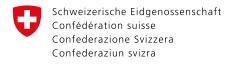
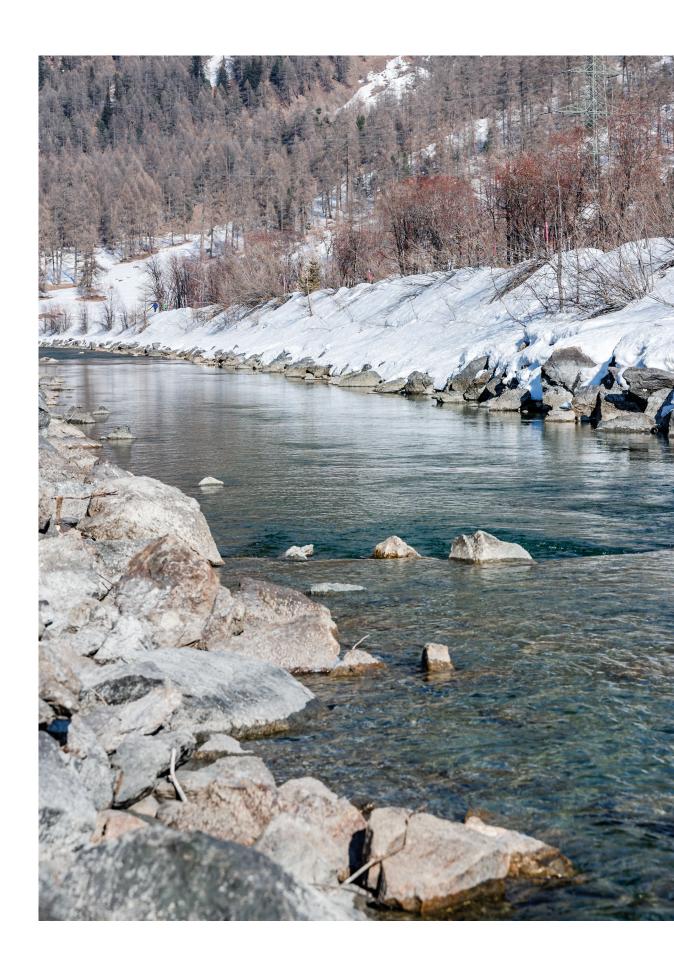


Environment Switzerland 2022

Overview of the report of the Federal Council







Foreword

Dear Readers

«Environment Switzerland 2022» is the third report to be published on the state of the environment in Switzerland. This overview of key figures is intended by the Federal Council to inform a fact-based and forward-looking environmental policy.

Switzerland has made real progress on many environmental issues. This has been facilitated by various new federal government instruments designed to protect our country's natural resources. The high quality of Switzerland's air, forests and waters is a welcome outcome of these efforts and a significant factor in our quality of life.

However, the progress made should not overshadow the fact that much remains to be done in regard to environmental protection. The intense heatwaves and extended dry period of summer 2022 again demonstrated the extent of the need for action — particularly urgent in regard to climate change, biodiversity loss and overexploitation of natural resources. Of note, too, is that two thirds of Switzerland's environmental burden is generated abroad.

As a prosperous and innovative country, Switzerland is ideally placed to drive the transformation needed for a sustainable use of resources. We know from the science that living a climate-neutral lifestyle is possible and indeed affordable. And the consequences of doing nothing are enormous. We now need to harness the synergies between climate and biodiversity policy more systematically.

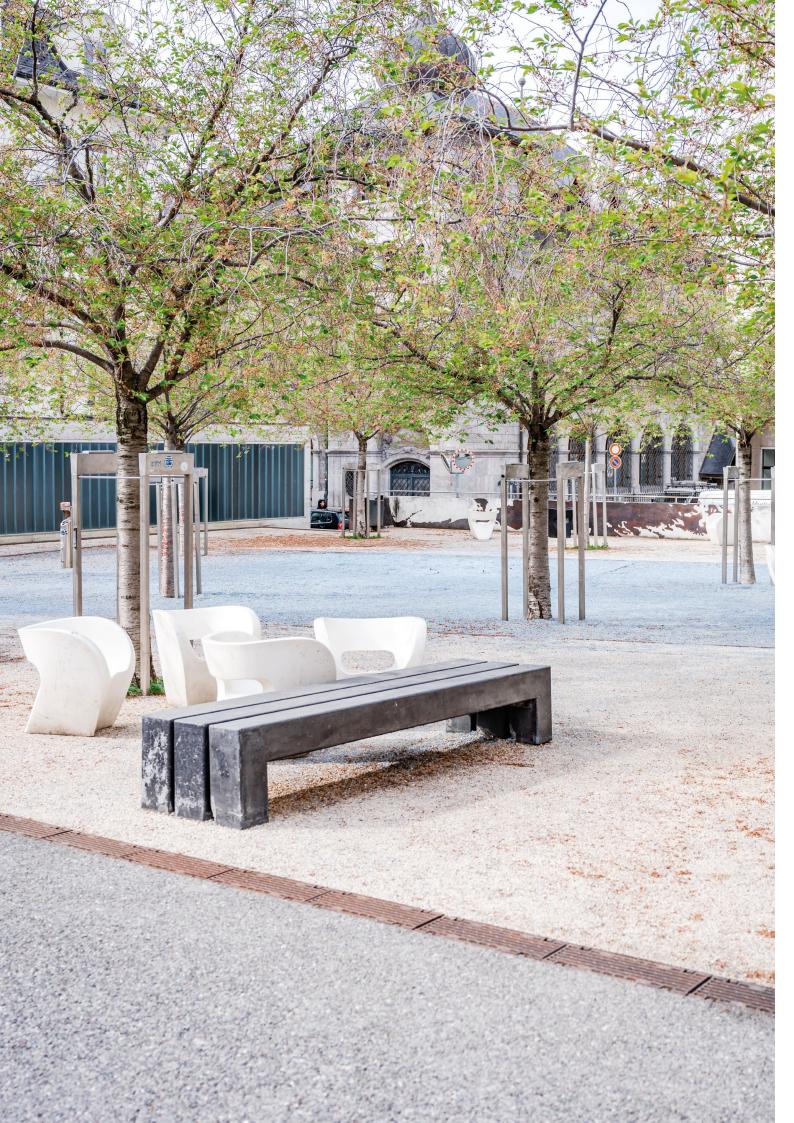
After all, trees, green spaces and waters have beneficial impacts on both climate and biodiversity. And of course, energy policy also overlaps with climate policy: switching to domestic renewables helps secure our electricity supply while also making an important contribution to climate protection.

