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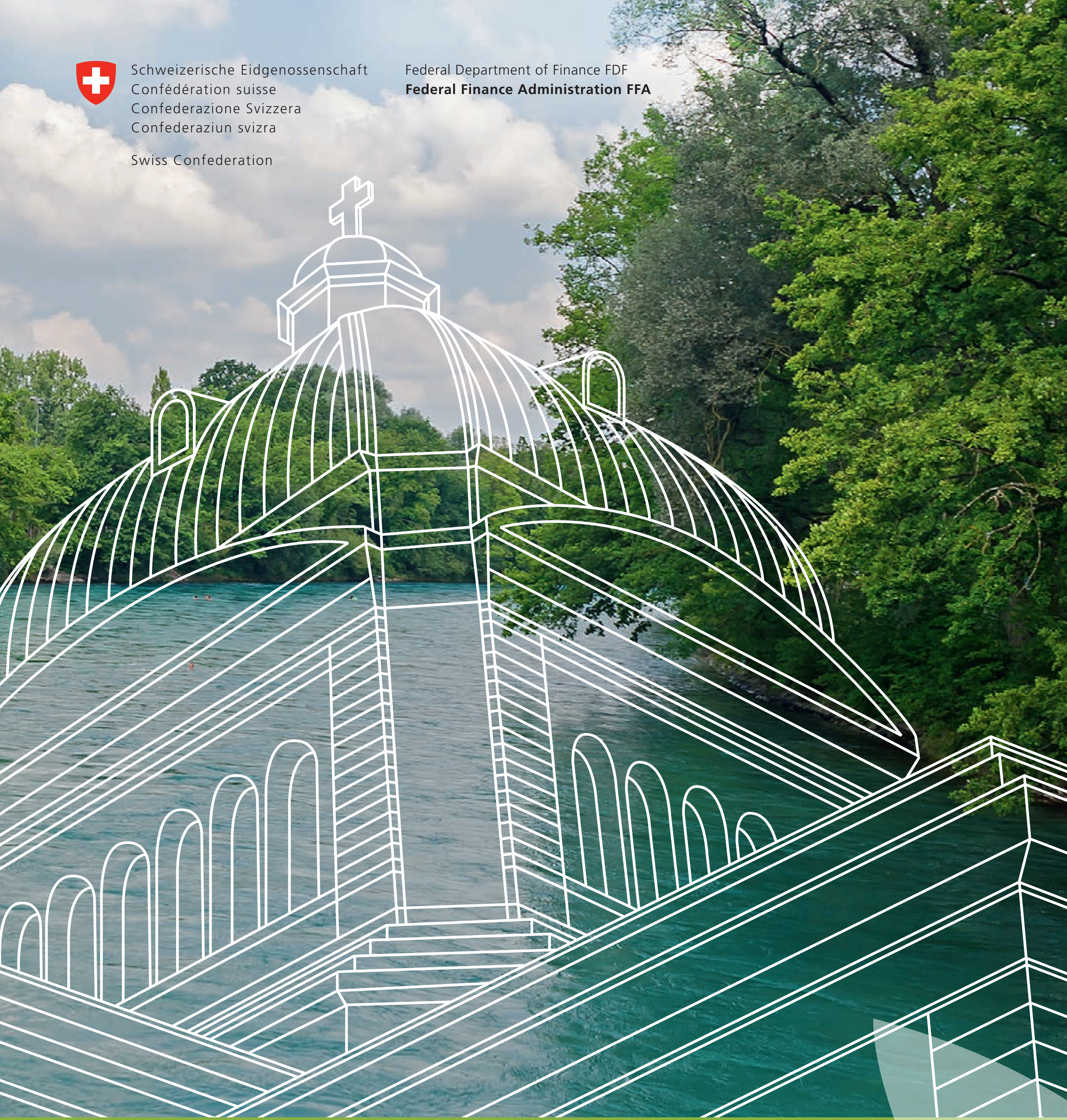


SWISS CONFEDERATION

2023 GREEN BOND ALLOCATION AND IMPACT REPORT

CONTENTS

INTRODUCTION

The rationale for Green bond issuance

To bolster Switzerland's commitment to sustainability and to establish its financial center as an international leader in sustainable financial services, the Federal Council decided in November 2021 to include Green Confederation Bonds in its funding strategy. The Federal Council also aims to further increase transparency about public green expenditure and its impact. Given that parliament ultimately has to approve any type of expenditure independent of its funding, sovereign green bonds do not lead to more environmental projects and spending. Nonetheless, the Green Confederation Bond is expected to have numerous benefits, such as strengthening the application of international green bond standards in Switzerland, providing investors with an additional sustainable asset class and encouraging the issuance of further green bonds by private and public players. This in turn will enhance the competitiveness of the Swiss financial center in sustainable finance and could also lead to more investments and projects with a positive environmental impact over time.

Commitment to reporting

The Swiss Confederation is committed to ensure full transparency about the issuance of Green Confederation Bonds. Investors will be provided with an allocation and impact reporting annually until full allocation of proceeds. The reporting is based on the Swiss Confederation's Green Bond Framework (July 2022) and follows the requirements of the International Capital Markets Association's (ICMA) Green Bond Principles (GBP). The reporting can be adjusted in the case of new requirements and developments regarding the content and type of reporting.

The Swiss Confederation follows, to the greatest extent possible, the recommendations presented in the ICMA Harmonized Framework for Impact Reporting (June 2021). Both the allocation and impact reporting will be published on the website of the Swiss Confederation in the year following each issuance. The impact report will be available publicly until bond maturity.

The allocation report shows that the proceeds have been allocated in accordance with the present Green Bond Framework's criteria for eligible green expenditures. The report includes general information about the issuance of the past year and a detailed list of allocated proceeds, including a break-down by type of expenditure. Moreover, the amount of total identified eligible green expenditures is also reported.

The impact report outlines the environmental impact achieved with the green expenditures where Green Bond issuance proceeds have been allocated to. The report includes a detailed description of the allocated green expenditures and the environmental objectives of these expenditures. Specific impact and output results form the core of the report.

ALLOCATION REPORTING

Green Confederation Bond

In October 2022, the Federal Treasury issued Switzerland's first sovereign green bond (CH0440081567, 1.50 % 10/26/38) with a volume of 766 million Swiss francs.

The Federal Treasury tapped the Green Confederation Bond (CH0440081567, 1.50 % 10/26/38) twice in 2023, thereby raising additional proceeds of 671 million Swiss francs. Markets again reacted favorably to the two taps. This increased the total volume outstanding of the Green Confederation Bond to 1'437 million Swiss Francs.

The financing instrument will enable the proceeds to be allocated to green expenditures that have already been approved by Parliament, with a one-year lookback period. An analysis of the federal budget based on the 2022 state financial statements identified green expenditure of around 4.7 billion Swiss francs, primarily in the areas of public transport, biodiversity, green buildings, international cooperation and research.

The framework adopted by the Federal Council during its meeting on 17 August 2022 forms the basis for issuing Green Confederation bonds. It shows how the bonds are integrated into the Confederation's sustainability strategy, which expenditures from the federal budget can be classified as green and how reporting is set up. When preparing the framework, the Confederation was guided by the GBP of the ICMA, which are considered the market standard internationally. The Confederation has also taken into account the EU Taxonomy to some extent despite not being subject to the regulation (i.e. the eligibility criteria for the eligible green expenditures criteria follow the substantial contribution criteria of the EU Taxonomy on a best effort basis). ISS ESG was commissioned to provide an external review (ISS ESG in July 2022) of the framework.

