02

Territory and environment

Neuchâtel 2024

Land use statistics

Survey of land use and cover

Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Confederation

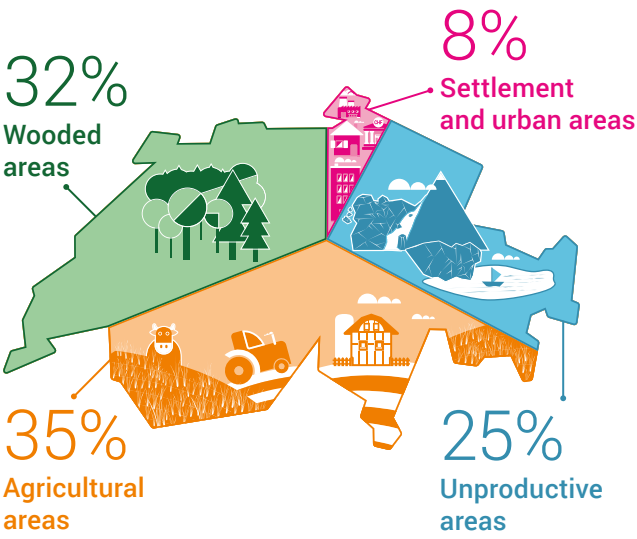
Federal Department of Home Affairs FDHA
Federal Statistical Office FSO

Land use statistics in Switzerland

The FSO's land use statistics provide information on the current situation and changes in land use and cover in Switzerland. They are an essential tool for long-term observation of the territory. In particular, the findings of these statistics make it possible to assess whether and to what extent changes in land comply with the objectives of Switzerland's spatial development policy, which aims to make economical use of land as a resource.

Currently, findings from four surveys for the whole of Switzerland are available for 1985, 1997, 2009 and 2018. Each year refers to the end of a multi-year survey period. Another survey began in 2021. Partial findings will be published every year until the end of the survey in 2027.

Land use in Switzerland



Source: FSO – Switzerland's Land Use Statistics (AREA)

The latest findings from the land use statistics can be found here:

www.statistics.admin.ch → Look for statistics → Territory and environment → Land use and land cover

The land use statistics survey

The land use statistics are based on high-resolution digital aerial images covering the whole of Switzerland, provided by the Federal Office of Topography (Swisstopo).

A grid of sample points spaced 100 metres apart is superimposed on these aerial images. In all, there are 4.1 million points whose position remains identical from one survey to the next.

Specially trained land use interpreters examine the aerial images on a 3D stereoscopic monitor and assign each point to one of the predefined land use and land cover categories. To make it easier to classify sample points, the interpreters have at their disposal additional information such as the Swiss cadastral system, the building register, a large-scale topographic landscape model, the utilised agricultural area inventory, as well as any other relevant data from other offices (e. g. FOEN, WSL). In some rare but complex cases, the information available is not enough and a field visit is necessary.

Landslides (Brusio GR) – aerial image

Photograph of the terrain

www.statistik.ch → Statistiken finden → Raum, Umwelt → Arealstatistik Schweiz (in German and French)

Human interpretation and artificial intelligence

Since 2022, new technologies have been used for land use statistics. Due to the development of artificial intelligence, the range of possibilities in the field of automated image recognition has grown considerably in recent years.

The use of these technologies is particularly suited to land use statistics, because of the huge quantities of data available to train automated classification models: in previous surveys, millions of aerial images have been interpreted by experts and all these images, together with their classification, have been stored digitally.

The tool used for the land use statistics is called **ADELE** (**A**rea **DE**ep **LE**arning). ADELE enables work to be done more efficiently, automating part of the interpretation process and helping with decision making. In combination with the experts' invaluable knowledge, these new tools will enable the creation of new cartographic products.

www.statistics.admin.ch → Look for statistics → Territory and environment → Land use and land cover → Artificial intelligence: First implementation in land use statistics

Nomenclature

The land use statistics have 46 different categories for land use and 27 for land cover. Use and cover are recorded separately so that each sample point is allocated two codes. This means that either the type of cover or the type of use can be considered alone, or these two characteristics can be combined into a standard nomenclature.

Standard nomenclature

Settlement and urban areas: industrial and commercial areas, building areas; road areas; railway areas; airports and airfields; special urban areas; recreational areas and cemeteries
Agricultural areas: orchards; vineyards; horticulture; arable land; natural grasslands; local pastures; alpine agricultural areas
Wooded areas: closed forest; open forest; brush forest; woods
Unproductive areas: lakes; rivers; unproductive vegetation; bare land; glaciers, perpetual snow

Time series

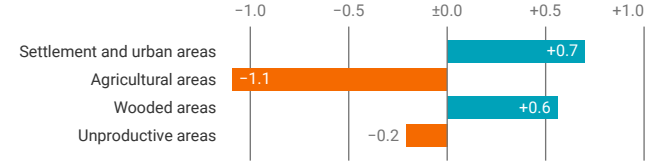
For the best possible comparability of findings over time, the land use statistics' nomenclature has remained unchanged or any modifications have been uniform.

www.statistik.ch → Statistiken finden → Raum, Umwelt → Arealstatistik Schweiz (in German and French)

