic way by means of parameters, taking the date of submission of the application as a baseline. The parameters refer to the system boundary and to the influencing factors used to determine the emissions generated by the project. In addition to the project scenario, at least two other scenarios must be developed. The probability of occurrence of the scenario and the development of the emission sources and influencing factors must be described for each scenario. The reference scenario is generally the most economically attractive alternative corresponding at least to the state of the art (see section 2.2). If the most economically attractive alternative is not chosen as the reference scenario, reasons must be given to justify this choice.

³⁶ All of these documents are published at: *CDM-Home (unfccc.int)* (use the search engine to find the required document)

³⁷ Example for the heating of homes: The reference scenario relates to homes heated individually with oil. The project scenario relates to homes heated by a local heating network using a wood pellet boiler.

The description of the reference scenario must include, in particular, a description of the following in order to determine the expected reference development:

- the technologies that would have been applied if the emission reduction measures planned under the project or programme had not been implemented;
- the emission reduction measures that would have been implemented anyway, in whole or in part during the project or programme duration, with details of when this would have happened, where applicable;
- common practice;
- the financial benefit of the reference scenario compared with the alternatives;
- ***in Switzerland:*** all the legal requirements and economic framework conditions in accordance with Annex A1 of this communication, including any target agreement concluded with the Confederation;
- ***Abroad:*** all legal requirements and economic framework conditions in the partner country;
- the application of technologies enabling compliance with environmental protection regulations, particularly in terms of pollutant emissions and performance (see section 2.3).

In Switzerland:

Specific information for biological CO₂ storage projects in forests:

To take account of climate and energy policies and effectively manage interfaces with other climate policy activities in the timber and forestry industry, the applicant must calculate the carbon sink effect achieved on the basis of a national reference scenario.

Influencing factors:

Technological developments and influencing factors such as changing demand-side behaviour, energy price developments and changes to legislation generally have an impact on the development of emission reductions. The applicant must therefore identify all the key factors liable to influence the reference development or the emission reductions achieved by the project. The influencing factors identified must be taken into consideration both when compiling the reference scenario and when developing the demonstration method and drawing up and implementing the monitoring plan.

Example of a calculation for determining the expected reference development:

E_{Ref} describes the assumed progression of emissions if the emission reduction measures planned as part of the project were not implemented. It is based on the emission sources and influencing factors. Ideally, the reference development is calculated based on the expected annual effects A_{Ref} and the emission factors EF .

$$E_{Ref} = A_{Ref} \times EF$$

E_{Ref} = expected annual reference development [in tonnes of CO₂eq]

A_{Ref} = expected annual effect of the reference

EF = specific emission factor in accordance with Annex A3 of this communication

The expected annual effect of the reference A_{Ref} corresponds, for example, to a project's annual energy consumption (expressed in litres, kWh or m³). The data needed to quantify the effect are measured during monitoring.

Depending on the project or programme type, additional methods may be necessary to determine the activity levels and emission factors. This is the case, for example, when calculating the efficiency of installations.

In Switzerland:

Binding standard methods including suitable calculation formulas have been developed for local heating network and landfill gas projects (see Annexes 3a and 3b of the CO₂ Ordinance). In the case of projects and programmes in progress, for which an authorisation application has already been submitted, these methods apply from the end of the current crediting period, subject to revalidation (see section 3.8). Other non-binding methods are published as annexes to this communication.³⁸ With no obligation to use one of the binding standard methods, the applicant may develop their own methodology. However, if a non-binding method is published and the method proposed by the applicant differs from it, the applicant must demonstrate the equivalence of their own method. Recommendations and emission factors that can be used to determine the expected reference development, to determine the corresponding expected emission reductions and to develop demonstration methods are given in Annexes A1 to A3 of this communication.

Abroad:

The existing Clean Development Mechanism (CDM)³⁹ or Gold Standard⁴⁰ can be used as a reference. These methods are only a basis for validation. Their use does not guarantee compliance with the requirements of Switzerland's CO₂ Ordinance. The FOEN decides on their recognition. The reference scenario must also reflect the legislation of the partner state.

³⁸ All non-binding methods are available on the FOEN website at www.bafu.admin.ch/tv-1315-e > Annexes D, F, G and K

³⁹ <https://cdm.unfccc.int/methodologies/index.html>

⁴⁰ <https://globalgoals.goldstandard.org/documents/methodology/>

5.3 Expected emissions

The expected annual emissions generated by the project over its entire duration are determined in the project or programme description. Similar to the procedure for determining the reference development, the expected emissions for the project can be calculated based on the expected annual effects A_P and the emission factors EF . The system boundary is the same in both cases.

For example:

$$E_P = A_P \times EF$$

E_P = expected annual development of project emissions [in tCO₂eq]

A_P = expected annual effect of the project

EF = specific emission factor in accordance with Annex A3 of this communication

The expected annual effect of the project A_P corresponds, for example, to a project's annual fuel consumption in litres. The data needed to quantify the effect are measured during monitoring.

5.4 Expected emission reductions

The emission reductions expected for each calendar year, as well as those expected for the entire crediting period (see 2.6.2) or over the project duration, must be included in the project or programme description (Art. 6, para. 2, let. e, CO₂ Ordinance). The applicant estimates the expected emission reductions (ER_{total}) (see Fig. 5). To this end, the emissions generated by the project (E_P) are subtracted from the emissions that would have been generated without the emission reduction measures planned under the project (reference development E_{Ref}). The effects of leakage must also be taken into account (see section 5.1). There is no need to explain how the values of the various parameters required to estimate the expected emission reductions are estimated or calculated. However, the Compensation Office recommends using the same method as that used to determine the actual emission reductions during monitoring, by applying appropriate hypothetical values to the parameters. These values are determined according to the knowledge available at the time that the project qualification decision is issued and do not affect project implementation. The emission reductions used during monitoring and verification of the project or programme to identify any deviation between the expected values and the values actually measured (see section 7.2). Any significant difference between the expected emission reductions and the actual emission reductions (+/- 20 %) must be explained in the monitoring report.

Example of a calculation of expected emission reductions in tCO₂eq:

$$ER_{total} = E_{Ref} - E_P + leakage$$

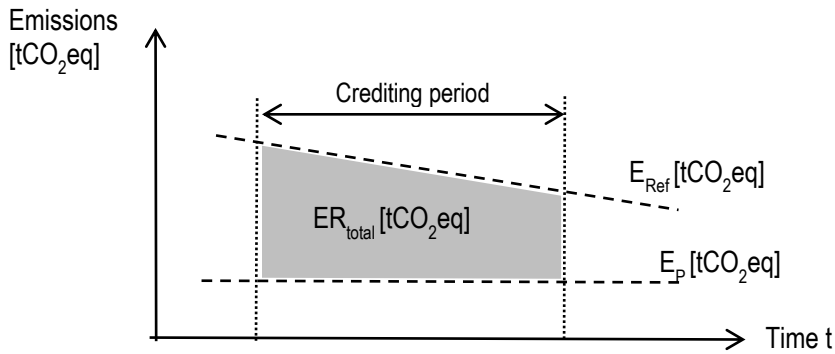
ER_{total} = expected emission reductions over the project or programme duration

E_{Ref} = expected emissions over the project or programme duration according to the reference development (see section 5.2)

E_P = expected emissions for the project or programme over its duration (see section 5.3)

$Leakage$: negative value if sources of additional emissions, positive value if emissions avoided (see section 5.1)

Fig. 7: Schematic representation of expected emission reductions



5.5 *Abroad*: delimitation from the nationally determined contribution (NDC) of the partner country

Projects and programmes must be clearly delimited from the NDC targets of partner countries. In particular, the applicant must show that no emission reductions are transferred to Switzerland from sectors for which the unconditional NDC of the partner country has not been achieved.