But it takes us all to help our country live up to its environmental responsibilities: the Federal Council and Parliament to shape the framework conditions, the cantons and communes to implement environmental policy, the business world to make sustainable investments, and the research community to develop the underlying science and solutions.

I would also like to thank the general public for their countless initiatives and innovations that help us conserve our resources and natural environment.

We must do everything we can to preserve our livelihoods — working together towards a truly sustainable society.

Federal Councillor Simonetta Sommaruga



Key messages

Switzerland's environmental policy has yielded results in many areas. But much remains to be done. The most pressing problems are climate change, biodiversity loss and overexploitation of natural resources.

Switzerland is particularly affected by **climate change**, with average temperatures now at least 2 °C higher than pre-industrial levels. (Switzerland intends to halve its emissions by 2030, and the Federal Council is committed to achieving net zero greenhouse gas emissions by 2050.) The aim is to transform society and the economy towards climate compatibility, utilising all **technical potential** and efforts to **decarbonise the economy**. There is also a need to create the framework conditions for making everyday life more sustainable.

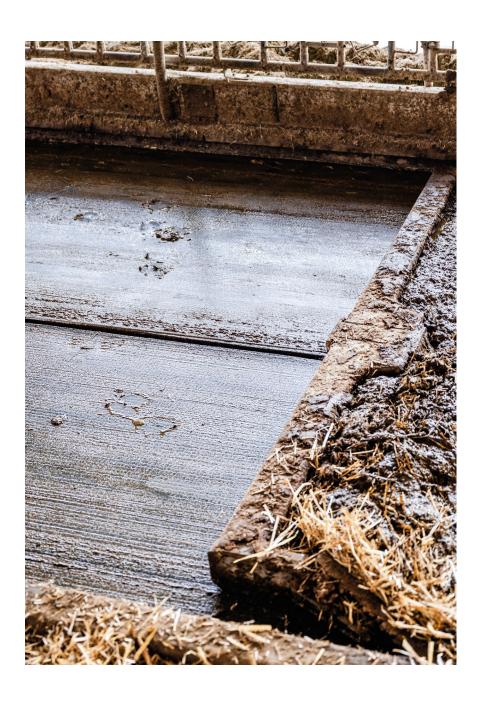
Various measures to promote biodiversity have made occasional gains, primarily with local impact. However, **biodiversity** still comes **under pressure** from the lack of land area, soil sealing, landscape fragmentation, intensive farming, and nitrogen and pesticide inputs. There is an urgent need for resolute action to preserve the services that biodiversity offers society and the economy. Rich and resilient biodiversity also helps to mitigate climate change and its consequences.

Switzerland's goal of using **raw materials** sustainably and systematically ensuring closed-loop **material cycles** has yet to be achieved. This can be done by designing products so that they use less materials and energy to manufacture and use, are more durable and can be repaired, reused or recycled.

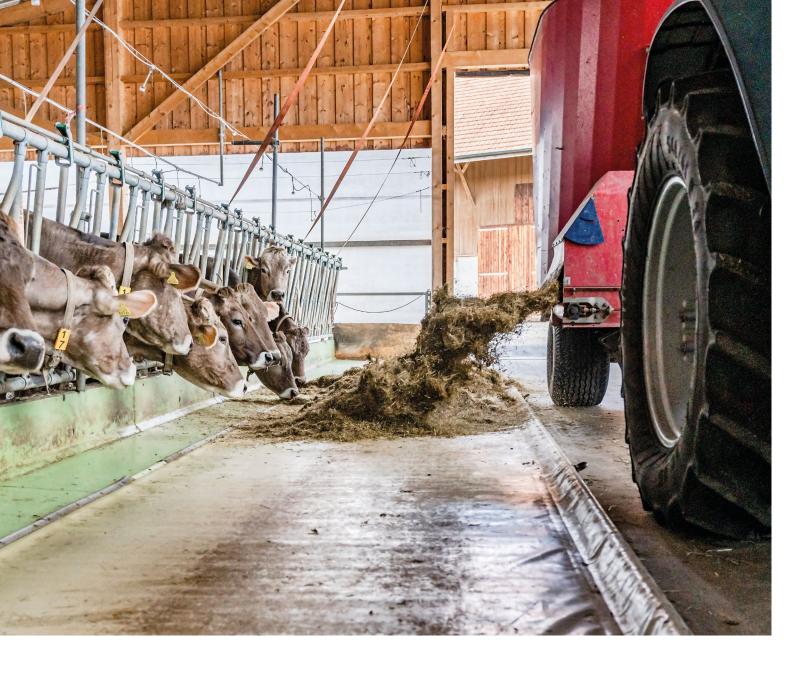
A **sustainable future** is still achievable, but it requires a **fundamental change** in production and consumption patterns, especially in regard to **mobility**, **housing** and **nutrition**. These three areas are responsible for two thirds of all environmental impacts.