In accordance with the selection process described in the framework, the proceeds from the issue have been linked to expenditures in the federal government budget that contributes to fulfilling Switzerland's environmental and climate objectives, the UN Sustainable Development Goals (SDGs) and the Paris Agreement (PA) among others. This report presents how the proceeds of the year 2023 are distributed among the different eligible areas of expenditure of the year 2022. The report also includes output and impact statements outlining the positive environmental impacts of the green expenditure if such information is available.

Allocation Overview

The Swiss Confederation tapped the Green Confederation Bond (CH0440081567, 1.50 % 10/26/38) twice in 2023, thereby raising proceeds of 671 million Swiss francs. This increased the total volume outstanding of the bond to 1'437 million Swiss Francs. The 2023 issuance proceeds can be attributed to expenditures that are classified as green according to the categories described in the Framework. The 2022 State Financial Statements include approximately 4.7 billion Swiss francs in expenditures that meet these requirements. The 2023 issuance proceeds represent approximately 14 percent of available eligible green expenditures in the 2022 State Financial Statements. Proceeds were managed according to the process defined in the Framework. No proceeds were allocated to expenditures that are excluded according to the Framework.

Issuance proceeds were only allocated to eligible green expenditures of the 2022 financial statement. The expenditures from the 2023 budget would also be eligible in principle. However, since the issuance volume was significantly lower than the eligible expenditures according to the 2022 state financial statement, the expenditures from the 2023 budget were not used. The green bonds have become an integral part of the Confederation's issuance program since the first issue. Therefore, the expenditures from the 2023 budget (respectively the 2023 state financial statement) can be allocated to the Green Confederation Bond issues in 2024. It should be noted that the allocation to the individual categories is not proportional to the total amount of eligible expenditures in the individual categories. This allows for a meaningful representation of the different areas of responsibility within the federal budget. This is especially true for the smaller categories in terms of volume, which nonetheless make an important contribution to achieving the federal government's sustainability goals.

The following table shows how the 2023 issuance proceeds are mapped to the available green expenditures from the 2022 state financial statement. In addition, each category shows which UN SDGs the expenditures correspond to and which expenditures were selected within each category. It is important to note that some of the total eligible green expenditures include expenditures (other budget items) to which no funds were allocated, as the total volume of green eligible expenditures exceeds the issuance proceeds.

Category	Eligible green expenditures (State financial statement 2022)		Responsible Federal office / Selected expenditures (budget item and name)	Allocation		SDG
	in CHF million	*in % of total eligible green expenditures*		*in CHF million*	*in % of total allocation*	
Clean transportation	3'503.1	74.7 %	Federal Office of Transport / A236.0110 Deposit railroad infrastructure fund	374.45	55.8 %	7, 11, 13
Agriculture, forestry, natural landscapes and biodiversity	861.3	18.4 %	Federal Office for Agriculture / A231.0234 Direct payments agriculture, biodiversity contributions	150.00	29.8 %	13, 14, 15
			Federal Office for the Environment / A236.0123 Nature and landscape	25.00		13, 14, 15
			Federal Office for the Environment / A236.0126 Revitalization	25.00		13, 14, 15
Green buildings and energy efficiency	179.7	3.8 %	Federal Office for Buildings and Logistics / A201.0001 Investments (global budget)	43.50	6.5 %	7, 11, 13
Renewable energy	0	0.0 %	No available expenditures in the 2021 state financial statements	0.00	0.0 %	7, 13
International cooperation	68.1	1.5 %	Federal Department of Foreign Affairs / A231.0330 Contributions to multilateral organizations	20.00	6.0 %	13, 15, 17
			Federal Office for the Environment / A231.0322 Multilateral environmental funds	20.00		13, 15, 17
Research, Innovation and awareness raising	79.4	1.7 %	Agroscope / A200.0001 Functional expenses (global budget)	13.40	2.0 %	7, 13, 15
Total	**4'691.6**	**100 %**		**671.35**	**100 %**	

Clean Transportation

(Share of total allocation: 55.8 %)

The federal government finances the operation, maintenance and expansion of the railroad infrastructure via the Railway Infrastructure Fund (RIF). With the RIF, the federal government is making an important contribution to keeping the Swiss rail network and its infrastructure efficient. The Swiss electorate approved the financing and expansion of the railroad infrastructure in 2014, thus laying the foundation for the creation of the fund. In addition to various earmarked revenues, which are excluded in the Framework, just under 50 percent of the RIF is financed from the general federal budget (equivalent to 2.7 billion Swiss francs in 2022). Under the Framework, the funds from the general federal budget are eligible for the Green Confederation Bonds. By allocating 374 million Swiss francs and thus the largest share of the issuance proceeds to the RIF expenditure, the high importance of rail transport is underlined.

Agriculture, Forestry, Natural Landscapes and Biodiversity

(Share of total allocation: 29.8 %)

Various expenditures in the area of biodiversity and sustainable agriculture are summarized under this category. For the allocation of the proceeds, we focus on the budget item of direct payments to agriculture sector, primarily to biodiversity contributions within this budget item. Over the years, many of the habitats in agriculture that are valuable for biodiversity have disappeared. Reasons include increasing mechanization and intensification of land use. With the biodiversity contributions, the federal government wants to counteract this development and financially compensate farmers for the adapted use of their land. In particular, the objective is to prevent the decline of priority species and valuable habitats on agricultural land and in summering. In total, issuance proceeds of 150 million Swiss francs are allocated to the total biodiversity contributions.

In addition to the biodiversity contributions in the area of agriculture, a part of the issuance proceeds are allocated to eligible expenditures of the Federal Office for the Environment (FOEN). On the one hand, this includes the eligible expenditure in the "Nature and Landscape" budget item used to promote biodiversity, species diversity and landscape (including biotopes of national importance and mire landscapes of outstanding beauty, UNESCO World Natural Heritage sites). On the other hand, the FOEN makes contributions to the planning and implementation of measures for the revitalization of water bodies with the budget item "Revitalization" based on the Flood Protection Act. A total of 25 million Swiss francs each are allocated for Natural Landscapes and Revitalization.

Green Buildings and Energy Efficiency

(Share of total allocation: 6.5 %)

The federal government has a large real estate portfolio to house the civilian parts of the federal administration. Sustainability plays a major role in the management of the real estate portfolio, which comprises several thousand buildings and objects, and in particular in reducing greenhouse gas emissions and the environmental impact of pollutants. To achieve this goal, the federal government applies a combination of the three basic impact mechanisms: Higher efficiency (less energy per service provided), consistency (use of energy with lower impact), and sufficiency (lower services provided). In doing so, the federal government consistently relies on materials that release as few pollutants as possible into the biosphere over their entire life cycle. Specific examples include energy renovations that take into account the proper life cycle, the replacement of oil and natural gas heating systems, or the expansion of electricity and heat production on suitable infrastructure sites. Issuance proceeds are allocated to the two projects with the largest eligible expenditures incurred in 2022. These are the third and fourth stages of the expansion step for the construction of the new administration buildings in Zollikofen. Together, these expenditures amounted to just under 44 million Swiss francs.

International Cooperation

(Share of total allocation: 6.0 %)

Switzerland's international cooperation aims to reduce poverty, hardship and global risks and promote peace. One of the Federal Council's strategic goals is to combat climate change and its effects on the environment. Natural resources are to be managed sustainably. In recent years, Switzerland has steadily expanded its commitment to combating the advance of climate change and the associated impacts on millions of people. It does this in particular through contributions to multilateral environmental funds (including the Green Climate Fund [GCF] and the Global Environment Facility [GEF]). Proceeds of 40 million Swiss francs are allocated to this area.

