

March 20 2023

# Europe's water castle faces serious challenges to preserve its invaluable resource

**Pestalozzi Attorneys at Law | Environment & Climate Change - Switzerland**



EVELYN FREI



MELANIE VON  
RICKENBACH

- > [Introduction](#)
- > [Background](#)
- > [Current challenges](#)
- > [Actions](#)
- > [Comment](#)

## Introduction

Switzerland's Guidelines on Water 2022-2025 opens as follows:

*We are water. The body of an adult human being consists of 60 percent water. Without water, there is no human life. Water is life, and access to this resource is a human right. Even more: water is an indispensable prerequisite for human beings and thus for society as a whole.*

The guidelines are based on this observation and put people at the centre. They substantiate Switzerland's principles of the Foreign Policy Strategy 2020-23 and the International Cooperation Strategy 2021-24 in relation to the thematic priority of water. The structure is framed by the five key objectives of the United Nations (UN) 2030 Agenda for Sustainable Development:

- people;
- planet;
- prosperity;
- peace; and
- partnership.

The guidelines provide a concrete basis for Switzerland's commitment and set out corresponding principles.

Water is a resource of utmost importance in Switzerland. The Swiss Alps are central, acting as a water tower for neighbouring countries. Switzerland's mountains form an excellent reservoir for water. This reservoir holds about 6% of Europe's freshwater reserves. To preserve the quality of its water, Switzerland very carefully monitors and protects this resource.

## Background

At first glance, Swiss water protection is a success story. Since the 1980s, water quality has improved greatly. Thanks to the construction of wastewater treatment plants, hardly any excess nutrients, which would lead to algae growth and fish mortality, enter the waters today. However, a different analysis shows considerable deficits in the management of Switzerland's water bodies, which must now be addressed in order to preserve this precious resource of water for future generations.

It was not until the last third of the 19th century that the larger Swiss cities began to establish centralised water supplies (Bern and Zurich in 1868, Lucerne in 1873). Before that, most of the population drew drinking, washing and cooking water from wells. At the turn of the century, when it was discovered that water was a route of infection for cholera (1883) and typhoid fever (1906) and it was recognised that a poorly maintained tap water system spreads pathogens, public health and hygiene became the driving innovative force for modernising the tap water supply. By the last third of the 20th century, continuously improved infrastructure and the development of lake water provided the entire population with safe drinking water, such that cholera and typhoid disappeared from Switzerland.

The focus has now increasingly shifted towards wastewater management and related water and groundwater protection. Increasing industrialisation, new applications in agriculture (eg, fertilisers and pesticides) and new products for the care of body and clothes (eg, detergents) have polluted the waters of Switzerland with trace substances. Consequently, until the 1980s, foaming streams, rivers and lakes were part of everyday life in Switzerland due to high pollution levels. Bathing in open waters was prohibited or only allowed at an individual's own risk. This was mainly because wastewater was discharged into surface waters without any treatment.

As the population grew, this situation became unacceptable and step-by-step measures were introduced. In the middle of the 20th century, the generational work of wastewater treatment began. This manifested in the systematic construction of wastewater treatment plants, co-financed by the federal government.

Today, bathing in surface waters is possible throughout Switzerland, and the input of trace substances has been substantially reduced. The water quality in Switzerland has become very good. Water protection and regular controls guarantee drinking water of great quality. Thanks to the measures taken so far, 40% of the groundwater used for drinking can be fed into the drinking water network without any treatment. For the remaining 60%, simple disinfection is sufficient.

## Current challenges

Switzerland's water bodies and water resources are used intensively by society and the economy in a wide variety of ways:

- for the production of drinking and process water;
- for industrial production;
- for farming purposes;
- for energy production;
- as a place for leisure and recreation; and
- for wastewater disposal.

Settlement growth, intensive agriculture, industrial use and the expansion of hydroelectric power all increase the pressure on water bodies and affect water quality.

Consequently, the National Groundwater Monitoring (NAQUA) is concerned that Switzerland's good water quality is deteriorating, especially because of the following substances being disseminated into the water:

- nitrates;
- residues of pesticides;
- medicines; and
- micropollutants from industry and households.

The condition of the groundwater in Switzerland still allows for the production of sufficient quantities of safe drinking water. However, contamination of groundwater occurs at numerous monitoring sites of the NAQUA, especially in intensively farmed areas. The groundwater is most heavily polluted by nitrate. In addition, at more than half of the NAQUA monitoring sites, residues of artificial, and in some cases persistent, substances are detected in the groundwater, such as degradation products of pesticides. The areas surrounding drinking water wells are increasingly being used or built over and thus can no longer fulfil their protective function. This also means that the water protection legislation concerning groundwater protection is not being implemented consistently enough.

As a result, some drinking water catchments have to be closed. In the context of the UN agenda, Switzerland aims, as part of goal No. 6.1, to ensure the preservation of groundwater resources in order to ensure the quality of the drinking water and plans to maintain the value of the drinking water infrastructure. As a part of this preservation, nitrate levels will be reduced; however, progress has been limited so far. The goal to reduce consumption of drinking water has been more successful.