However, mobility, housing and nutrition not only count as drivers of the environmental burden: they also offer many **options** and **opportunities** for intervention by **actors** in **policymaking**, **business**, **science** and **civil society**. What is needed here are holistic approaches to solutions that will create the right **framework** conditions for a socially just transformation. Examples of good practice show that many actors are already at work.

Failure to act has negative **economic consequences**. Various studies show that the social and economic costs of unchecked climate change or a loss of ecosystem services far exceed the costs of defence and protection measures.







Clean air initiatives in barn construction

Ammonia is a colourless and pungent-smelling gas containing nitrogen. In agriculture it is mainly produced when urine and faeces from livestock mix. Bacteria then produce an enzyme that converts urea into ammoniacal nitrogen. Ammonia finds its way into the atmosphere during the storage of slurry and manure and when it is spread on the field, but significant quantities are also emitted from the barn. Agroscope, the Swiss centre of excellence for agricultural research, is looking for ways to reduce ammonia emissions in livestock

farming. One successful approach has been a cattle barn in which the urea drains away more quickly thanks to a slope and a gutter. The cattle feeding stands are also configured so that no urine or faeces can accumulate in this area. This structural measure reduces ammonia emissions by 30%. The majority of the additional costs of such barns are covered by the federal government and cantons.

www.agroscope.ch > Ammonia Reduction in Cattle Husbandry www.ammoniak.ch > Praxisbeispiele

Overview

Purpose of the report

The Environment Switzerland report is published every four years by the Federal Council in fulfilment of its statutory mandate to provide information under the Environmental Protection Act (Art. 10f). This latest report, Environment Switzerland 2022, presents an overview of the current state and trends of the environment in Switzerland and of Switzerland's environmental impact. It assesses the measures taken by the federal government to improve the quality of the environment and identifies areas in which further action is required.

Current state of Swiss environmental policy

Switzerland has made progress in many areas of the environment. Over the past two decades, Switzerland's total environmental impact per head of population and in absolute numbers has fallen both at home and abroad $(\rightarrow EBP/Treeze\ 2022)$ $(\rightarrow Figure\ 1)$.

Improvements have been achieved in particular regarding air quality, forest biodiversity, the management of natural hazards, material efficiency and waste management.

Since the last Environment Switzerland report was published in 2018, the Federal Council has created **new instruments** to protect our country's natural resources:

 For example, in 2020 the Federal Council adopted the National Soil Strategy along with a package of measures designed to sustainably protect soil as a resource. These include the crop rotation areas sectoral plan, intended to improve the protection of Switzerland's high-est-yielding agricultural soils, the National Competence Centre for Soil (known by its German acronym KOBO) and a system for recording information about

- soils throughout Switzerland (\rightarrow Federal Council 2020a). The Federal Council updated the Swiss Landscape Concept in 2020. The objectives it sets are binding on the authorities and seek to ensure that landscapes which have come under pressure will continue to be available as high-quality places for living, working and recreation in the future (\rightarrow FOEN 2020a).
- In spring 2021, Parliament adopted the Federal Act on the Reduction of Risks relating to the Use of Pesticides. In addition, the Federal Council changed the regulations governing the export of non-approved pesticides in October 2020: five particularly problematic pesticides have been subject to an export ban since 2021, and the remaining pesticides that are not approved in Switzerland require an export licence. It had already amended the Waters Protection Ordinance in April 2020 and imposed stricter limit values on particularly problematic pesticides such as the insecticide cypermethrin. In addition, in April 2022 the Federal Council adopted a package of ordinances to ensure clean drinking water and more sustainable agriculture. It has thereby tightened the criteria for proof of ecological performance, especially with regard to nutrients and plant protection products, and created financial incentives for sustainable production systems in the form of new direct payment programmes1.
- In 2022, the Federal Council adopted an indirect counter-proposal to the popular initiative 'For the future of our natural world and landscape (Biodiversity Initiative)'², with the aim of creating sufficient natural habitat, promoting a high-quality 'building culture' and using additional financial resources.
- The Adapting to Climate Change in Switzerland action
 plan for the period 2020–2025 continues the established
 policy and contains measures to address the risks of
 climate change and increase the adaptability of nature,
 society and the economy (→ Federal Council 2020b).
- In 2021, the Federal Council adopted the Long-Term Climate Strategy, which sets out guidelines for achieving

^{1 19.475} Réduire le risque de l'utilisation de pesticides (f, g, i)

² Message relatif à l'initiative populaire « Pour l'avenir de notre nature et de notre paysage (Initiative biodiversité) » et au contre-projet indirect (modification de la loi fédérale sur la protection de la nature et du paysage) (f, g, i)

climate neutrality in Switzerland by 2050 (\rightarrow Federal Council 2021a). In September 2022 it submitted a proposal to Parliament for the **partial revision of the CO₂ Act** (\rightarrow Federal Council 2022d). Furthermore, in a direct counter-proposal to the Glacier Initiative, the Federal Council advocated enshrining the net zero target in the Federal Constitution (\rightarrow Federal Council 2021b). Parliament subsequently passed an indirect counter-proposal to the Glacier Initiative, which the Federal Council also welcomes.