Research, Innovation and Awareness raising

(Share of total allocation: 2.0 %)

In addition to concrete measures in the areas described above, the Swiss Confederation is also active in basic research in the field of sustainability. This particularly includes "Agroscope", the center of excellence for agricultural research, which makes a significant contribution to sustainable agriculture and the food industry, as well as to an intact environment, and thus to improving the quality of life. Research is carried out along the entire value chain of the agricultural and food industry. Furthermore, there are research programs in the field of energy research, energy efficiency and to increase the share of renewable energies within the Swiss Federal Office of Energy. In some cases, financial aid is paid to private-sector actors to support innovative projects at the development stage. 13 million Swiss francs of the Green Confederation Bond are allocated to the eligible green expenditures from Agroscope.

ESG risk management

The identification and monitoring of ESG risks are important aspects when issuing green bonds. The processes within the federal administration, the Swiss legal system, and Switzerland's direct democratic processes ensure that all new federal legislation and projects are thoroughly analyzed.

On the one hand, any new law has to be assessed in terms of its expected impact on the environment. This assessment is part of the legislative process and done by the federal administration. On the other hand, there are many opportunities for third parties outside the administration (e.g. lower levels of government, political parties, interest groups) to influence the legislative process. These opportunities exist both before and after laws are passed by the Federal Council and Parliament. Since every federal expenditure must have a legal basis, this process is indirectly applied to all new expenditures.

The available green expenditures are reviewed at least once a year by an interdepartmental working group of the federal administration ("Green Bond Working Group", GWG). The FOEN and the Federal Finance Administration are represented in the working group. In addition, various offices of the Federal Administration that have potential green expenditures are consulted. The GWG will call on experts on specific topics to confirm, refute or raise points of attention in the verification of eligibility of new or current eligible expenditure. This process will ensure that any changes in underlying expenditures can be identified and assessed at an early stage and the eligible expenditures comply with the applicable framework. Potential ESG controversies will also be investigated as part of this review. In this context, the market standards are used as a guideline for eligibility. If there are relevant changes to the defined categories, processes or eligible expenditures, the framework will be updated.

The GWG has determined the allocation of issuance proceeds to eligible expenditures in collaboration with the relevant offices of the Federal Administration. In addition to the appropriate representation of the various categories of expenditure, care has also been taken to ensure that reporting is as meaningful and illustrative as possible. The GWG is responsible for the allocation and impact reporting. This report is compiled and published in the year following the issuances of Green Confederation Bonds in 2023. The impact of the allocated expenditures is described in detail in the following part of this report.

OUTPUT AND IMPACT REPORTING

Reporting guidelines and limitations

The impact report outlines annually the environmental impact of the use of the Green Bond proceeds. The report includes both qualitative and quantitative measurements of output and impact generated over the reporting period on an ex-post basis.

After the issuance of the inaugural Green Confederation Bond in 2022, the bond was successfully tapped twice in 2023, generating proceeds in the amount of 671 million Swiss Francs. In the context of the Green Bond Reporting 2023, these proceeds will be allocated to eligible green expenditures that have already been approved by the Swiss Parliament, with a one-year lookback period. The 2023 issuance proceeds make up only around 14 precent of the eligible green expenditures of 2022. In order to still enable a meaningful reporting, where it seems appropriate or is not otherwise possible, the positive environmental impact of the total eligible expenditure is described in the impact report and not only the part of the expenditure that received allocation from the issuance proceeds. In other words, the impact reporting is based on a portfolio approach and aligns with the reporting requirements of the ICMA Green Bond Reporting Guidelines (June 2021). As the impact is based on a portfolio approach, no estimates are provided about lifetime results or project economic life in years.

To maintain a high level of comparability and consistency among the Green Bond reports, the issuance proceeds were assigned to the same categories as in the previous year.

In addition, to provide an insight into individual projects, the annual impact report also contains selected case studies for individual categories of eligible green expenditures. This year's report includes case studies for the category clean transportation, green buildings and energy efficiency as well as international cooperation.

The remainder of this report is structured as follows: The table below summarizes the outcome and impact indicators for all categories of eligible expenditure in a table. The next chapters contain a description of the expenditure and the impact achieved for each category. The reporting is based on the budget items of the federal government.

Summary of outputs and impacts

Category	Summary	Key indicator
Clean transportation	Highly positive impact of a safe, cost-effective, energy-efficient and largely greenhouse gas-neutral transportation thanks to an expanded and well-maintained railway infrastructure	• Share of electrified railway network • Passenger and freight transport performance • Modal split share of rail in transalpine combined transport
Agriculture, forestry, natural landscapes and biodiversity	Relevant and broad-based spending to strengthen and restore declining biodiversity, for example in agriculture and water bodies	• Hectares of sustainable agriculture • Kilometer of revitalized waterbodies
Green buildings and energy efficiency	Demanding building standards and high sustainability requirements help to sustainably accommodate the federal administration using green and efficient construction methods	• Heat consumption per m^2 • Energy demand oil heating and natural gas heating systems • Energy generated by PV
Renewable energy	No available expenditures in the 2022 state financial statements	
International cooperation	In order to fulfill its commitments under the international climate conventions, the Swiss Confederation participates in various international funds that contribute to positive environmental impacts of global significance	• Expected CO_2e avoided • Total beneficiaries • Hectares of natural resources improved
Research, innovation and awareness raising	Basic research in the field of sustainable agriculture leads to a higher awareness of environmental challenges and contributes to an intact nature	• Number of practie-oriented and scientific publications • Participation in specialist events

In general, for greenhouse gas emission related key impact indicators the emission factors of the Swiss greenhouse gas inventory have been used.[1]

[1] https://www.bafu.admin.ch/bafu/en/home/topics/climate/state/data/greenhouse-gas-inventory.html

Clean transportation

Financing of the rail infrastructure fund

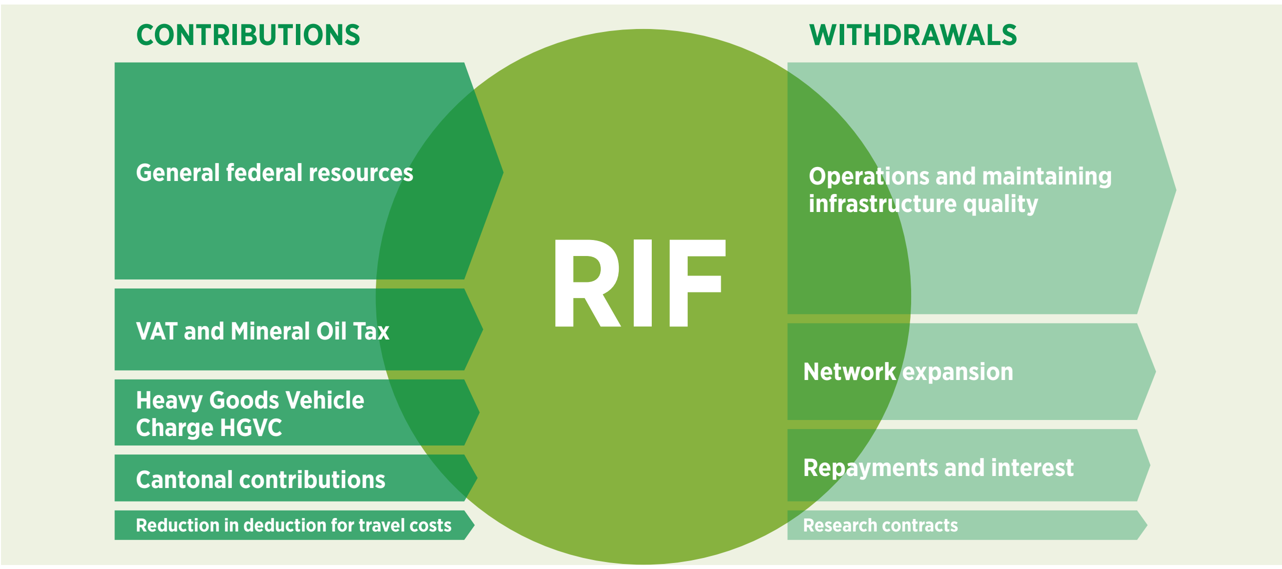
(Federal Office of Transport, A236.0110 "Contribution to the railroad infrastructure fund")