6 Additionality

The applicant must demonstrate the additionality of the project or programme (Art. 5 para. 1 let. b No 1 CO₂ Ordinance). Attestations are issued only for projects or programmes whose emission reductions are additional. In other words, attestations can only be issued for emission reductions where it is demonstrated that they would not have been achieved without the implementation of reduction measures as part of the offsetting project.

6.1 General principles

Demonstrating additionality is based on determining the reference scenario and showing that the emission reductions are additional to the reference development (see section 5.2). The elements of demonstrating additionality are based on:

- The economic feasibility analysis (see section 6.3) demonstrating that the project:
 - is not economically feasible and so would not be implemented without the revenue from the sale of attestations;
 - could be economically feasible but would not be implemented due to barriers. If necessary, a barrier analysis demonstrating that the contribution from the financial incentive linked to the sale of the attestations eliminates these barriers (see section 6.3.1).

The robustness of the economic feasibility analysis must be demonstrated by a sensitivity analysis which takes account of the uncertainty involved in the definition of the project's parameters (see section 6.3.2).

- the common practice analysis (see section 6.4) : some projects are part of common practice, which means even without the financial incentive linked to the attestations, their implementation would not be economically feasible and would involve significant barriers. A project that is part of common practice cannot be considered additional/cannot be issued with an attestation.

Specific information for programmes:

Additionality is demonstrated at the level of the programme's planned component activities and not at the programme level. The applicant can either demonstrate the economic unfeasibility of each planned component activity within the programme (*'component-specific demonstration of economic unfeasibility'*), or it can provide a representative demonstration of the economic unfeasibility of all the planned component activities that will be included in the programme (*'representative demonstration of economic unfeasibility'*). Representative demonstration may be chosen when the economic feasibility data (e. g. investment costs) are the same for all planned component activities or when the most economically feasible activity is not economically feasible to a significant degree, thus demonstrating that none of the planned component activities is economically feasible.

If the energy and investment costs change by more than 20 %, the demonstration of economic unfeasibility must be adjusted based on the new values. However, the adjusted economic feasibility analysis only applies to newly included planned component activities. As long as economic unfeasibility cannot be demonstrated, no new planned component activity can be included in the programme.

Abroad:

For programmes implemented with least developed countries (LDC) or small island developing states (SIDS), the economic feasibility analysis can be calculated at programme level without demonstrating the economic feasibility of each component activity. It must be demonstrated that the programme speeds up the dissemination of a new technology in the partner country using a technology dissemination trajectory confirmed by the partner country.

6.2 Financial assistance

The project or programme description must include information about the financing and financial structure of the project, as well as its delimitation from other public policy instruments (Art. 6 para. 2 lets c, g and h CO₂ Ordinance).

The amounts and sources of the contributions must be indicated. Any allocation of contributions must be taken into account in the economic feasibility analysis, even when an application is pending. This information serves to verify the criterion of economic feasibility (Art. 5 para. 1 let. b No 1 CO₂ Ordinance).

Abroad:

The following in particular must be considered:

- development assistance contributions from Switzerland or another donor country;
- climate finance under Article 9 of the Paris Agreement;
- public funding from the partner country;
- other non-refundable payments.

6.3 Economic feasibility analysis

An economic feasibility analysis must be carried out for every project. This comparison demonstrates that the revenue from the sale of attestations is the key financial incentive without which the project would not be implemented. It is based on the UNFCCC's '*Tool for the demonstration and assessment of additionality*'⁴¹ and takes place in two stages:

1. To prove that the project is not economically feasible, the applicant compares the project scenario with the reference scenario or demonstrates, by a comparison of the benchmarks, that the project's return on investment is insufficient. Neither the revenue from the sale of attestations nor the transaction costs are taken into account. However, all other revenues, in particular the financial assistance provided by funding institutions, are taken into consideration.
2. The economic feasibility analysis for the project scenario without the revenue from the sale of attestations is compared with the economic feasibility analysis for the project scenario with the revenue from the sale of attestations.

The economic feasibility analysis must be based on appropriate and realistic assumptions (e. g. customers' willingness to pay, benchmark fuel prices) and must be done conservatively.⁴² Risks inherent in projects can be taken into account in the cash-flow calculation (e. g. an increase in insurance costs may be factored into the financial assessment of specific risks). All significant technical and economic parameters and assumptions should be listed and documented in such a way that they can be validated. The applicant must perform a sensitivity analysis to check the robustness of the analysis (see section 6.3.2).

⁴¹ Available at <https://cdm.unfccc.int/> (use the search engine to find the document)

⁴² A conservative economic feasibility analysis is based on assumptions that are realistic but formulated in such a way that the project is as economically feasible as possible.

Different analysis methods may be used depending on the type of project: simple cost analysis, investment comparison analysis, or benchmark analysis.

If a project generates no monetary benefits other than the revenue from the sale of attestations, a simple cost analysis is used. Otherwise, an investment comparison analysis or benchmark analysis should be performed. Guidance on cost parameters can be found in Annex A2 to this communication.

Simple cost analysis

The investment costs and average annual operating costs related to the project are analysed. The applicant demonstrates that, apart from the monetary value resulting from the sale of attestations, the project does not generate any profit or other receipts (see examples Tab. 5) and that it is less economically feasible than at least one of the alternative scenarios.

Table 4 provides a breakdown of investment and operating costs. The project or programme description must also indicate the revenues and receipts, such as any financial assistance applied for and/or granted (see section 6.2).