• The CO₂ emission standards for passenger cars were tightened and requirements introduced for delivery vans as of 2020. The transitional (or 'phasing-in') period, during which the most climate-damaging vehicles could be exempted from meeting the CO₂ emissions target, came to an end in 2022. Having enacted the relevant CO₂ Ordinance (→ Federal Council 2021c), the Federal

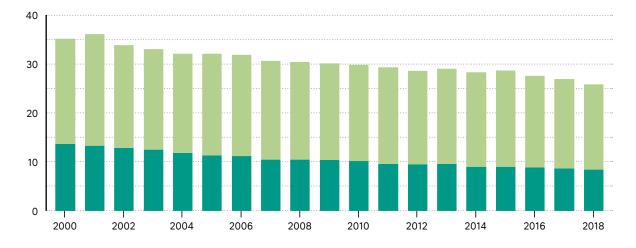
- Council went on to strengthen the incentives for climatefriendly commercial vehicles by adjusting the weight and length specifications for low-emission HGVs.
- In 2021, the Federal Council adopted the dispatch on the Federal Act on a Secure Electricity Supply from Renewable Energy Sources (→ Federal Council 2021d).
 With this bill, it seeks to prioritise the expansion of indigenous renewables and thus reduce CO₂ emissions.
 To this end, it has decided to extend the phasing-out of support for renewable energies.
- Implementation of the Energy Strategy 2050 is to be supported by accelerating the processes for large-scale renewable energy generation (hydropower and wind energy) (→ DETEC 2017). To this end, draft legislation to simplify the planning and approval procedures was drawn up in 2021. The consultation procedure on this draft legislation got under way at the start of

Figure 1 Total environmental impact along the supply chains per capita

This indicator shows Switzerland's environmental impact at home and abroad along the supply chains, from production to consumption. As well as the use and disposal of products, the extraction of raw materials and production are also taken into account. As Switzerland imports many products, the environmental impact is mostly generated abroad. The eco-points method used (also known as the ecological scarcity method) is based on Switzerland's legally and politically defined environmental targets and assesses resource extraction (primary energy carriers, metal and mineral resources, freshwater, land),

pollutant emissions into the air, water and soil, as well as waste and noise (\rightarrow FOEN/ÖBU 2013, FOEN/ÖBU 2021). The impacts in these areas of the environment are aggregated and expressed as 'ecopoints', with the weighting generally remaining constant over the respective period. The total environmental impact per head of population fell by 13% in absolute terms between 2000 and 2018. According to these calculations, the current impact would have to be reduced by at least two thirds in absolute terms in order to reach a naturally sustainable level (\rightarrow EBP/Treeze 2022).





Total environmental impact associated with Swiss final demand: 🛮 in Switzerland 🔳 abroad

2022. The **Wind Energy Concept**, which was revised in 2020, provides the cantons and project developers with a valuable tool for demarcating those areas and sites that will allow the sustainable production of electricity in a way that best matches the needs of the population and nature (\rightarrow ARE 2020). This does not restrict environmental law.

- The final meeting of the Hydropower Round Table set up by the Federal Department of the Environment, Transport, Energy and Communications (DETEC) took place in 2021. Key stakeholders adopted a joint declaration illustrating potential ways of expanding hydropower as a contribution to security of supply while achieving the lowest possible carbon emissions and maintaining the existing level of protection of natural resources.
- In November 2021, the Federal Council decided to take additional measures to further strengthen the transfer of transalpine freight traffic from road to rail (→ Federal Council 2021e). As well as providing better protection for the Alps, this action is intended to help achieve the climate targets.
- The federal government set out its goals for transport infrastructure planning in the revised Programmes section of the Transport Sectoral Plan, which was adopted in 2021 (→ DETEC/ARE/FEDRO/FOT/FOCA/FOEN 2021). 'Mobility and Space 2050' aims to establish an efficient mobility system that supports sustainable spatial development while keeping the adverse environmental impact to a minimum. Examples include the Transport Hubs programme, which was adopted jointly with the cantons, cities and communes in the 2021 Declaration of Emmenbrücke, and the Federal Mobility Data Infrastructure as a public service offered by the federal government.
- In implementing the 2021 federal decree on cycle paths, the Federal Council intends to create a safe, interconnected network of cycle paths (→ DETEC 2018). The cantons are now obliged to plan cycle path networks, while the federal government will act as a role model in those areas for which it is responsible (e.g. motorway access roads or national highways with mixed traffic) by creating modern and safe bicycle infrastructures.
- In 2019, the National Council and Council of States released some CHF 1.4 billion to co-finance urban transport infrastructures. The positive environmental im-