To achieve the sustainability goals of the federal government, public transport plays a decisive role. In order for freight and passenger transport to increasingly take place by rail, an expanded and well-maintained railway infrastructure is of great importance. The rail infrastructure in Switzerland provides the population with a safe, cost-effective, energy-efficient and largely greenhouse gas-neutral transport alternative. At the same time, the rail network is used for a considerable part of daily freight transport, especially transalpine freight transport. In addition to the high use of this transport option, it is particularly noteworthy that almost all trains are electrically powered. The largest public transport company (Swiss Federal Railways, SBB), for example, runs virtually all trains on electric power, which draws 90 perecent of its energy from hydropower.

To keep the railroad infrastructure up to date, regular investments and maintenance work are required. Switzerland finances the operation, maintenance and expansion of the railroad infrastructure via the RIF. The RIF is a legally independent fund with its own financial accounts. The RIF receives an annual contribution of around 5.6 billion Swiss francs (2022) from the federal budget, of which around half is financed by earmarked revenue. Until the end of 2020, the fund could additionally borrow from the Confederation. The debt (2022: 5'827 million Swiss francs) is interest-bearing and is expected to be repaid by about 2031. Two-thirds of the RIF's resources are used for the operation and maintenance of the railroad infrastructure. Around one billion Swiss francs per year is invested in the expansion of the rail infrastructure.

The funds for infrastructure maintenance have legal priority. In this way, the Swiss Confederation wants to ensure that the infrastructure remains in a well-maintained and efficient condition. The gradual expansions will eliminate bottlenecks in the rail system, increase capacity at major rail hubs such as Geneva, Basel and Bern and expand the rail network. On the one hand, this will make it possible to absorb the rising demand for traffic (passenger and freight trains), and on the other hand, it will increase the range of public transport services. This includes, for example, the introduction of half-hourly or quarter-hourly service on frequently used sections of line. The RIF also provides funds for research contracts in order to clarify fundamental issues relating to the operation, maintenance and expansion of the railroad infrastructure.

Rail infrastructure fund (RIF)



Impact of the expenditure

Accurate impact measurement based specifically on the allocation of issuance proceeds to clean transportation expenditures is nearly impossible because the funds for rail infrastructure receive only a relatively small allocation from the Green Bond. To consider the positive environmental impact of rail, the totality of this spending must be considered. In addition, the maintenance and expansion of the infrastructure is required by law. The impact of the very well-developed railroad infrastructure and the high use for passenger and freight transport undoubtedly has a high and positive effect on Switzerland's greenhouse gas emissions. For example, an analysis by the SBB shows that around 10 percent of Switzerland's total emissions are avoided each year thanks to the modal shift to rail.[2] This corresponds to around five million tons of CO_2 per year. In this context it is important to note that the Swiss railway network is already over 99 percent electrified. For example, SBB trains already draw 90 % of their energy from hydropower. The remaining 10 % is nuclear power. By 2025, all rail power is to come from renewable sources.

The following table shows how various metrics have been developed over time, also thanks to the investments of the Rail Infrastructure Fund (RIF). These metrics also illustrate the positive environmental impacts that can be achieved through rail infrastructure with economic development. It should be noted that not all of the federal government's contribution to the RIF can be attributed to the Green Confederation Bond, as about half is funded by earmarked revenues. In turn, of its total eligible expenditures in 2022, only about 14 percent was allocated from the Green Confederation Bond. Accordingly, only a proportional share of the indicators shown can be considered an impact of the green bond. Furthermore, it should be emphasized that in addition to SBB, there are another 35 transport companies that transport passengers and goods on the Swiss railroad infrastructure and benefit from the investments of the RIF. When analyzing the time series shown, it should be noted that mobility decreased significantly due to the COVID pandemic in 2020 and 2021.

Indicator	Unit	Status end 2020	Status end 2021	Status end 2022
Share of electrified railway network SBB only (Source: SBB)	%	100	100	100
Passenger transport performance (pkm) of railroad operators (Source: Federal Statistics Office)	Billion	13.379	14.349	19.400
Freight transport performance (net Tkm) of railroad operators (Source: Federal Statistics Office)	Billion	9.790	10.398	10.479
Greenhouse gas emissions from energy consumption SBB only (Source: SBB)	tCO_2	68'773	70'985	70'271
Course km in regional passenger transport (RPV) (Source: internal database Federal Office of Transport, data collected electronically from regional transport companies)	Million km	330.168	339.816	350.787
Modal split share of rail in transalpine combined transport (Source: Federal Statistics Office)	%	71.8	73.8	73.9

[2] Climate protection | SBB: https://company.sbb.ch/en/the-company/responsibility-society-environment/sustainability/environmental-protection/climate-protection.html

Foto: Patrice Schreyer

Case study: Double-Track Expansion between Ligerz and Twann

The construction work concerns the municipalities of Neuenstadt, Ligerz and Twann on the Neuchâtel-Biel railway line. It includes the expansion of the existing railway infrastructure as well as the construction of a new 2.13-kilometer-long double-track tunnel.

The double-track expansion will accommodate the increase in traffic on the line and improve schedule stability. Thanks to the new Ligerz Tunnel, the SBB (Swiss Federal Railways) can enhance the service and thus the capacity of rail traffic, while protecting residents from railway noise. Additionally, the population will gain a new living space along the lakeshore. After the tunnel is commissioned, the existing railway track along the shores of Lake Biel will be dismantled and redesigned.

The repurposing of the vacated track presents a significant challenge for the affected municipalities. They have decided to create a new, inter-municipal zoning plan to establish zones for nature, vineyards, and public uses.

This project takes into account numerous regional characteristics and legal frameworks to ensure the new tunnel portals integrate optimally into the landscape. These include the UNESCO World Heritage site of the pile dwellings, the entry in the Federal Inventory of Landscapes and Natural Monuments of National Importance (BLN), hydrogeological constraints (groundwater, Lake Biel, the Brunnmühle drinking water source), and the protected landscape.

The project is estimated to cost approximately 431 million Swiss francs.

Agriculture, forestry, natural landscapes and biodiversity

Biodiversity contributions for agriculture
(Federal Office for Agriculture / A231.0234 "Direct payments agriculture")

Biodiversity is the variety of life. It enables many ecosystem services, for example pollination, natural pest regulation or the provision of recreational space, from which the whole of society benefits. Over the years, many of the habitats valuable for biodiversity have disappeared due to agricultural activities. Reasons include increasing mechanization and the intensification of land use.

With the biodiversity contributions, the federal government wants to counteract this development and financially compensate farmers for the adapted use of their land. In Switzerland, around 42'200 farms and around 6'700 summer pasture/alpine farms receive direct payments and biodiversity contributions. In particular, the objective is to prevent the decline of priority species and valuable habitats on agricultural land and in summering. In this way, the objectives and measures defined within the framework of the biodiversity contributions can also contribute to the achievement of environmental objectives in the field of agriculture. A total of around 443 million Swiss francs in biodiversity contributions will be paid out to farms in 2022 as part of the direct payment system in this area, accounting for 16 % of all direct payments to agriculture.