Analyses et findings

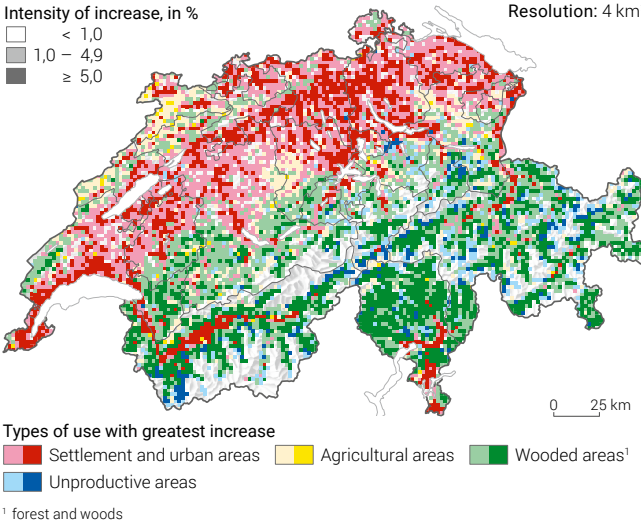
Change in land use in m² per second between 1985 and 2018

Increase and decrease by main category



Source: FSO – Land use statistics (AREA) © FSO 2023

Main newly emerged uses, 1985–2018



[1] forest and woods

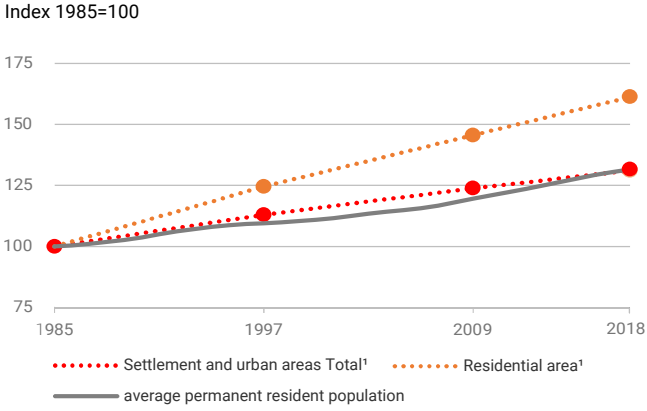
Source: FSO – Land Use Statistics (AREA) © FSO 2021

www.statistics.admin.ch → Look for statistics → Territory and environment → Land use and land cover

Indicators

The results of the land use statistics can be used as indicators to monitor the development of the Swiss territory.

Growth in settlement areas compared with population

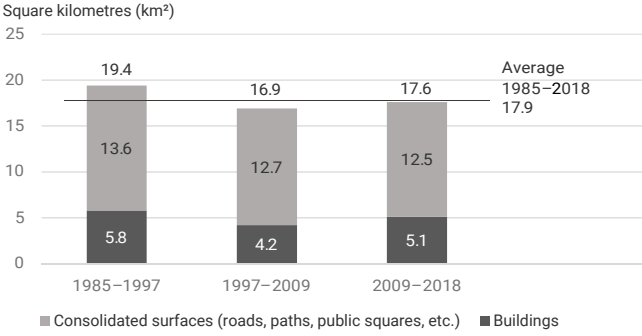


¹ Data only collected for 1985, 1997, 2009 and 2018, which are the final years of respective multi-year survey periods

Source: FSO – Land use statistics (AREA), Population and Household © FSO 2021

Annual increase in sealed surfaces

Average annual increase by observation period and type of sealed surface



Source: FSO – Land use statistics (AREA) © FSO 2021

www.statistics.admin.ch → Look for statistics → Territory and environment → Land use and land cover → Settlement and urban areas Degree of sealing

Changes in land use

The Swiss landscape is changing, as shown by this example of agricultural areas being replaced by settlements and urban areas in Grand-Saconnex (GE).

1:25 000

1980

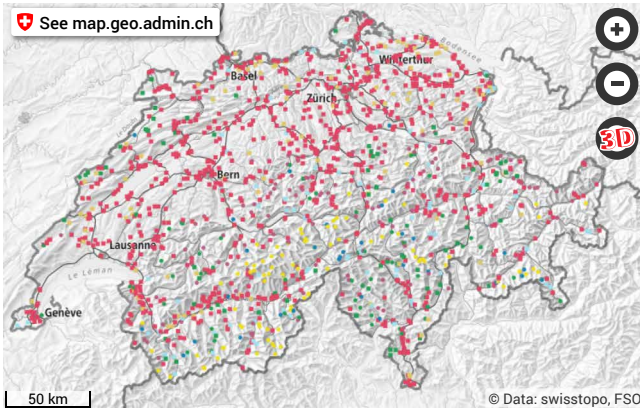
1992

2004

2012

2020

More than 1500 illustrations showing different types of land use change in Switzerland are available on the Confederation's Geoportal.



For each point there is a record detailing the type of development and a series of associated images.

www.map.geo.admin.ch → Maps of Switzerland → FSO

Land use statistics quiz

Test your interpretation skills!

www.quiz.bfs.admin.ch → Arealstatistik (in German and French)

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The MONET 2030 indicator system
www.statistics.admin.ch → Look for statistics → Sustainable development → The MONET 2030 indicator system