- pact of the measures is an important criterion for their being awarded financing. By mid-2021, the fourth generation of these programmes had already been submitted for consideration; Parliament will decide in 2023 whether to support them.
- The Federal Council would like to make it administratively easier to introduce 30km/h speed limits on roads in residential areas that are mainly used by the people who live there. It submitted a proposal to that effect for consultation in 2021.
- In December 2020, at DETEC's request, the Federal Council resolved to ask Parliament to approve CHF 14.4 billion in funding for the maintenance and modernisation of the rail network. As a result, an extra CHF 1.2 billion per year has been made available to the railways for the 2021–2024 period. The additional funds will be used, inter alia, to improve the availability and quality of the network.
- With its health policy strategy for the 2020–2030 period, adopted in 2019, the Federal Council aims to reduce environmental health risks such as pollution, biodiversity loss and climate change (→ Federal Council 2019). In addition, a high quality of natural environment and landscape which has a positive impact on human health is to be promoted.
- The 2030 Sustainable Development Strategy (2030 SDS) and the accompanying 2021–2023 Action Plan, both of which were adopted in 2021, are first and foremost instruments for strengthening sustainable development at the federal level and coordinating between policy areas (→ Federal Council 2021f). In particular, they aim to make achieving the 2030 Agenda's Sustainable Development Goals (SDGs) a core component of the Confederation's many sectoral activities (→ UN 2015). That is why the Federal Council has designated 'sustainable consumption and sustainable production', 'climate, energy and biodiversity' and 'equal opportunities and social cohesion' as the three priority topics.
- The 2022 action plan on food waste is intended to accelerate progress towards reducing avoidable food losses.
 It is aimed at all companies and organisations in the food industry along with the federal government, cantons and communes (→ Federal Council 2022a).
- The Public Procurement Act, revised at the start of 2021, and the Federal Administration's procurement strategy increasingly make sustainability

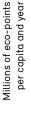
- considerations a key component of federal procurement (→ Federal Council 2020c).
- The Federal Administration also plays its part in reducing the environmental impact. It has set itself the goal of reducing operational and product-related environmental impacts through its various environmental management systems (RUMBA, RUMS-VBS). The Federal Council hopes that the Climate Package for the Federal Administration (→ Federal Council 2020d), which has been running since 2020, and the Action Plan for Air Travel will further reduce the Federal Administration's declared environmental impact. The Federal Administration is to be completely climate neutral by 2030.

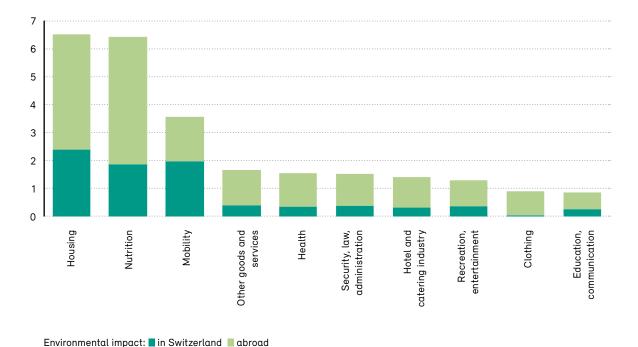
Despite the successes achieved, the per capita **consumption of resources** in Switzerland is higher than the European average. The material footprint per head of population in this country is 17.1 tonnes, while in the EU it averages 14.5 tonnes (→ FSO 2021, EUROSTAT 2021). The proportion of **environmental impacts abroad** has also risen since 2000 and currently stands at two thirds (→ EBP/Treeze 2022). Overall, the consumption of and damage to natural resources exceed the capacity of nature to regenerate. Planetary boundaries have been crossed worldwide, especially in the case of **climate change**, **biodiversity losses** and **nitrogen surpluses**. If every other country were to use its resources in the same way as Switzerland, the planetary boundaries would be overshot

Figure 2
Environmental impact along the entire supply chain for various sectors

Housing causes 25% of environmental impacts, making it the most important area of Switzerland's end consumption together with the food and nutrition system (also 25%), followed by private mobility (14%). The environmental impact in the area of housing can be mainly attributed to heating energy and electricity consumption in households, and construction. In the food and nutrition system, it is

primarily animal products and beverages that have a high environmental impact (in particular wine and coffee, e.g. through the extensive use of plant protection products). Meanwhile, in mobility, fossil fuel consumption for private means of transport and air travel are the main contributors.





Source: EBP/Treeze 2022









Communal living and working

Various projects involving new forms of housing have emerged in both rural and urban areas in recent years. One example is the Kalkbreite Cooperative's Zollhaus in Zurich, which comprises a colourful mix of dwellings for some 175 people on a floor area of around 5,000m². The dwellings range from 1.5-room to 9.5-room apartments. There are also four 'hall apartments', which occupants can fit out themselves. Including the communal areas, each occupant has just under 30m² — which is significantly below the Swiss average of 46m²

of living space per capita. Around 40% of the premises is used for restaurants, arts and cultural facilities, offices, services, businesses, a guest house and a nursery. On the roof there is a large garden available to members of the cooperative, which they jointly look after. There are also plans to turn the adjacent wasteland into an urban wilderness known as the 'Zollgarten'.

www.kalkbreite.net > zollhaus

even further. Crossing the boundaries gives rise to a considerable risk of significant and irreversible environmental changes that will have a negative impact on living conditions in Switzerland and abroad.

The main drivers of this high environmental impact are mobility, housing and the food and nutrition system (→ Figure 2). These three areas now account for two thirds of the total impact. The main contributory factors are greenhouse gas emissions, the use of land for settlements and transport, failure to close open material cycles, nitrogen surpluses from agriculture and pollution caused by plant protection products.

Main challenges

Climate change is one of the biggest environmental challenges of our time. The world is currently heading for global warming far above the critical threshold of 2°C or even 1.5 °C. Switzerland is affected more than most: if global emissions are not significantly reduced, warming of 4.8-6.9 °C above pre-industrial levels can be expected by the end of the 21st century (→CH2018 2018, NCCS/ FOEN 2021). In 2020, total domestic greenhouse gas emissions were 19% lower than in the reference year 1990 (→ FOEN 2022a). Despite the pandemic-related decline, this falls just short of the target set in the CO2 Act of -20% by 2020. Taking into account the emissions associated with the production of imported goods abroad (energy carriers, raw materials and finished products, including foodstuffs and feedstuffs), Switzerland is one of the world's highest per capita emitters (→ FOEN 2020b) (→ Climate: View beyond the borders 'International comparison of CO₂ emissions'). If emissions are to be reduced, it is crucial that we move away from fossil fuels.