In fact, there are two types of biodiversity contributions that support the so-called biodiversity promotion areas (or BFF, in German): Farmers are paid for the quality of the BFF, and/or for the connectivity of the areas. There are two levels of quality and accordingly levels of payments depending on the condition of the biodiversity in the area, more than half of the supported areas were of high quality in 2022. The payments for connectivity of an area are determined by how well the connectivity of ecosystems (or species habitats) in and between areas are secured. More generally, the biodiversity contributions seek to promote and accordingly reward the existence of extensive meadows and pastures, hedges, high trunk trees, and arable strips among others.

The quality contributions are fully financed by the federal government. In the case of the connectivity contributions, the federal government assumes a maximum of 90 % of the payment; the remaining share of financing is provided by the cantons, municipalities or private sponsors.

The biodiversity contributions are based on Article 73 of the Agriculture Act according to which the contributions support the conservation and promotion of biodiversity by agriculture.

Impact of the expenditure
Switzerland has been measuring and monitoring the impact of its agricultural practices on the environment since at least 1990. Thus, the Federal Office for Agriculture (FOAG) has been collecting information on a number of aspects including nitrogen and phosphorous cycles, biodiversity, soil, energy, and climate using internationally comparable indicators. The collected data and information allows the FOAG to assess the qualitative and quantitative impact of Switzerland's agricultural policy over the past three years. While initially all important environmental indicators improved, the performance over the past ten years has been more mixed. However, greenhouse gas emissions from agriculture have decreased. They stood at 6.43 million tCOe in 2022, almost 15% less than at the outset.

Also, the share of agricultural land supported with biodiversity contributions has been increasing; in 2022 a total of 195'413 hectares of agricultural land (19,3 % of the total agricultural land in Switzerland) and around 224'000 hectares of summer pastures in the Alps were supported with biodiversity contributions.

Indicator	Unit	Status end 2020	Status end 2021	Status end 2022
Agricultural land supported with biodiversity contributions in ha (and % of total agricultural land) (Source: Agrarumweltmonitoring, Federal Office for Agriculture)	ha (%)	192'544 (19 %)	190'609 (19 %)	195'413 (19.3 %)
Number of high trunk field fruit trees (Source: Agrarumweltmonitoring, Federal Office for Agriculture)	#	2'210'755	2'213'320	2'214'300
Greenhouse gas emissions from agriculture (Source: Switzerland's greenhouse gas inventory, Federal Office for the Environment)	tons CO_2 e (million)	6.47	6.51	6.43

Nature and landscape

(FOEN / A236.0123 "Nature and landscape")

The Swiss population cares about a healthy nature and landscape. Their beauty and diversity should also ensure a high quality of life and location in the future. The FOEN has multiple budget items including expenditure that meet the requirements of the framework and serve to achieve these objectives.

The expenditures in the budget item "Nature and landscape" (2022: about 98.2 million Swiss francs) are used for measures in favor of biodiversity (2022: 77 %) and landscape (2022: 23 %). Based on the Federal Act on the Protection of Nature and Cultural Heritage, the federal contributions support the implementation by the cantons on the basis of program agreements. Of the total 98.2 million Swiss francs, 96.5 million Swiss francs are eligible (1.7 million Swiss francs are financed through earmarked financing from road traffic). From the total 2023 issuance proceeds, 25 million Swiss francs are allocated to the budget item "Nature and landscape".

In the area of biodiversity, the eligible expenditure involves the planning, protection, enhancement and conservation of biotopes of national importance, mire landscapes of particular beauty and national importance, and other biotopes worthy of protection. In coordination with direct agricultural payments, contributions are paid to the agricultural sector for specific services. In addition, measures to promote biodiversity and habitat connectivity are supported.

In the area of landscape, federal expenditures are primarily used for measures in favor of landscapes and natural monuments of national importance, parks of national importance and UNESCO World Natural Heritage sites.

The budget item also covers support for conservation organizations operating throughout Switzerland, as well as research and training institutions for their activities in the public interest. Furthermore, some emergency measures in biodiversity are being financed via this budget item.

The legal basis for the expenditure is the Nature and Cultural Heritage Protection Act of 1.7.1966 (NHG; SR 451) and there in particular articles 13, 14, 14a, 18d and 23k NHG.

The expenditures contribute significantly to the preservation and promotion of biodiversity as well as to the quality-oriented further development of the landscape as a high-quality living, economic and cultural space. They serve to strengthen awareness and action competence for the promotion of biodiversity and landscape.

Impact of the expenditure

The program agreements (PA) with the cantons are geared towards effective implementation. The cantons are supported by the federal government throughout the entire cycle (goals and objectives, reporting, controlling and measures). Program objectives as well as performance and quality indicators are defined in the PAs. The cantons report to the federal government. On the basis of the controlling reports and on the basis of random samples, it is checked whether the PAs are being fulfilled as agreed.

The impact of the measures for the protection of biotopes of national importance is scientifically assessed by means of the Impact Monitoring Biotope Protection Switzerland (WBS). For this purpose, remote sensing and field surveys are carried out cyclically in all types of biotopes of national importance. This enables specific statements to be made about the condition and development of the areas studied.

Continuous monitoring is ensured in the area of biodiversity thanks to Biodiversity Monitoring Switzerland (BDM). The program has been running since 2001 and is based on cyclical sampling, which is carried out in a regular grid across the entire country. BDM thus provides insight into the state and development of biodiversity as a whole.

Basic monitoring in the area of landscape is carried out by the Monitoring Program Landscape Observation Switzerland (LABES). LABES uses around 30 indicators to record both the physical and the perceived quality of the landscape.

Monitoring Program LABES Selected indicators	**Unit**	**Status end 2020**	**Status end 2021**	**Status end 2022**
Annual change in urban greenery* (Source: Environmental Indicators and Biodiversity Indicators, Federal Office for the Environment)	%	-0.9 %	-1.6 %	n.a.
Areas designated for biodiversity** (Source: Environmental Indicators and Biodiversity Indicators, Federal Office for the Environment)	%	13.5 %	13.4 %	13.4 %

Selected indicators related to biotopes:
* Urban greenery is a characteristic element of urban landscapes. It is relevant to climate and biodiversity (cooling of cities; creation of biotopes).
** Proportion of the Swiss national territory designated for the conservation of biodiversity or specific species.

Indicatore Name	State	Trend
Agricultural area	☹	☹
Area reserved for promoting biodiversity	☹	☺
Areas designated for biodiversity	☹	😐
Attitude toward biodiversity	☺	😐
Biodiversity footprint	☹	☹
Butterfly Index	☹	☹
Deadwood	😐	☺
Diversity of species communities in meadows and pastures	☹	☹
Evolution of annual mean temperature		☹
Fragmentation of landscapes	☹	☹
Invasive alien species	☹	☹
Knowledge of biodiversity	😐	☺
Light emissions	☹	☹
New renewable energy	😐	☺
Organically farmed area	😐	☺
Particularly valuable habitats	☹	☹
Red lists	☹	😐

Indicators of the Monitoring Program LABES

Revitalization
(FOEN / A236.0126 “Revitalization”)

At first glance, Swiss water protection is a success story. A differentiated analysis, however, shows considerable deficits in the management of Switzerland’s water bodies. Great efforts are still needed both in the structure of streams, rivers and lakeshores and in water quality to achieve the best possible condition.

The watercourses in Switzerland have a high degree of obstruction. The background was to ensure flood protection and the creation of agricultural land in the 18th/19th to mid-20th centuries. For this purpose, wetlands were drained and watercourses were canalized and straightened. In addition, Swiss streams and rivers are highly fragmented, which prevents the free migration of fish.