Tab. 4: Typical investment and operating costs

Type of costs	Examples:
Investment costs (all one-off costs associated with implementing a project, programme or planned component activity)	<ul style="list-style-type: none"> • Costs of project planning and design and supervision of construction works • Direct installation costs (construction, materials, transport, assembly, land) • Boundary contributions and contributions for utility connections • Financing costs during construction (construction loan interest) • Any replacement or expansion investments • Other costs (e. g. chemicals, water) • Deconstruction costs when replacing existing buildings or installations or remediating contaminated sites, where such costs relate solely to project implementation • Any salvage/residual value or scrap value (present value) of an installation must be deducted from the investment costs. • Acquisition of the infrastructure needed for programme implementation (e. g. software)
Annual operating costs (annual costs incurred by projects, programmes or planned component activities during their useful life)	<ul style="list-style-type: none"> • General operating costs (including administration and insurance costs) • Maintenance costs (costs of upkeep and maintenance; renovation costs, where not already counted as replacement investments) • Personnel costs for operation and monitoring of the installation • Material costs, including energy costs (amount of energy consumed multiplied by the energy price)⁴³ • Personnel costs for management of planned component activities

Tab. 5: Typical receipts and savings

Type of product	Differentiation
Receipts	Project receipts from the sale of services, goods or energy; financial assistance
Savings	Savings compared with the reference scenario, e. g. energy savings achieved through the installation of energy-efficient equipment

⁴³ In Switzerland: The price list for conventional energy sources is published on the FOEN website at www.bafu.admin.ch/tw-1315-e > Annex C

Investment comparison analysis

If the technologies provide the same quantity and quality of goods or services in both the reference scenario and the project or programme scenario, the applicant compares financial indicators (investment comparison analysis) such as the net present value⁴⁴ (NPV) or the internal rate of return (IRR). The indicators take appropriate account of the costs incurred at different times. Alternative technologies and practices must correspond at least to the current state of the art when new investments are made.

The present value method (determining the NPV) identifies the receipts and investment and operating costs at different times and allows them to be compared by discounting to the investment start date. To this end, the initial investment is compared with the discounted cash flows on the planned date of commissioning.

The most attractive investment alternative in terms of economic feasibility is the one with the highest present value. If the project has the highest present value, it is not additional.

Benchmark analysis

The applicant compares the financial indicator calculated for the project (NPV, IRR, etc.) with a corresponding reference value ('benchmark'). The following may serve as benchmarks:

- interest rates on government bonds (for projects and programmes carried out in Switzerland) or the specific interest rate of the partner country according to the World Bank or the interest rates on government bonds in the partner country (for projects and programmes carried out abroad); where relevant, these rates should be increased appropriately to take account of the risk and so accurately reflect the private investment or project type;
- assessments of the financial costs and required return on capital undertaken by the manager of a private equity fund or by financial experts on the basis of similar projects;
- a company-specific benchmark that has been applied consistently in the past (e.g. WACC⁴⁵).

The applicant must show that, without the incentive provided by revenue from the sale of attestations, the project has a less favourable financial indicator than the selected benchmark and will therefore not be implemented without an additional incentive. If several benchmarks are possible for a given project, the lowest must be chosen.

6.3.1 Barrier analysis

There are some projects which, despite being economically feasible according to the economic feasibility analysis, are nonetheless additional. In this case, if an economic feasibility analysis cannot demonstrate that the project is economically unfeasible, a barrier analysis can be undertaken to assess the investment and operating costs.

⁴⁴ The net present value refers to the present value of future payments. It is determined by discounting future payments.

⁴⁵ weighted average cost of capital

The barrier analysis shows that the project, though economically feasible, would not be implemented due to barriers, and how these barriers can only be overcome with the revenue from the sale of attestations. Such barriers may be invoked if they prevent at least one of the alternative scenarios, as well as the project or programme scenario. The barriers invoked must be duly justified, for example by studies, market data or statistics.

Examples of what can be invoked as barriers:

- technical difficulties: a lack of specialists to implement projects locally, leading to implementation risks (e. g. operation of an installation);
- lack of knowledge and trust among customers;
- the benefits accrue to the user and not to the investor (landlord/tenant dilemma).

Examples of what cannot be invoked as barriers:

- cumbersome and costly authorisation procedures;
- insufficient willingness to invest in specific projects or programmes that are economically feasible;
- a lack of financial means, meagre profit or low return.

If the barriers identified meet the above requirements, additionality is determined on the basis of economic feasibility, also taking into account the costs of removing the barriers (monetisation). A sensitivity analysis is also carried out (see section 6.3.2) confirming compliance with the additionality principle.

Example of barriers to increasing energy efficiency

Initial situation and description of barrier: A programme aims to increase sales of a new product designed to improve the efficiency of household heating systems. The product has been available for some time but sales have not taken off due to a lack of trust in the product. Consequently, potential customers have not yet had an opportunity to test out the product's reliability and whether it actually delivers the claimed increase in efficiency.

Way to potentially overcome the barrier and achieve monetisation: Implementing additional pilot projects (such as offsetting projects) and carrying out measurement campaigns could build trust among customers. The costs of the pilot projects and measurement campaigns can be estimated and added to the implementation costs of the programme's planned component activities.

6.3.2 Sensitivity analysis

In addition to the economic feasibility analysis, the applicant must also perform a sensitivity analysis. This indicates whether the results concerning financial incentives for the project are robust when the assumptions are independently adjusted. To this end, the applicant develops a maximum scenario and a minimum scenario for each of the main parameters. The values should differ by at least 10 % (25 % for biogas plants) from the value of the project scenario. Furthermore, the deviations of the main parameters must correspond at least to the typical uncertainty in the estimate of the parameter value. As a general rule, the economic feasibility analysis only provides a valid basis for demonstrating additionality if the sensitivity analysis confirms, in all minimum and maximum scenarios, that the project retains its additionality.

6.4 Common practice analysis

Regardless of whether the economic feasibility analysis demonstrated a lack of economic feasibility or whether other barriers were identified, the applicant must carry out a common practice analysis as part of the project description. This analysis identifies projects that would normally be carried out without attestations because they are common practice, even though they are not economically feasible and face considerable barriers.

In Switzerland:

Example of a reference scenario for upgrading a comfort heating system:

When it comes to comfort heat, the replacement of fossil-fuel heating systems with renewable alternatives is, to some extent, common practice⁴⁶. This has been taken into account in the recommendations for assumptions on the shares of fossil and non-fossil installations in the reference development for heating projects (for more details on this, (see Annex 3a of the CO₂ Ordinance).

When developing the project, the applicant should preferably examine, as far as possible, whether projects similar to its own⁴⁷ have already been carried out. If so, the applicant should explain exactly why the project being presented cannot be implemented, despite similar conditions.

If, generally speaking, no similar project is being or has been carried out, additionality in relation to current practice is considered to be demonstrated.

If the Compensation Office provides evidence, backed up by relevant basic data, that the project is regarded as current practice, and is not therefore additional, it may be rejected.

⁴⁶ Wüest Partner: Heizsysteme: Entwicklung der Marktanteile. Commissioned by the Swiss Federal Office of Energy, Bern. Current version available in German only at www.bafu.admin.ch > Topics > Topic Climate > Information for specialists > Measures CO₂ Act > CO₂ compensation > Projects in Switzerland > Documents (at bottom of page)

⁴⁷ Projects are similar if they are of the same scale, take place in the same framework conditions and use the same technologies to achieve the same result.

7 Structure and implementation of monitoring

The aim of monitoring is to demonstrate that the expected emission reductions have indeed been achieved, to determine the quantity of the reductions and to establish that there has been no double counting. Together with the project or programme description, the applicant must draw up a monitoring plan specifying which data should be collected during monitoring in order to quantify the emission reductions and how the data will be collected (see section 0).