The **loss of biodiversity** presents just as big a challenge – both globally and nationally. One third of all species and half of all habitat types in Switzerland are under threat. The greatest loss of species is to be found in **bodies of water and riparian zones** (\rightarrow FOEN 2022b). This is due to the lack of diverse structures, obstructions to continuity in the form of man-made structures such as dams and power plants, and the effect on water quality of micropollutants (pesticides, medicinal products, cleaning agents) and nutrients. Biodiversity is also in a very

poor state on **agricultural land**. As well as the removal of structures such as trees, hedges and piles of stones, environmental problems in agricultural areas are mainly attributable to high **nitrogen and pesticide inputs**. Overall, inputs of nitrogen compounds in Switzerland exceed the critical limit in two thirds of sensitive ecosystems. Therefore, the environmental targets for agriculture have not yet been met (→ FOEN/FOAG 2016). **Soil sealing** is also problematic: around two thirds of Switzerland's settlement area is sealed, and more and more open spaces are becoming fragmented. At the same time, settlement areas could offer significant, often untapped potential for biodiversity. Switzerland also lacks an **ecological infrastructure** that protects and connects the core areas for biodiversity.

The large amounts of waste and the failure to close material cycles remain another challenge. In 2020, Switzerland produced almost 90 million tonnes of waste. Around 7% of this was municipal solid waste (\rightarrow FOEN 2021). This places Switzerland among the top waste-producing nations in the world, as measured by the size of its population. Although the material efficiency of the Swiss economy has improved, in absolute terms the consumption of raw materials such as minerals, biomass, fossil fuels and other materials has continued to rise. Because Switzerland imports large quantities of raw materials and products, two thirds of its total environmental impact can be attributed to the use of raw materials abroad (→ EBP/Treeze 2022). The worst offenders are feedstuffs (such as soy), cotton, coffee, cocoa, tea, animal products, palm oil, peat, fossil fuels and metals.

The high consumption of materials and raw materials has a negative impact on the climate, ecosystems and biodiversity, as well as on the health and quality of life of the population (→IRP 2019). That is why protecting the climate, preserving biodiversity and strengthening the circular economy are among the priority objectives of environmental policy. In this sense, climate and biodiversity protection go hand in hand. Rising average temperatures, changed precipitation regimes, more frequent extreme weather events plus ocean deoxygenation and acidification mostly have a negative impact on biodiversity. Conversely, the change in biodiversity affects the climate system, especially through its impact on the

nitrogen, carbon and water cycles. Ultimately, rich biodiversity that is responsive to change is a prerequisite for climate change adaptation. Strengthening the circular economy in turn helps to reduce the need for primary resources as well as cutting greenhouse gas emissions and biodiversity losses in the extraction, processing and manufacture of products.

The action taken to conserve biodiversity and mitigate climate change is associated with costs. However, a number of studies show that the social and economic costs of unchecked climate change or a loss of ecosystem services far exceed the costs of defence and protection measures.

Aims of Swiss environmental policy

Switzerland's environmental policy focuses on **climate** change mitigation, biodiversity conservation and the sustainable use of resources. The Federal Council wants to achieve the following objectives in this respect:

To protect the **climate**, Switzerland aims to halve its greenhouse gas emissions from their 1990 level by 2030. Switzerland sets out the details of how it proposes to achieve its target of net zero emissions by 2050 in its long-term climate strategy (→Federal Council 2021a). This involves making greater use of renewable energy sources, which is crucial to the decarbonisation of the economy and society.

In order to preserve its rich biodiversity and associated ecosystem services, Switzerland has adopted a biodiversity strategy featuring ten strategic goals (→ FOEN 2012). In addition, the Federal Council aims to ensure sufficient habitat is available to plants and animals and to write the ecological infrastructure into binding law: among other things, it would like to see at least 17% of the national territory covered by the core areas for biodiversity from 2030; these are also to be restored and connected (→ Federal Council 2022b). Through the Swiss National Soil Strategy, the Federal Council seeks to ensure that, from 2050 onwards, net soil use will be zero and that soil functions will be maintained (→ Federal Council 2020a). The Waters Protection Act calls for the restoration of rivers and lakes and for hydropower plants to undergo ecological remediation (bed load, hydropeaking, fish migration) so as to re-establish the natural functions of the bodies of water and strengthen their resilience and benefits to society. The Forest Policy seeks to designate 10% of the forest area as reserves and permanent islands of old growth by 2030, and to ensure that the forests and woods can fulfil their many and varied functions for society, the economy, the environment and the climate.

With regard to raw materials and the circular economy, the environmental impact at home and abroad is to be reduced along the entire life cycle of products and structures, material cycles are to be closed and resource efficiency improved. The Environmental Protection Act (EPA) sets out the principles that waste is to be avoided and must be recovered wherever possible. Thus, one of the basic ideas behind a circular economy is contained in the EPA.

How can Switzerland achieve its environmental targets?

Action must be taken at various levels to keep the environmental impact in check. This includes consistently enforcing national and international environmental regulations, making sustainable investments, using clean and resource-efficient technologies, and transforming production and consumption patterns, especially in terms of mobility, housing and the food and nutrition system.