Since the revision of the Water Protection Act (GschG in German) in 2011, the cantons are obliged to revitalize built-up or covered water bodies (rivers and lakeshores). The goal is to revitalize about a quarter of the obstructed watercourses in 80 years, which corresponds to a length of about 4’000 km. The federal government is providing approximately 35 million Swiss francs per year for this purpose.

Based on the Water Protection Act, federal subsidies support implementation by the cantons on the basis of program agreements or as individual projects. The share of federal subsidies amounts to 35–80 %. The legal basis for the expenditures is the Water Protection Act of 24. 1. 1991 (GSchG; SR 814.20) and there the Art. 38a GSchG. The cantons have partially delegated the task to the municipalities or private parties.

Flood protection projects can also receive an additional subsidy from the GSchG if they significantly exceed the required ecological minimum.

The implementation of revitalization projects is intended to achieve the following goals:

- Restoration of the natural functions of obstructed or covered watercourse sections (watercourses and lakeshores) with structural measures.
- The measures will restore site-appropriate habitats in the aquatic, amphibian and terrestrial realms along the watercourses.
- The measures promote aquatic longitudinal connectivity.
- The measures promote natural bedload dynamics.
- The measures promote momentum.

As a result of watercourse corrections and obstructions, aquatic biodiversity is threatened and has the highest proportion of extinct or threatened species.

To stop and reverse this trend in aquatic biodiversity, revitalizations are necessary. Against the backdrop of advancing climate change, the implementation of revitalizations is all the more needed in order to make water bodies more resilient.

Impact of the expenditure

Revitalized water bodies provide habitat for many native species, both in the aquatic and amphibian realms, as well as in terrestrial riparian areas. Through dynamic processes and constantly emerging and changing habitats, specialized species can become established, whereas in built-up monotonous waters, generalists with unspecific habitat requirements become established.

With revitalization, obstructions are removed and the section of watercourse has a near-natural or natural character after implementation. This can be verified by ecomorphological mapping. The main goal of revitalization is to reverse the trend of aquatic biodiversity loss.

Impact monitoring is conducted to better understand habitat and biodiversity impacts and to make future revitalization efforts more effective. Impact monitoring is characterized by the following features:

- Since 2020, recordings have been made throughout Switzerland according to a uniform concept and methods.
- Before/after pictures are taken (with an interval of several years between them).
- Abiotic and biotic indicators are assessed.
- Not all projects are evaluated, but a budget is defined per canton from which the recordings are financed (approx. 30 % of the projects are evaluated).
- Results are periodically evaluated and recommendations for action are to be derived from them.

Indicator	Unit	Status 2011	Status end 2020	Status end 2021	Status end 2022
Revitalized watercourse* (Source: internal, Federal Office for the Environment)	km	0	182	196.6	223
Revitalized lake shore* (Source: internal, Federal Office for the Environment)	km	0	8	8.3	8.4

* The calculations are made based on the information and data provided by the cantons. At the beginning of each year, the Federal Office for the Environment requests information on implemented rehabilitation projects from the cantons.

Green Buildings and Energy Efficiency

(Federal Office for Buildings and Logistics / A201.0001 "Investments")

The Federal Office for Buildings and Logistics (FOBL) is responsible for housing the civilian part of the federal administration. It provides the real estate for the federal offices and is responsible for its planning, construction, maintenance and operation.

In 2022, the FOBL's real estate portfolio comprised around 2'800 properties and 1'900 plots of land with an acquisition value of 9.8 billion Swiss francs in total. Among other things, the FOBL is responsible for 34'000 office workplaces, 28'000 of which are located in the Bern area. As a resource office, the FOBL plays a key role in terms of sustainability within the federal administration and sets an example for the business community and the public. The FOBL is committed to implementing the principles of the Federal Council's SDS 2030 and the UN 2030 Agenda for Sustainable Development. It takes into account further strategies such as the Energy Strategy 2050, the Climate Strategy, the Biodiversity Strategy, the Swiss Landscape Concept as well as the Baukultur Strategy, and is guided by generally applicable standards for sustainability. Furthermore, it follows the recommendations of the Coordination Conference of Construction and Real Estate Bodies of Public Builders (KBOB) and the Federal Procurement Conference (BKB).

In order to anchor the principle of sustainability centrally in the office, the FOBL adopted its sustainability strategy in 2019 and updated it in 2022. The understanding of sustainability here goes beyond the classic three sustainability dimensions. With an additional focus on processes, the FOBL continues to drive the consideration of sustainability aspects in its structures, activities and projects. The FOBL publishes yearly its sustainability report, it informs its stakeholders annually about its commitments, its achievements and its progress in the area of sustainability.

The Ordinance on Federal Real Estate Management and Logistics (VILB) obliges the FOBL to create and follow sustainable standards with regard to the construction, furnishing, management and operation of its real estate. In its directives on sustainable real estate management, the Federal Departement of Finance has defined eleven guiding principles in this regard. The Recommendation on Sustainable Real Estate Management and the fact sheet Sustainable Building Standard Switzerland (SNBS) 2.1 of the KBOB further specify these guiding principles.

For projects in Switzerland, the FOBL uses the SNBS as a planning basis. In accordance with the federal government's Model Energy and Climate (VEK) initiative, the FOBL aims for SNBS and/or Minergie-P/A-ECO® certification for new buildings. In doing so, it strives for the maximum possible use of renewable energies and equips all suitable areas with photovoltaic systems (PVA).

The FOBL is thus fulfilling its exemplary role in sustainable real estate management. In accordance with the Federal Council's mandate of September 2020, it is taking the measures from the implementation concepts for the Federal Administration Climate Package and taking into account the mandates of different parliamentary motions (10.3638 Energy efficiency and renewable energies in federal buildings as well as motions 19.3750 Energy autonomy of federal real estate and 19.3784 Energy autonomy of federal real estate – photovoltaic offensive).

Impact of the expenditure

The proceeds from the issuance of the Green Confederation Bond will be allocated to two large construction projects of the FOBL according to the 2022 state accounts: The third (31.6 million Swiss francs) and fourth (11.9 million Swiss francs) stages of the new buildings in Zollikofen. These are new administrative buildings with around 2'200 workplaces, which will be built according to the SNBS and Minergie-P-ECO® standards.

Approximately 15 % of the FOBL's total investments in 2022 received allocation from the 2023 issuance proceeds.

The third stage of the administrative buildings in Zollikofen received the platinum rating, the highest SNBS certification. The SNBS certification is also being sought for the fourth stage.

From 2020 to 2022, two new FOBL buildings were certified according to the Swiss Sustainable Building Standard SNBS.

- The new federal administration building on Pulverstrasse in Ittigen was awarded the SNBS Gold Certificate in 2020.
- In 2022, the second, and in 2023, the third stage of the administrative buildings in Zollikofen received the SNBS platinum certificate.
- The SNBS certificates have been available in silver, gold and platinum levels since 2016. The SNBS takes into account all areas of sustainability in construction projects involving the economy, society and the environment on the basis of 45 indicators. Among other things, the energy consumption of a building, its life cycle costs, the flora and fauna of the surrounding area, mobility or regional value creation are evaluated.