Monitoring normally begins when the project starts to have an effect (see section 7.2). To be eligible for the issuance of attestations for emission reductions actually achieved, the applicant must collect, in particular, the data indicated in the monitoring plan included in the project or programme description. These data are used to determine and demonstrate the emission reductions actually achieved by the project. The data for parameters affecting the reference development are also collected. The applicant compiles these data in a monitoring report (see section 0) which it has verified by a VV before submitting it to the FOEN.

Abroad:

The monitoring report must also be submitted to the partner state.

Specific information for programmes:

The applicant must demonstrate that the planned component activities fulfil all the inclusion criteria in accordance with Article. 5a, para. 1, let. c of the CO₂ Ordinance. During verification, the VV may limit the verification to a sample of representative component activities (Art. 9 para. 3 CO₂ Ordinance). The Compensation Office will not decide on the inclusion of new planned component activities in a programme until the verified monitoring report has been submitted.

7.1 Monitoring plan

The monitoring plan is an integral part of the project or programme description and, therefore, of the authorisation application. It specifies the start date of the monitoring (known or provisional). It also defines the parameters to be measured and determines how emission reductions are calculated. The applicant uses the binding project or programme description form (containing the monitoring plan) provided by the FOEN⁴⁸.

The monitoring plan also specifies the exact formatting requirements for the data to be included in the document recording the results. This format should be directly transferable as input into the calculation table for the method used to calculate emission reductions (monitoring). The calculation table for the method used must follow the guidelines in Annex M.⁴⁹

The monitoring plan covers the entire project or programme, regardless of any apportionment of effect (see section 8).

7.2 Implementation of monitoring and calculation of actual emission reductions

From the start of the project effect, monitoring includes the following steps:

1. The applicant ensures that the measurements are carried out in accordance with the quality requirements specified in the description (e. g. in accordance with the Measuring Instruments Ordinance (MIO), SR 941.210), for each measured value and for the entire duration of the monitoring.
2. The applicant records the project data and parameters as stated in the monitoring plan.
3. The applicant compiles these data in the monitoring report and carries out quality assurance.
4. The applicant calculates the emission reductions actually achieved based on the data and parameters measured, using the method specified in the monitoring plan.
5. For parameters deemed of fundamental importance, the applicant performs a plausibility check on the data ('cross-check').
6. The applicant documents each step of the monitoring, any modifications and the results of their calculations in a monitoring report.

All the information involved in calculating the emission reductions (e. g. manufacturer's specifications, measurement results, studies, evaluations, market information, independent expert opinions) must not only be referenced in the monitoring report, but also made available to the VV and attached as an electronic copy to the application for issuance of project or programme attestations.

The reference development during monitoring must be determined based on correct, transparent and intelligible assumptions and calculations. If a parameter cannot be determined exactly, the estimates pertaining to it must be as precise as possible. Uncertainty factors must be stated and taken into account conservatively.

⁴⁸ All forms are published on the FOEN website at www.bafu.admin.ch/compensation

⁴⁹ The document is available on the FOEN website at www.bafu.admin.ch/uv-1315-e > Annex M

In general, the applicant calculates the actual emission reductions for the given monitoring period y based on the updated expected values of the reference development and the emissions generated by the project or programme as measured during the monitoring, i.e.:

$$ER_y = RD_y - E_{p,y} + leakage_y$$

ER_y = emission reductions achieved by the project or programme for the given monitoring period
 RD_y = updated reference development of the project or programme for the given monitoring period
 $E_{p,y}$ = project or programme emissions for the given monitoring period
 $Leakage_y$: negative value if sources of additional emissions, positive value if emissions avoided (see section 5.1)

Example of a calculation of the updated reference development of a project or programme:

$$RD_y = A_{Ref,y} \times EF$$

RD_y = updated reference development for the given monitoring period y [in tCO₂eq]
 $A_{Ref,y}$ = updated annual effect for the given monitoring period y
 EF = specific emission factor in accordance with Annex A3 of this communication

Example of a calculation of actual project or programme emissions:

$$E_{p,y} = A_{p,y} \times EF$$

$E_{p,y}$ = project or programme emissions for the given monitoring period [in tCO₂eq]
 $A_{p,y}$ = project effect for the given monitoring period
 EF = specific emission factor in accordance with Annex A3 of this communication

For parameters deemed of fundamental importance to the calculation of emission reductions, the data is based on the measured values at project level (e. g. fuel consumption, quantity of heat supplied, quantity of biogas produced, electricity generation) or must come from comparable projects if the data cannot be measured as part of the project or programme (see section 6.4) and compliance with the principle of conservatism must be demonstrated. The applicant performs a plausibility check on the data contained in the monitoring report, cross-checking them against data from other sources (e. g. the installation logbook, inventories, electricity/heat meters, purchase receipts or similar sources).

Attestations can only be issued for verified and quantified emission reductions (Art. 5 para. 1 let. c No 1 CO₂ Ordinance). The total number of attestations issued for the project or programme is also limited by the duration of the project effect or by the crediting period (see section 2.6.2).

Specific information for carbon storage projects and programmes:

The applicant must demonstrate in a comprehensible and verifiable manner the quantities already stored and the quantity of carbon newly stored during the monitoring period. It must prove that the CO₂ actually stored is in line with the model presented in the project or programme description and that there is no demonstrable CO₂ leakage.

7.3 Monitoring report

The monitoring report includes the data collected by the applicant, as required by the monitoring plan to demonstrate the emission reductions, and where relevant describes the procedures used to collect the data (Art. 9 para. 1 CO₂ Ordinance). All calculation methods and procedures applied are also documented in accordance with the monitoring plan. The applicant uses the binding form available on the FOEN website⁵⁰ (all quantitative data must adhere to the format stipulated in the monitoring plan). The monitoring reports provide only raw data. All data processing must be carried out using the calculation table, which must not have changed since the validation phase.

If minor adjustments are made to the method validated during the first monitoring period, these must be documented in the monitoring report. The monitoring report also documents all the modifications that have occurred between two monitoring reports, lists the interfaces with other climate policy instruments, and indicates how these are taken into account in the calculation of emission reductions.

Abroad:

The information set out in section 2.8 must be taken into account in the monitoring report. The plausibility of the implementation must be verified, particularly with the first monitoring report for a new installation, for example by means of photographic and/or video documentation.

Specific information for carbon storage projects and programmes:

To guarantee the permanence of the CO₂ storage, the applicant must also submit to the FOEN, no later than 1 September 2031, a verified monitoring report and the corresponding verification report for the 2030 monitoring period, even if the project or programme ended earlier.

8 Apportionment of effect

Where a project or programme receives non-refundable payments, in addition to the expected receipts from attestations, and the institution making these payments claims the emission reductions attributable to its contribution, the applicant must make an apportionment of the emission reductions related to the project or programme (in other words, an 'apportionment of effect').⁵¹ As such, the emission reductions must be clearly assigned to the respective measures or to the various actors contributing financially to the project, and must on no account be attributed twice (Art. 10 paras 7 and 8 CO₂ Ordinance).