Implement adopted measures and fill gaps

Climate

To meet the objective set by the Paris Agreement and achieve the goal of halving greenhouse gas emissions by 2030 compared to 1990, a further revision of the CO_2 Act is necessary. The draft approved by the Federal Council for consultation at the end of 2021 is intended to create a broad basis for future climate policy. The focus is on measures that will enable the general public to reduce CO_2 emissions in their everyday lives and which support the ongoing efforts of the various sectors. In addition, in 2021 the Federal Council adopted the dispatch on the Federal Act on a Secure Electricity Supply from Renewable Energy Sources as a means of further developing the energy strategy (\rightarrow Federal Council 2021d).

In the interests of **climate change adaptation**, the Federal Council adopted its second action plan for the 2020–2025 period (→ Federal Council 2020b). The measures it contains are intended to help address the risks of climate change, seize opportunities and increase the adaptability of ecosystems and society.

Sustainable finance, i.e. the integration of sustainability criteria into the financial sector is also key to achieving this goal. The Federal Council would like to see the Swiss financial centre become known globally as a credible location for investors who want to contribute to the environment and society in a comparable and measurable manner. To avoid greenwashing, it makes sense to encourage uniform definitions of sustainability impacts. Switzerland supports the 'UNEP Inquiry into the Design for a Sustainable Financial System' (→UNEP 2014). This programme aims to gather best practice examples and experiences from different countries in order to define strategies that better align the financial system with the needs of sustainable development. In spite of everything, the Swiss financial centre continues to invest heavily in the production of oil and coal.

At the 26th Climate Change Conference (COP), countries agreed on rules that exclude the double-counting by the nations involved of emissions reductions achieved abroad. Switzerland had previously committed to strict emissions trading rules in several bilateral agreements. During the conference, Switzerland also pledged more than CHF 50 million in funding, underlining its commitment to pay its fair share towards international climate financing.

Biodiversity

Switzerland will contribute to the UN's global biodiversity goals, which are expected to be adopted by the end of 2022 ('Post-2020 Global Biodiversity Framework').

The Federal Council is preparing an indirect counter-proposal to the popular initiative entitled 'For the future of our nature and landscape (Biodiversity Initiative)' with the aim of strengthening nature conservation³. The current **Biodiversity Action Plan** (Phase I 2017–2023) implements objectives of the Swiss Biodiversity Strategy (SBS) in three areas (→ Federal Council 2017a). The first area includes ecological infrastructure development and

species promotion. The measures in the second area exploit potential synergies with other policy areas such as agriculture, spatial planning, transport and the economy. The third area of action is aimed at spreading knowledge and raising awareness among the general population and key stakeholders.

In 2017, the Federal Council adopted the Action Plan on Plant Protection Products (→ Federal Council 2017b). That same year, Parliament enacted the Federal Act on the Reduction of Risks relating to the Use of Pesticides. These need to be further implemented in order to reduce the risks arising from plant protection products by half and to minimise the risks associated with biocides. In addition, in April 2022, the Federal Council adopted a package of ordinances on clean drinking water and more sustainable agriculture. The measures taken to reduce micropollutants in settlement areas must be consistently implemented and continued. It is also necessary to reduce nutrient inputs (nitrogen and phosphorus) from agriculture into ecosystems⁴.

In addition, progress is to be made with respect to the goals regarding the **restoration** of water bodies and the **ecological remediation of hydroelectric power plants** laid down in the Waters Protection Act.

Through the National Soil Strategy, adopted in 2020, the Federal Council is seeking to ensure that soil becomes a sustainable resource (→ Federal Council 2020a). For this to be achieved, reliable soil information is essential. That is why the federal government is setting up a competence centre for soil (known by its German acronym KOBO) and developing a concept for Swiss-wide soil mapping. The financial world has also recognised the risk of investments that harm biodiversity and, thanks to financial support from the federal government, an assessment tool that can be used anywhere in the world has been developed: ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) (→ UNEP 2018). However, this and similar tools are still not being used systematically.

Raw materials and the circular economy

Based on the report 'Federal measures for a resource-conserving, future-proof Switzerland (Green Economy)', the Federal Council tasked the administration in 2020 with

³ Message relatif à l'initiative populaire « Pour l'avenir de notre nature et de notre paysage (Initiative biodiversité) » et au contre-projet indirect (modification de la loi fédérale sur la protection de la nature et du paysage) (f, g, i)

^{4 19.475} Réduire le risque de l'utilisation de pesticides (f, g, i)

proposing further measures to conserve resources and boost the circular economy (\rightarrow Federal Council 2020e).

In 2020, the Environment, Spatial Planning and Energy Committee (ESPEC) of the National Council launched the **parliamentary initiative entitled 'Strengthening the Swiss Circular Economy'** which calls for a revision of the EPA⁵. By strengthening the circular economy, the environmental impact at home and abroad is to be reduced along the entire life cycle of products and structures, material cycles are to be closed and resource efficiency improved. Strengthening the circular economy is also intended to increase the performance and security of supply of the Swiss economy.

The 2021–2023 Action Plan accompanying the **2030 Sustainable Development Strategy** also features a number of measures dealing with consumption and production. Examples include action on food waste, the revision of the foreign economic strategy and doing more to monitor the impact of free trade agreements.

Consistently exploit synergies with other policy areas

Today's environmental problems are complex and can have multiple causes. In other words, the environmental impacts of mobility, housing and nutrition result from the interaction between various supply and demand factors, including values, lifestyles, social structures, markets, technologies, products and infrastructures, which also influence each other. Consequently, solving these problems requires cooperation across several sectors. Even better use will have to be made of these synergies in the future. Although environmental concerns already feed into many policy areas, they must be increasingly integrated into financial, economic, transport, agricultural, spatial planning, energy and health policy.