The following information relates to the real estate portfolio covered by the FOBL's energy statistics that is limited to Switzerland and of which only a part is attributable to the green bond:

Indicator	Unit	End 2020	End 2021	End 2022	Target 2030
Heat consumption per m² (Source: Federal Office for Buildings and Logistics)	**kWh/m² Energy reference area**	63	58	60	–
Energy demand oil heating (Source: Federal Office for Buildings and Logistics)	**tCO_2/a or GWh a**	2'441 or 9.2	2'255 or 8.5	2'096 or 7.9	1'326 or 5.0
Energy demand natural gas heating systems (Source: Federal Office for Buildings and Logistics)	**tCO_2/a or GWh a**	4'870 or 24.2	5'112 or 25.4	3'851 or 19.1	4'085 or 20.3
Energy generated by PV (Source: Federal Office for Buildings and Logistics)	**GWh/a**	1.0	1.1	1.5	3.7

Case study: New construction of administration building Zollikofen

Proceeds from the 2023 issuance of the Green Confederation Bond are allocated to two large construction projects of the FOBL according to the 2022 state financial statement: The third (31.6 million Swiss francs) and fourth (11.9 million Swiss francs) stages of the new buildings in Zollikofen (a municipality in the canton of Bern and a suburb of the city of Bern).

Objective: Sustainable accommodation of the federal administration

Measures: New administrative buildings with around 2'200 workplaces in accordance with SNBS and Minergie-P-ECO® standards

Indicator:
3rd stage: SNBS Certificate Platinum – achieved
4th stage: SNBS Certificate Platinum – targeted

Investment costs: 178.3 million Swiss francs (3rd stage 129.8 million Swiss francs, 4th stage 48.5 million Swiss francs) BKP 1–9

Construction period: 2020–2023 third stage, 2022-2025 fourth stage

Commissioning: third stage 2023, fourth stage 2025

International Cooperation

(FOEN, A231.0322 “Multilateral environmental funds” / Swiss Agency for Development and Cooperation, A231.0330 “Contributions to multilateral organizations”)

The Confederation contributes to various multilateral environmental funds, in particular the GCF, the GEF, the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF). Federal contributions co-finance projects and measures to protect biodiversity, restore nature, reduce pollution, and combat climate change in developing countries. Whereby the GCF focuses on climate change mitigation. LDCF and SCCF exclusively fund projects that strengthen climate change adaptation in the poorest developing countries and mainly in small island developing states, respectively. Only the GEF has a broader mandate and finances projects that address various environmental problems in different sectors. This concerns climate change, biodiversity, desertification, chemicals, waste and water.

All four funds (GCF, GEF, LDCF and SCCF) serve the UN Framework Convention on Climate Change and the PA. The GEF also serves other multilateral environmental conventions, such as the Convention on Biological Diversity.

Switzerland influences the use of funds on two levels: on the one hand as a member of the environmental conventions, which regularly set and recommend programmatic guidelines, and on the other hand as a member of the respective councils of the various funds, which, among other things, must approve all major pro jects financed by the funds. The councils decide on the detailed programmatic content as well as on policy and governance issues of the various funds.

With a contribution of 1’350 million Swiss francs for 2023–2026, Switzerland is one of the larger donors to the GCF. With a contribution of 155 million Swiss francs over the next four years (2022–26), Switzerland holds a 3.64 % share of the GEF burden and is thus a medium-sized donor.

With these contributions, Switzerland fulfills its obligations under the International Climate Conventions and contributes to environmentally sound, sustainable development in all developing countries. The effects of climate change and biodiversity loss are becoming increasingly visible and tangible. Switzerland has a strong interest in addressing these two crises, mitigating and halting the effects, and increasing the adaptive capacity of developing countries.

The contribution to the GCF comes from the budget item for development cooperation (“Contributions to multilateral organizations”). The contributions to the other three funds come from the budget item for the global environment (“Multilateral Environmental Funds”).

For two of the funds (GCF and GEF), Switzerland makes multi-year commitments and disburses them in regular tranches. Contributions to the other two funds are more variable.

Impact of the expenditure

The funds contribute to positive environmental impacts of global significance, such as reducing CO_2 emissions, restoring land, or protecting marine areas, directly benefiting many people in developing countries. The positive environmental impact is measured at the level of the projects financed by the funds. The disclosures generally correspond to the expected values. The data are granular. For example, beneficiaries are gendered and sub-indicators are added to each indicator.

The impact analysis focuses on the most meaningful indicators, namely the reduction of CO_2 emissions and the number of beneficiaries. To avoid any double counting, Switzerland reports only that part of the impacts that corresponds to its respective share of the burden in the different funds (e.g. 3.64 % in the GEF and 1.27 % in the GCF. At the GEF, impact measurement is done using the GEF-8 Corporate Scorecard. This is a comprehensive report on the performance of the Global Environment Facility during the GEF-8 period, i.e., the current GEF 8 cycle (2022–26). In particular, the scorecard reports on progress toward GEF-8 targets. It is published on a semi-annual basis. The GCF uses what it calls an Integrated Results Management Framework (IRMF) and continuously publishes expected CO_2 reductions and beneficiaries at the overall portfolio level.[3]

In the time period 2022, the approved projects had the following impact:

Indicator	Unit	From projects approved in 2022	Swiss share
Expected CO_2e avoided (Sources: internal, the Green Climate Fund [GCF] and the Global Environment Facility [GEF])	million metric tons CO_2e	319.7	7.8
Total beneficiaries from all five results areas including biodiversity, climate change (mitigation and adaptation), chemicals, international waters, and land degradation (Sources: internal, the Green Climate Fund [GCF] and the Global Environment Facility [GEF])	million	133.4	3.2
Hectares of natural resources managed with improved low-emission or climate-resilient management practices (Sources: internal, the Green Climate Fund [GCF] and the Global Environment Facility [GEF])	million hectares	58.6	1.8

[3] The GEF resp. GCF Secretariat receive the data from the GEF agencies, GCF accredited entities respectively that implements the projects on the ground in the recipient countries with other international and local partners and bear the responsibility for the reporting of the data.

Case study: Project financed by the Global Environment Facility

40 million Swiss francs of the 2023 Green Confederation Bond issuance were allocated to international cooperation. As part of its international cooperation Switzerland supports climate change action in developing countries. It does this in particular through contributions to multilateral environmental funds including the Green Climate Fund (GCF) and Global Environment Facility (GEF).

The GEF supports developing countries in managing the most pressing environmental challenges in the areas of biodiversity loss, chemicals and waste, climate change, international waters and land degradation by financing projects that are implemented through international and local implementing partners. Since its start in 1991, it has provided more than 25 billion US dollars and unlocked multiple times that amount in co-financing. Currently, the GEF supports more than 1'600 active projects and programs across 149 recipient countries. In 2022, the GEF approved a project benefiting five Central Asian countries and aimed at better water resources management and climate change adaptation.

Project Objective: Strengthen the resilience of Central Asian countries (Uzbekistan, Kyrgyz Republic, Kazakhstan, Tajikistan, Turkmenistan) and enable regional cooperation to assess their glacier systems and develop methods for sustainable development and climate change adaptation.

Measures: The project is implemented by the United Nations Development Program (UNDP) together with UNESCO International Hydrological Programme and regional and local partners.

Indicator: Direct beneficiaries: 1'500 (50 % women, 50 % men)

GEF Contribution: 6.2 million US dollars

Project duration: 2022–2026

Research, Innovation and Awareness raising

Description and basis of the expenditure

Agroscope is the federal competence center for agricultural research and is affiliated with the FOAG. Agroscope makes a significant contribution to sustainable agriculture and food production as well as to an intact environment, and thus helps to improve the quality of life.

Agriculture uses natural resources with the aim of producing food, while at the same time exerting an influence on the environment and the other functions of the agroecosystem. Politicians and the society expect the agricultural and food industries to further improve their efforts to use resources sustainably and to reduce greenhouse gas emissions. Agroscope is devoting 13 million Swiss francs of its pure research funds of 96 million Swiss francs to four areas specifically dedicated to these issues, out of a total expenditure of 194 million Swiss francs. The expenditure regarding those four areas has been deemed eligible under the green bond framework. The four areas include:

- Sustainability assessment
- Careful use of soil
- Promotion and use of biodiversity and habitats in the agricultural landscape
- Agriculture and Climate Change

International agreements, legislation and national policies based on them underpin the activities in these areas. The specific framework is provided by the federal government's research concept for agriculture and the food industry, which is revised every four years.