The FOEN only issues attestations for the part of the emission reductions that has not been accounted for in the emission reductions of the institution co-funding the project.⁵² The non-refundable payments that must be taken into account for the apportionment of effect and the way this should be done are described in the next two sections.

8.1 Non-refundable payments to be taken into account

If unsure whether to take payments into account, the applicant should contact the Compensation Office.⁵³

⁵¹ If the emission reductions are achieved by a company that is wholly owned by a public body, the amounts paid by that body to the company are not considered as financial assistance.

⁵² If the power and heat generation plants receive payment of remuneration, the minimum requirements regarding the use of the heat related to this remuneration must be taken into account. Emission reductions due to the avoidance of methane emissions at biogas plants are not subject to apportionment of effect.

⁵³ Financial contributions allocated through public tenders and the non-recurrent remuneration for photovoltaic systems as well as investment contributions for biomass plants do not require an apportionment of effect but must be taken into consideration in the economic feasibility analysis.

In Switzerland:

Table 6 gives a non-exhaustive list of non-refundable payments that must be taken into account in the apportionment of effect.

Tab. 6: Examples of non-refundable payments within the meaning of Article 10 paragraphs 4 to 5 CO₂ Ordinance

Non-refundable payments	Entity	Other information
Project-related financial contributions for promotion measures as part of a SwissEnergy programme	Confederation (SFOE)	www.suisseenergie.ch
Feed-in remuneration at cost for installations generating electricity from renewable energies	Confederation (SFOE)	www.bfe.admin.ch/rpc (Art. 19 EnA)
Financial contributions allocated through public tenders	Confederation (SFOE)	www.prokilowatt.ch
Financial contributions as part of Federal Office for Agriculture (FOAG) activities relating to biogas plants and other emission reduction projects in agriculture	Confederation (FOAG)	e. g. programmes promoting the sustainable use of natural resources (art. 77a et 77b AgricA)
Financial contributions as part of cantonal funding programmes, e. g. financial support for building renovations (Buildings Programme) based on the cantons' harmonised funding model (HFM 2015)	Canton	See the web pages of the cantonal funding programmes, most of which can be accessed from the website of the cantonal energy services: www.leprogrammebatiments.ch
Financial contributions as part of communal funding programmes	Commune	See the web pages on communal funding programmes: the non-exhaustive list at www.energiefranken.ch (in German) can be consulted to find out if this type of programme exists in a commune.
Financial contributions as part of support from the Swiss Climate Foundation	Swiss Climate Foundation	www.klimastiftung.ch

Abroad:

If a project or programme receives non-refundable payments from international or national public donors alongside the expected receipts from attestations, the emission reductions (i.e. the 'effect' brought about by the project or programme) must be apportioned to avoid double counting. An apportionment of effect must always take place if the payments are counted as 'climate finance' under Article 9 of the Paris Agreement.

8.2 Method for apportioning effect

The Compensation Office provides an Excel tool (Annex E of this communication⁵⁴) to assist in calculating and confirming the apportionment of effect using Form A or B.

Form A The apportionment of effect is calculated so that the other actor pays as much for its share of the effect, in Swiss francs (CHF) per tonne of CO₂eq emission reductions, as the applicant derives from the sale of the attestations issued. This is the only apportionment of effect accepted for projects and programmes carried out abroad.

Form B: The apportionment of effect is mutually agreed and laid down in a contract (free apportionment of effect). This can be done on a relative or lump-sum basis (see Annex E).

⁵⁴ The Annexes to this communication are published on the FOEN website www.bafu.admin.ch/uv-1315-e > see annexes.

In Switzerland:

The applicant agrees an apportionment of effect with the other actor and proves this by means of an official document.

Abroad:

Only an apportionment of effect using Form A is accepted. Form B is not accepted.

The applicant sends the form to the funding body concerned, which signs it to confirm that it accepts the apportionment. The share of emission reductions for which attestations are issued is specified in the project or programme description, normally for the full duration of the crediting period. Contributions paid while the project or programme is in progress must also undergo apportionment of effect. When an apportionment of effect using Form A is applied, the share must be adapted, if necessary, as part of the monitoring report, if substantial modifications to the parameters are observed (e. g. sum of the non-refundable payments or volume of emission reductions achieved). If the amount of the financial contribution to be paid by the funding body is not yet known when the application for project or programme authorisation is submitted, the final amount may be indicated in the first monitoring report. In this case, the other actor confirms this amount at that time by means of a signature. Confirmation of the apportionment of effect must be attached to the application (Form A or Form B in Annex E to this communication).

Abroad:

The reference interest rate is a key factor in the investment analysis, because different payments are made at different times. Either the interest rate of government bonds or the specific interest rate of the partner country as published by the World Bank may be used for this purpose.

In Switzerland:

Special cases:

With projects or programmes that receive payments from multiple funding institutions (e. g. projects or programmes implemented nationwide and financed by several cantons), apportionment of effect using the Excel tool is not always possible. Where this is the case, the apportionment must be done in consultation with the Compensation Office.

With heating networks as defined in Annex 3a of the CO₂ Ordinance: No apportionment of effect is required for connections subsidised by the canton as part of the Buildings Programme. Instead, a fixed reduction factor of 10 % is applied to all projects of this type. Moreover, no deduction should be made for heat consumers whose connection to the network was mandatory. This process only applies to the incentive to connect to a heating network via M-07. In the case of investment contributions (M-18, incentive for plants, network and, in special cases, connections), apportionment of the effect between the cantons and applicant is always required.

9 *In Switzerland: Interfaces*

9.1 Interface with the operation of installations with reduction obligations

Installation operators under a reduction obligation for which an emission target under Article 67 of the CO₂ Ordinance has been agreed can apply to receive attestations for emission reductions resulting from a project under Article 5 of the CO₂ Ordinance or a programme under Article 5a of the CO₂ Ordinance provided these reductions were not taken into account in the emission target (Art. 5 para. 1 let. c No 3 CO₂ Ordinance). For installation operators under a reduction obligation with an emission target, this is the case in particular if at least one of the following conditions is met:

- the emission reductions are achieved by reducing greenhouse gas emissions which are, by definition, not included in the emissions target for the operation of installations because they are greenhouse gases other than CO₂ (e. g. HFC emissions generated by refrigeration systems);
- the emission reductions generated by the use of waste heat which, technically, cannot be used as part of the reduction obligation for installation operation;
- the impact of the offsetting project leads to an amendment of the emissions target under Article 73 of the CO₂ Ordinance.

The emission reductions for which the attestations have been issued are considered – as far as the achievement of the objective is concerned – as greenhouse gas of the plant operator (Art. 74a CO₂ Ordinance). The monitoring and verification reports must be submitted to the FOEN by 31 May of the following year at the latest (Art. 9 para. 7 CO₂ Ordinance). Attestations for offsetting projects or programmes are only issued provided the plant operators have declared their emission reductions and all double counting has been excluded (see section 2.7).