Hydropower production influences the amount of water and causes structural changes in water bodies. In order for watercourses to fulfil their function as habitats and migration corridors for aquatic organisms in the long term, sufficient residual water must flow everywhere. This is reflected in the UN agenda by goal No. 6.4, where Switzerland aims to ensure sufficient residual water amounts. Around 25% of the 980 remediations of the 980 water withdrawals points, which should have been carried out by 2012 to ensure sufficient residual water, are still outstanding today.

Climate change alters the temporal and spatial availability of water and increases the temperature of water bodies. In the Rhine near Basel, the temperature has risen by more than two degrees Celsius since the 1960s. Climate change and the discharge of heated water (eg, from cooling plants or wastewater treatment plants) contribute to this development. Similar temperature increases can also be observed in other water bodies in Switzerland. Consequently, there have been large-scale deaths of fish, and heat-sensitive plants and animals are disappearing. In addition, streams are increasingly dried up in summer.

Intensive land use in the past has led to massive changes in watercourse structures and landscape impoverishment. Numerous watercourses have been blocked or straightened to meet the increasing demand for land, or to protect settlements from floods. The space allotted to water bodies is thus limited in many places to a drainage channel. Switzerland's hydrological network comprises approximately 65,300 kilometres of rivers and streams. Today, 14,000 kilometres or 22% of the hydrological network is heavily modified or culverted by structural measures, such as walls, artificial steps or bank obstructions. In the case of watercourses, in the Alpine valleys below 600 metres above sea-level, as much as 52% of the total watercourse length is, from an ecomorphological standpoint, in poor condition. Around 10,800 kilometres of watercourses range between significantly impaired, unnatural and in need of restoration.

The substantial deterioration of water bodies and wetlands is reflected in the red lists of endangered species. More than one-fifth of the species that are threatened by extinction or are already extinct in Switzerland are linked to water bodies, and another fifth to shores and wetlands. Therefore, Switzerland has set itself the goal No. 6.6 to restore water bodies with heavily built-up shores to their natural state as part of the UN agenda.

### **Actions**

Switzerland has a good legislative basis for the protection of groundwater and surface water bodies in its Waters Protection Act and the associated ordinance. In order to remediate the impairment of Switzerland's water quality and of Swiss water bodies as a precious habitat, Switzerland is taking the following measures:

- restoring water's natural function as a habitat via the remediation of water bodies that have been blocked, straightened or culverted. With the available funds, only about one-quarter of the impaired water bodies can be revitalised. The cantons have identified a high ecological benefit for revitalisation in almost 10,000 kilometres of watercourses. It is planned that approximately 4,000 kilometres of constructed watercourse sections will be revitalised within 80 years. This corresponds to about 50 kilometres per year. Between 2011 and 2019, a total of around 160 kilometres was revitalised, which corresponds to about 18 kilometres per year;
- designating a minimum area for surface water bodies (ie, agricultural areas located within the surface water areas must be managed as ecological compensation areas). Around 20 million Swiss francs have been added to the agricultural budget to this purpose. Around 30-40 million Swiss francs per year is allocated to remediation measures of the surface areas. The first projects are currently being implemented;

- eliminating the negative impact of hydropower production (e.g. hydropeaking) and ensuring migration of fish. To achieve this goal by 2030, 50 million Swiss francs are made available annually;
- implementing measures to eliminate micropollutants. Based on the criteria of the Water Protection Ordinance, the cantons determine which wastewater treatment plants to upgrade and on which to carry out additional cleaning measures. With 100 enhanced plants, micropollutants can be removed from almost two-thirds of all wastewater;
- reducing the input of pesticides into water bodies. In order to reduce the discharge of plant protection products, especially from agriculture, into water bodies, the Federal Council has adopted the Action Plan on Risk Reduction and Sustainable Use of Plant Protection Products. Among other measures, plant protection products are re-evaluated and, depending on the results, their use is banned;
- reducing climate-induced changes in the water-cycle. To counter the effects of climate change, water management is adapted by the federal government; and
- transboundary water management – the federal government works together with the riparian nations of transboundary water bodies on programmes for cross-sectoral water management in international catchment areas, such as Rhine 2020. Switzerland supports EU member states in implementing the European Water Framework Directive in accordance with international treaties and their national legislation.

#### **Comment**

Switzerland still enjoys the privilege of having large, excellent quality water reserves. However, in recent decades, intensive land use, intensive agriculture, wastewater from industry and households and global warming have posed substantial threats to water. Switzerland has drawn up a comprehensive plan for the preservation of this invaluable resource. In part, however, implementation of these ambitious goals has proven difficult and Switzerland is significantly behind in implementing the planned measures. Therefore, considerable efforts will be required in the future to protect water reserves in Switzerland.

*For further information on this topic, please contact [Evelyn Frei](mailto:Evelyn.Frei@pestalozzilaw.com) or [Melanie von Rickenbach](mailto:Melanie.vonRickenbach@pestalozzilaw.com) at Pestalozzi Attorneys at Law by telephone (+41 44 217 91 11) or email ([evelyn.frei@pestalozzilaw.com](mailto:Evelyn.Frei@pestalozzilaw.com)) or ([melanie.vonrickenbach@pestalozzilaw.com](mailto:melanie.vonrickenbach@pestalozzilaw.com)). The Pestalozzi Attorneys at Law website can be accessed at [www.pestalozzilaw.com](http://www.pestalozzilaw.com).*