In the area of *"sustainability assessment",* the activities are based on the Ordinance on the Assessment of Sustainability in Agriculture. This involves a systematic assessment of sustainability and eco-efficiency and how this can be improved in agricultural production. These analyses show which production methods are economically efficient and best conserve natural resources. They thus contribute to site-adapted optimization and a reduction in environmental impact.

The basis of research activities in the field of *"careful use of soil"* can be found in the Environmental Protection Act, the Swiss Soil Strategy and the Ordinance on Soil Pollution. Agricultural soils in Switzerland are exposed to hazards and stresses that lead to a decrease in their fertility and to losses of land. In order to counteract the negative developments, a better knowledge of the processes in the soil and the effective stress situation, as well as the development of recommendations for a sustainable, site-appropriate soil management and for the protection of the soil are important

The area *"Promotion and use of biodiversity and habitats in the agricultural landscape"* shows how ecologically valuable habitats can be preserved and used for agriculture. For this purpose, Agroscope conducts monitoring for the federal government and evaluates the measures that have been introduced for the conservation of biodiversity. The evaluation makes it clear where to start in order to improve the effect of ecological compensation measures.

According to the federal government's climate strategy, greenhouse gas emissions in agriculture are to be reduced by at least one third by 2050. In the area of *"Agriculture and Climate Change",* analyses provide important bases for policy makers and practitioners to decide which measures should be pursued to achieve the targets.

Impact of the expenditure

The following examples show the impact in two of the four eligible areas. As this primarily concerns basic research, it is not possible to show quantitative impact measures.

Decision-making Tool for Assessing Wet Arable Land

Numerous animal species such as natterjack toads, yellow-bellied toads and swamp dragonflies as well as plant species and arable companion species occurring in wetland habitats are endangered. At the same time, around 30 % of Switzerland's crop-rotation land, i.e. 137'000 hectares, is on drained land, and the older drained areas are in need of rehabilitation. A decision-making tool was developed for determining whether the drained crop-rotation land could potentially serve as wet arable land offering a habitat for the endangered animal and plant species. Devised for use in practice, this decision-making tool takes biodiversity, hydrology, soil, climate and agricultural use into account. The information is displayed in GIS-supported maps. The tool helps promote biodiversity in arable farming, which is an objective of the Swiss Biodiversity Strategy Action Plan's activity field "Agriculture".[4]

Temporary Carbon Sinks also Benefit the Climate

Soil organic carbon is formed via CO_2 absorbance from the air through photosynthesis and subsequent transfer as below- and aboveground plant biomass into the soil. Increasing the amount of organic carbon in soil is a carbon sink and considered an important means for achieving the goals of the Paris climate accords as it has a positive effect on the climate. Because soils are open systems, however, any carbon atom that enters the soil will eventually leave it, usually in the form of CO_2. Hence, soil carbon sinks are reversible in principle. In order to quantify the impact of long-term but also of reversible carbon sinks on the climate a relatively simple approach has been developed. This involved calculating the climate effect of reversible and permanent soil carbon sinks using different time horizons. It was shown that, with the same maximum sink, the longer the sink is preserved, the better the climate impact, but that also short-lived sinks contribute to climate protection. In practice, this approach can offer guidance for CO_2-certification or for the compensation of farmers for their contribution to climate protection.[5]

Dissemination of new knowledge

The following graph shows the number of contributions and publications for practice and science where the issuance proceeds have been allocated to.

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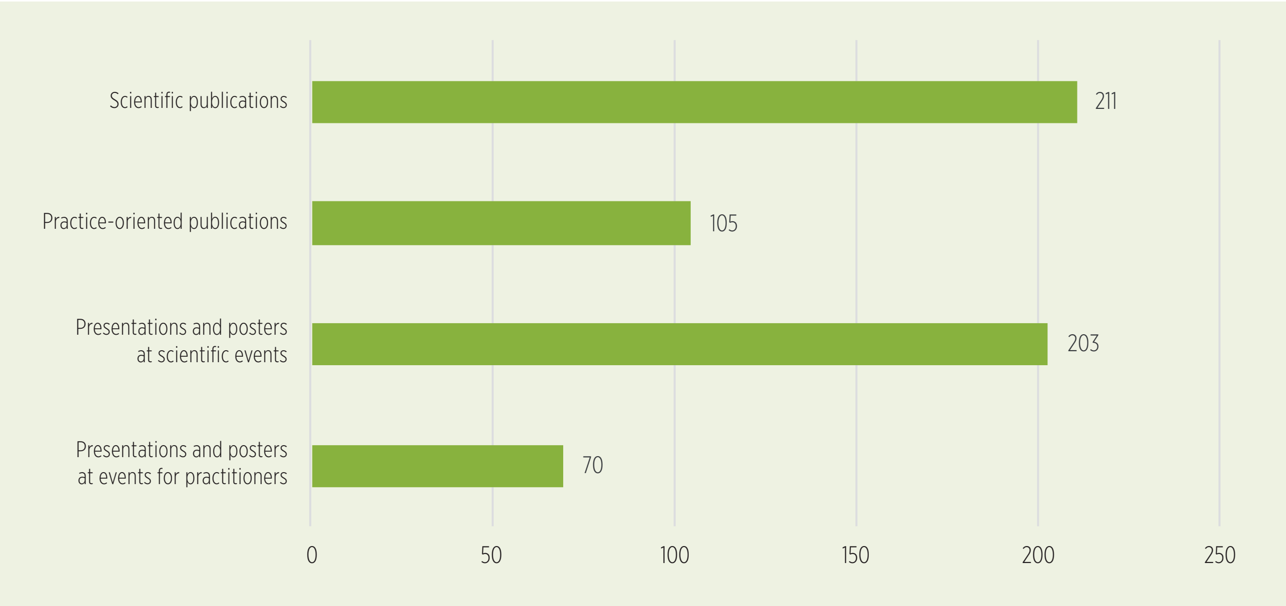
4 Yvonne Fabian, Giotto Roberti, Katja Jacot, Anja Gramlich, Regula Benz, Erich Szerencsits, Gregory Churko, Volker Prasuhn, Jens Leifeld, Alexander Zorn, Thomas Walter und Felix Herzog: Die Nutzung von vernässenden Ackerflächen neu denken: Synthese des Projektes «Feucht(Acker)Flächen», Agrarforschung Schweiz, 13, 2022, 198–209.
Roberti G., Gramlich A., Benz R., Szerencsits E., Churko G., Prasuhn V., Leifeld J., Zorn A., Jacot-Ammann K., Herzog F., Fabian Y. Entscheidungshilfe für feuchte und nasse Ackerflächen: Unterstützung bei der Identifikation von Flächen, auf denen Alternativen zur Entwässerung in Betracht zu ziehen sind. Agroscope Transfer, 449, 2022, 1-68. weitere Sprachen: französisch | italienisch.

5 Leifeld J., Keel S.G.: Quantifying negative radiative forcing of non-permanent and permanent soil carbon sinks. Geoderma, 423, 2022, 1–8.
Leifeld, J., 2023. Carbon farming: Climate change mitigation via non-permanent carbon sinks. Journal of Environmental Management 339: 117'893.

Sustainable agriculture and food industry in 2022



Source: Internal data, Agroscope.

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