9.2 Emission reductions achieved through heat supply to or by installation operators with an emission target

Emission reductions achieved through the supply of heat produced by offsetting projects (heat supply) to or by installation operators with a reduction obligation must be indicated separately, for each calendar year, in the monitoring report. The FOEN decides, based on the verified monitoring report, whether attestations can be issued for the emission reductions concerned or whether they should be withheld.

9.3 Emission reductions achieved by heat supply from household waste incineration plants

Emission reductions achieved by the supply of heat from household waste incineration plants must be indicated separately, for each calendar year, in the monitoring report. When examining the application, the FOEN will look at whether these emission reductions are already claimed under the sectoral agreement between the Association of Plant Managers of Swiss Waste Treatment Installations and the Confederation in order to avoid unauthorised double counting.

10 Scientific support

A project whose emission reductions or carbon storage capacity cannot be quantified with sufficient precision may be attested if, in addition to the usual requirements, the applicant implements scientific support measures (Art. 5b CO₂ Ordinance). To qualify for this alternative, the projects or programmes concerned must submit an appropriate monitoring plan. The scientific support supplements the monitoring plan by indicating the method used to determine the emission reductions. By means of studies, it serves to reduce the remaining uncertainties. However, it is not intended to assist with the late development of a project or to correct methodological weaknesses. Its sole purpose is to reduce uncertainties regarding the quantification of monitoring plan parameters (Art. 5b para. 1 CO₂ Ordinance).

The applicant chooses the form of scientific support that it wishes to deploy. This support must meet the requirements of normal scientific practice (e.g. independent measurements or measured values, critical appraisal of results, publication of technical bases in a journal recognised by the scientific community). Scientific support for the project is provided at the applicant's expense.

10.1 Scientific support and project or programme description

The applicant submits a scientific support plan at the same time as the project or programme description. The VV examines its feasibility and transparency as part of the validation. This plan sets out in particular:

- the objective of the scientific support as well as the science on which it is based;
- the current state of knowledge, including the statistical data needed to determine measurement uncertainty;
- information about the evaluation and interpretation of the data collected and how they are used to calculate emission reductions or storage;
- the estimated duration of the scientific support required;
- proof that the individuals responsible for providing the support have the necessary technical knowledge, for example references to peer-reviewed scientific publications, experience with different measurements or measurement methods, knowledge of the technologies used or other evidence;
- proof of independence and absence of potential conflicts of interest for both the applicant and the individuals responsible for the scientific support.
- funding or co-funding of scientific support. In particular, the applicant should provide information on the use of both public and private financial and human resources.

10.2 Scientific support and project monitoring

The scientific support measures must be implemented no later than the start of the project effect. For each calendar year, the applicant submits the results of the support measures to the FOEN in addition to the monitoring report. Until new values are available, parameters that are the subject of scientific support should be taken into account conservatively. Only when the scientific support has reduced their uncertainty can these parameters be used with values that further reduce emissions.

The VV assesses whether the effect of the emission reductions or carbon storage has been quantified with sufficient precision and presents the results in the verification report, where it also makes a recommendation about whether the scientific support should continue.

On the basis of the VV's recommendation, the FOEN decides whether the scientific support measures are still needed.

Termination of scientific support for the project:

The FOEN may decide to terminate the scientific support before the end of the project if the support has enabled the effect of the emission reductions or carbon storage to be quantified with sufficient precision, as defined previously in the project or programme description (Art. 5b para. 3 CO₂ Ordinance). To allow widespread use of the studies carried out and as a guarantee of scientific quality, the applicant must publish the results of the scientific support at the end of the project (Art. 5b para. 4 CO₂ Ordinance). If it wishes, the applicant may also continue the scientific support, with no further requirement to submit the results to the FOEN.

Annex A

A1 Policy framework

In Switzerland:

Tab. 7: General framework for the Confederation, cantons and communes

Level	Measure	Specific application
Confederation	Energy legislation (Energy Act, EnA)	Among others (see section 8): Article 19 (feed-in remuneration at cost), Article 25 (non-recurrent remuneration for photovoltaic systems), Article 27 (investment contribution for biomass plants), Article 32 (competitive tenders for efficiency measures), Article 44 (installations, vehicles and equipment), Articles 45 and 52 (buildings), support measures under Chapter 6, Article 50 (measures on the use of energy and waste heat) of EnA.
	CO ₂ legislation, including FOEN enforcement aids for the CO ₂ Ordinance	Among others: building-related measures (Art. 34 of the CO ₂ Act), CO ₂ levy on fuels (Art. 94 CO ₂ Ordinance): CHF 120/t CO ₂ ⁵⁵ as of 1 January 2022.
	Legislation on mineral oil tax, in particular to promote natural gas as a fuel and biofuels (tax relief until 31 December 2023)	Assumption for determining the reference development: (admixture of at least 20 % biofuels to natural gas) and conditions for tax relief under Article 12b of the Mineral Oil Tax Act (MinOTA).
Cantons, communes	Cantonal and communal energy provisions (including article on large consumers)	Target agreements. Connection obligation. Legal bases of the cantons.
	Funding programmes of cantons, cities and communes.	Measures under the Buildings Programme as well as commune-specific and canton-specific funding programmes.

Abroad:

A list of legal framework conditions abroad cannot be provided due to the diversity of partner countries involved.

⁵⁵ Burning one litre of heating oil produces 2.65 kg of CO₂. If the levy is set at CHF 120/t CO₂, this equates to around 30 centimes/l of oil.

A2 Economic framework

In Switzerland:

The assumptions below are those generally applied for calculations and financial analyses and for defining the reference development. Values resulting in a more accurate assessment of the additionality or reference development may also be used.

An annually updated list of energy prices is published on the FOEN website.⁵⁶ The prices published at the end of January apply to project proposals submitted from 1 April of that year until 31 March of the following year.

For economic feasibility calculations, a theoretical interest rate of 3 % is acceptable.

Where technical installations are involved, the project duration corresponds to the useful life of these installations. Table 8 contains examples of standard useful lives, by way of guidance. For installations not listed in Table 8, the applicant must justify the useful life. In the case of replacement installations, only emission reductions that have taken place during the remaining useful life qualify for attestations.

Example for the useful life of replacement installations:

If an oil heating system is replaced by a wood heating system five years before the end of the standard useful life, the emission reductions achieved through this replacement can only be recognised for five years in total. Beyond this, it is only possible to claim emission reductions based on the reference development.

Tab. 8: Standard useful lives

Local heating networks	40 years
Industrial processes	4 years (minimum)
Saving measures in buildings' technical installations	10 years
Building envelope measures	20 years
Heat generators	15 years

Abroad:

A list of economic framework conditions abroad cannot be provided due to the diversity of partner countries involved.

⁵⁶ The price list for conventional energy sources is published on the FOEN website at www.bafu.admin.ch/tw-1315-e > see Annex C.