Fuel innovation

Innovation is key to moving mobility, housing and nutrition towards greater sustainability. Innovations can only be promoted if they satisfy high quality requirements and

thus effectively reduce environmental impacts. There are currently a number of different funding instruments that help to improve resource efficiency while at the same time strengthening the competitiveness of the Swiss economy. These include the federal government's environmental technology promotion⁶ and Innosuisse, the Swiss Innovation Agency⁷.

Technological innovations are possible in all areas of the environment: they are constantly emerging and have great potential. It is important that they receive support from the public authorities not only in the phase leading up to laboratory prototyping, but right through to the stage when they are ready to bring private investors on board. Examples of such innovations are negative emissions technologies (NET, Carbon capture and storage) (→ Federal Council 2022c)⁸, which store CO₂ in biomass or geological substrates, among other things, and synthetic aviation fuels, which are already being produced in pilot facilities. Digital applications help to avoid food waste in the catering sector or to connect transport services. Robots and drones that can spread fertilisers with high precision, for example, are further examples of technological advancements capable of playing a part in reducing environmental impacts.

However, in addition to technical innovations, the focus should also be on **new business models** such as exchange and sharing, 'use, not own', do it yourself and repair. The ability to weigh up the opportunities and threats and come up with safe, socially, economically and environmentally sound solutions in good time also requires a broad-based dialogue to take place between all the relevant actors.

Great potential is also to be found in **digitalisation** and technological change. Openly accessible environmental data can, for example, make the ecological aspects of products, services and consumption transparent, thus allowing investors, industry and consumers to make better-informed decisions and exercise responsibility more

^{5 20.433} Développer l'économie circulaire en Suisse (f, g, i)

⁶ Environmental technology promotion

⁷ Innosuisse

⁸ Negative emissions technologies









Reduced environmental impact thanks to recycled concrete

Some 32 million tonnes of gravel and sand are used in Switzerland every year to manufacture concrete (\rightarrow EMPA 2019). These are finite resources and their extraction leaves a mark on the landscape. Furthermore, the production of clinker – a key component of cement – is extremely energy-intensive and associated with high emissions of greenhouse gases (GHG): the cement industry is responsible for 6% of Switzerland's GHG emissions. If concrete from the building sector is recycled, this not only conserves mineral resources, but also reduces the demand for land for construction waste landfills.

In order to reduce its environmental impact and save space in landfills, the city of Zurich has constructed all of its high-rise buildings since 2005 using concrete containing at least 25% recycled aggregate. The city went a step further in 2015 and required the use of concrete made from cement containing slag-sand

in place of clinker (CEM III/B). This allows ${\rm CO_2}$ emissions per tonne of concrete to be reduced by a quarter. Thanks to the combination of recycled concrete and CEM III/B, the total environmental impact is reduced by an additional 10% without losing the robustness and other desired properties of concrete.

In addition, the circular economy principle — whereby environmental impacts can be most effectively reduced by sharing, reusing, repairing and recycling, and through longer life cycles overall — also applies in the construction sector. Key approaches are lightweight construction, the use of environmentally friendly building materials, extending the useful life of buildings, reusing building components, and modular construction methods (\(\rightarrow\) Housing).

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effectively. However, in order to avoid rebound effects – such as increased energy consumption – digitalisation must consistently focus on the conservation of resources and ecosystems as well as on climate change mitigation.

What are known as **nature-based solutions** can also make a significant contribution. Trees, green areas and expanses of water, for example, cool the urban climate. At the same time, selecting native species can promote biodiversity. In agriculture, cultivation methods such as agroforestry systems or the promotion of beneficial species can increase biodiversity. Building with local, renewable raw materials such as wood or straw stores a lot of carbon, thus contributing to climate protection.

Address challenges together

Implementing the existing legal bases, adopting technological innovations, consistently making the most of synergies with other policy areas, pursuing international environmental policy and seeking to create a sustainable financial system are not enough in themselves to protect the climate and biodiversity adequately and use raw materials sustainably. Instead, a fundamental change is called for, particularly with regard to mobility, housing and nutrition. This is also the conclusion of various reports by international bodies such as the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES), the International Resource Panel (IRP), the United Nations Environment Programme (UNEP), the UN World Food Summit and the Committee on World Food Security (CFS). This report summarises possible approaches to promoting sustainable production and consumption and illustrates them using examples of good practice.

These examples show that many different stakeholders are already at work today: an effective, long-term reduction in the environmental impact can be achieved when the authorities, business and science communities, and civil society work together. All actors are required to understand their roles and seize the opportunities to bring about the necessary change.

- Policymakers can create a favourable environment for achieving the desired changes in mobility, housing and the food and nutrition system.
- The federal government, cantons and communes must implement the spatial planning, transport, agricultural, energy and environmental policies.
- The business world has the ability to make production systems and value chains sustainable, thereby conserving natural resources. Eco-design aims to reduce a product's environmental impact along the entire value chain. In addition, companies contribute to sustainable development by exercising corporate social responsibility (CSR). They can also make promising investments and set ambitious and measurable targets.
- Science provides important foundations, insights and potential solutions for a more sustainable policy, economy and society. These include environmentally friendly technologies and production methods, a more efficient generation and use of resources and energy, digitalisation and the 'sharing society'.
- Civil society has the opportunity to play a part in protecting the environment and conserving resources. It can also launch local initiatives, support non-governmental organisations and use experimental spaces.

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Examples of good practices

These examples of good practices exist only in German, French and Italian



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