A3 Emission factors

In Switzerland:

- With regard to offsetting projects and programmes, the presentation of certificates of origin (e. g. for biogas or electricity) has no bearing on the emission factors. The emission factors always apply in accordance with the CO₂ Ordinance and with this FOEN communication. In cases where energy produced by a project or programme is used directly without being fed into a Swiss network, the emission factor of the effective reference scenario applies (e. g. a diesel-fuelled power generator for a photovoltaic system).
- The emission factor of the biomass is set at zero for all project types.
- More information about the emission factors of refrigerants can be found on the FOEN website.⁵⁷

The emission factors and conversion factors (net calorific values, density) applying to projects and programmes are given in Table 9. The emission factors in Annex 10 of the CO₂ Ordinance are decisive. When no value is explicitly indicated, the default base values presented in the table below should be used. The greenhouse gas emissions per kWh of electrical current provided for the Swiss production mix (see 'product mix') can be found on the FOEN's website.⁵⁸ The emission factors accepted in the qualification decision can be used throughout the crediting period. The values of the greenhouse gas effect on global warming in CO₂ equivalents (CO₂eq) are set out in Annex 1 of the CO₂ Ordinance.

⁵⁷ Installations contenant des fluides frigorigènes : du concept à la mise sur le marché, FOEN, 2020. The document is available on the FOEN website at: www.bafu.admin.ch > Topics > Topic Chemicals > Publications and Studies > Anlagen mit Kältemitteln: vom Konzept bis zum Inverkehrbringen

⁵⁸ Umweltbilanz Strommix Schweiz 2018 (in German). treeze Ltd (Luana Krebs, Rolf Frischknecht), 27 April 2021. The document is available on the FOEN website at: www.bafu.admin.ch > Topics > Topic Climate > Questions and answers > 8. How climate-friendly is the Swiss energy supply?

Tab. 9: CO₂ emission factors, density and net calorific values of fossil energy sources

Energy source	Net calorific value (NCV)		Density		Emission factors			
	MJ/kg	kWh/kg	kWh/l	kg/m ³	t CO ₂ /t	t CO ₂ /TJ	kg CO ₂ /MWh	kg CO ₂ /l (= t CO ₂ /m ³)
		conversion MJ → kWh	determined using density			determined using NCV	conversion MJ → kWh	determined using density
Extra-light heating oil (HEL)	42,9 ²⁾	11,9	10,0	839 ²⁾	3,16 ²⁾	73,7	265	2,65
Natural gas in gaseous state	45,7 ¹⁾	12,7	0,0101	0,795 ¹⁾	2,58 ¹⁾	56,4	203	0,002
Liquefied natural gas	45,7 ¹⁾	12,7	5,73	451 ¹⁾	2,58 ¹⁾	56,4	203	1,16
Petroleum spirit excluding aviation fuel	42,6 ¹⁾	11,8	8,72	737 ¹⁾	3,15 ¹⁾	73,8	266	2,32
Aviation fuel	43,7 ¹⁾	12,1	8,68	715 ¹⁾	3,17 ¹⁾	72,5	261	2,27
Aviation fuel (= kerosene)	43,2 ¹⁾	12,0	9,59	799 ¹⁾	3,14 ¹⁾	72,8	262	2,51
Diesel	43,0 ¹⁾	11,9	9,91	830 ¹⁾	3,15 ¹⁾	73,3	264	2,61

Source disclosure 1) CO₂ Ordinance, Annex 10; 2) Calculation basis for Annex 11 of the CO₂ Ordinance.

Abroad:

A list of emission factors applying abroad cannot be provided due to the diversity of partner countries involved. Please use the 'IPCC Emission factors' database.⁵⁹

⁵⁹ IPCC Emission Factor Database: <https://www.ipcc-nggip.iges.or.jp/EFDB/main.php>

List of other annexes

As of January 2024

The following annexes to this communication are available separately in PDF format www.bafu.admin.ch/uv-1315-e:

Annex B

Invoicing of work in accordance with the FOEN
Fees Ordinance

Annex C

Energy prices 2023

Annex D

Standard method for monitoring emission
reductions achieved through road-to-rail transfer
programmes

Annex E

Excel tool including Forms A and B for the
apportionment of effect

Annex G

Standard method for demonstrating emission
reductions from landfill gas projects

Annex K

Standard method for agricultural biogas plant
offsetting projects

Annex L

Eligible and ineligible project types

Annex M

Requirements for documents containing monitoring
report calculations

Annexes D, G and K concern Switzerland only.

List of abbreviations

CAR

Corrective Action Request

CDM

Clean Development Mechanism

CH₄

methane

CHF

Swiss francs

CO₂

carbon dioxide

CO₂eq

carbon dioxide equivalents

CR

Clarification Request

FAR

Forward Action Request

FOEN

Federal Office for the Environment

HFCs

hydrofluorocarbons

N₂O

nitrous oxide (laughing gas)

NDC

nationally determined contribution

NF₃

nitrogen trifluoride

PFCs

perfluorocarbons

SF₆

sulphur hexafluoride

UNFCCC

United Nations Framework Convention on Climate Change

Literature

Figures

Figure 1

Start of implementation and crediting period 14

Figure 2

Effect of programmes without amendment of the provisions of the CO₂ Ordinance 15

Figure 3

Example of the impact of a legal amendment outside of the CO₂ Ordinance on an already registered programme 16

Figure 4

Diagram of the procedure for authorisation applications and issuance of attestations in Switzerland. 18

Figure 5

Diagram of the procedure for authorisation applications and issuance of attestations abroad. 19

Figure 6

Schematic representation of a system boundary 35

Figure 7

Schematic representation of expected emission reductions 40

Tables

Table 1

Examples of proof of the start of implementation 12

Table 2

Documents to be provided by the applicant when submitting an application for project or programme authorisation 22

Table 3

Documents to be provided by the applicant when submitting a monitoring report 25

Table 4

Typical investment and operating costs 43

Table 5

Typical receipts and savings 43

Table 6

Examples of non-refundable payments within the meaning of Article 10 paragraphs 4 to 5 CO₂ Ordinance 52

Table 7

General framework for the Confederation, cantons and communes 57

Table 8

Standard useful lives 58

Table 9

CO₂ emission factors, density and net calorific values of fossil energy sources 60

Glossary

Additionality

Principle whereby attestations are only issued for emission reductions where it is demonstrated that they would not have been achieved without the implementation of reduction measures as part of the offsetting project or programme. This is particularly the case where the economic feasibility of the project or programme is significantly enhanced by the sale of the attestations and where measures going beyond the reference development are planned.

Applicant

Person submitting an application for authorisation of an emission reduction project or programme to the FOEN (Art. 7 CO₂ Ordinance). The applicant is the contact person for the FOEN. The attestations issued for the project or programme belong to the applicant.

Application for the issuance of attestations

Application under Article 10 paragraph 3 of the CO₂ Ordinance, comprising the project or programme monitoring report and the verification report, on the basis of which the FOEN decides whether to issue attestations for emission reductions or carbon storage.

Authorisation application

Application under Article 7 of the CO₂ Ordinance, comprising the project or programme description and the validation report, on the basis of which the FOEN decides on the project or programme's qualification.

Biological storage

Long-term increase in carbon storage in soils, agroforestry systems and forests by means of active measures.

Carbon sink enhancement

When the stored CO₂ comes from the atmosphere or biomass, carbon sink services are created or enhanced. Conversely, when the stored CO₂ comes from a fossil source or a process and storage is sustainable, there is considered to be a reduction in emissions since these emissions do not reach the atmosphere and are therefore prevented.

CO₂equivalents (CO₂eq.)

Unit used as a uniform basis for measurement that relates the global warming potential of a greenhouse gas to the effect of carbon dioxide (CO₂) on the climate. It reflects the fact that different greenhouse gases contribute to a greater or lesser degree to global warming.

Crediting period

Period during which the decision on a project or programme's qualification for the issuance of attestations is valid. During this period, the project or programme can receive attestations commensurate with its verified emission reductions. The start of the crediting period coincides with the start of implementation of the project or programme. The crediting period lasts until 31 December 2030 or until the end of the project or programme duration, if this is shorter than the crediting period (Art. 8 para. 3 CO₂ Ordinance). Attestations for emission reductions achieved under a project can only be issued during this period.

Decision/ruling

Formal decision issued by the FOEN regarding the qualification of a project or programme or the issuance of attestations for demonstrated emission reductions.

Geological storage

Long-term storage of CO₂ deep underground or in inorganic building materials (e. g. concrete).

Issuance of attestations

Confirmation that the emission reductions achieved can be used to meet the offsetting obligation under the CO₂ Act. Attestations are issued for emission reductions achieved as part of projects meeting the requirements of Article 5 of the CO₂ Ordinance or programmes in accordance with Articles 5 and 5a of the CO₂ Ordinance. The attestations are issued on the basis of a monitoring report and the corresponding verification report.

Leakage (or carbon leakage)

Leakage means a change in emissions outside the system boundary which cannot be directly attributed to the project but can nevertheless be traced back to it. The impact of leakage on the level of emissions can be both positive (additional emission reductions) and negative (additional emissions). These changes in the level of emissions must be included in the calculation of emission reductions, provided that they are quantifiable and are produced within the country.

Nationally determined contribution (NDC)

Nationally determined contributions (NDCs) are documents in which signatory countries to the Paris Agreement internationally report and regularly update their national climate protection targets. NDCs come in a variety of formats and are not standardised. However, many NDCs distinguish between unconditional and conditional contributions. The conditional contribution is dependent on the availability of international support, whereas each country is expected to make the unconditional contribution by itself. This unconditional contribution is therefore relevant for the reference scenario.

Programme

A programme allows the applicant to group together several planned component activities in which emission reduction measures that have a common purpose (in addition to reducing emissions) are implemented. Planned component activities within a programme must meet the requirements of Article 5a of the CO₂ Ordinance. However, they may differ in terms of the method used to demonstrate the achieved emission reductions (calculation rules, additionality and monitoring). These differences are taken into account by defining appropriate inclusion criteria for all types of planned component activities included in the programme. The applicant defines the criteria for inclusion in the programme and checks that the planned component activities it accepts within the programme meet all these criteria.

Project

A project comprises one or more measures resulting in demonstrable emission reductions. These measures are implemented within the boundaries of a given system, at a defined location and for a determined period.

Programme duration

The programme duration is determined by the applicant. If the programme is not time-limited, its duration is 'indefinite'.

Project duration

Generally speaking, the standard useful life of technical installations is used for all construction measures. With measures other than construction measures, the duration of the effect (e. g. the duration of a change in behaviour resulting from the measure) is used.

Reference development

The reference development describes the assumed progression of emissions if the emission reduction measures planned as part of the project were not implemented. It is based on the emission sources and influencing factors. The reference development must be plausible and comprehensible and it must be possible to quantify it by means of an appropriate method.

Reference scenario

The reference scenario is the most likely of the various plausible alternatives to the project scenario. The reference scenario and the project pursue the same objective.

Start of implementation

Date on which the applicant makes a significant financial commitment to third parties with regard to the overall cost or itself takes organisational measures relevant to the project or programme. The aim here is to determine the point at which the project or programme implementation can no longer be stopped ('point of no return').

Substantial modifications

Examples of substantial modifications include changes to the framework conditions, systematic modifications to the monitoring plan or in the choice of technical means or procedures, and any modification affecting investment and operating costs or financing structure due to the granting of additional assistance, which occurred after the submission of the application. In particular, a modification is deemed to be substantial if the investment and operating costs or the emission reductions achieved deviate from the values given in the project or programme description by more than 20 % and, de facto, are no longer consistent with the described project.

System boundary

The system boundary encompasses all direct and indirect emission sources that can be unequivocally attributed to the project. It is the same for emissions generated by the project and the reference development. The choice of system boundary must be justified and represented graphically in the project or programme description.

List of changes

Status as of January 2024

- Simplification of the title of this communication and the communication on validation and verification
- Updating of publication details, abstract, foreword and introduction
- Throughout the document: deletion of references to Annex F: Annex 3a now applies to a change of heat source in the case of a local heating network
- Clarification of types of eligible and ineligible projects (2.1)
- Clarification of requirements for projects abroad (2.3)
- Addition of a paragraph on projects and programmes abroad: Definition of the *fraction of non-renewable biomass* (2.4)
- Crediting period: Updated in line with the latest legal requirements, clarification of specific information on the programmes (2.6.2)
- Clarification on taking account of double counting according to the relevant factsheets (2.7)
- Addition of reporting procedures on the receipts from the sale of attestations (2.8.2)
- Reference to terminology used in practice for projects and programmes abroad (3)
- Clarification of legal requirements (0) on validation
- Clarification of the criteria for the inclusion in a programme (3.4)
- Clarification of the document format to be provided on the submission of requests and the applicable law in force (3.4 and 3.7)
- Clarification of the definition of significant modifications (3.9 and 3.9.2)
- Clarification of the level of definition of project and programme boundaries (5.1)
- Deletion of a paragraph on the reference scenario for projects providing products and services for the population below the poverty threshold. (5.2)
- Deletion of a paragraph on the unconditional project or programme objectives (0)
- Clarification of general principles enabling the additionality of a project to be demonstrated (6.1)
- Clarification of the countries concerned for the specific information on programmes abroad (6.1)
- Deletion of an outdated example (6.4)
- Deletion of information overlapping with section 5.2(0)
- Clarification of the sources and methods for the definition of the fundamental parameters (7.2)
- Addition of a footnote on the definition of the reference for power and heat production plants receiving the feed-in payment and definition of projects avoiding methane emissions (8.1)
- Specification of the apportionment of effect in relation to the Buildings Programme (8.2)
- Addition of procedures concerning the submission of application documents in the case of interfaces with the use of plants with reduction obligations (9.1)
- Changes throughout the text aiming to improve readability (the numbering of some sections and sub-sections has been changed compared with previous versions of this communication)
- Update of Annex A1 at the level of cantons and communes
- Clarification of Annex A3 Emission factors in Switzerland and deletion of table 10