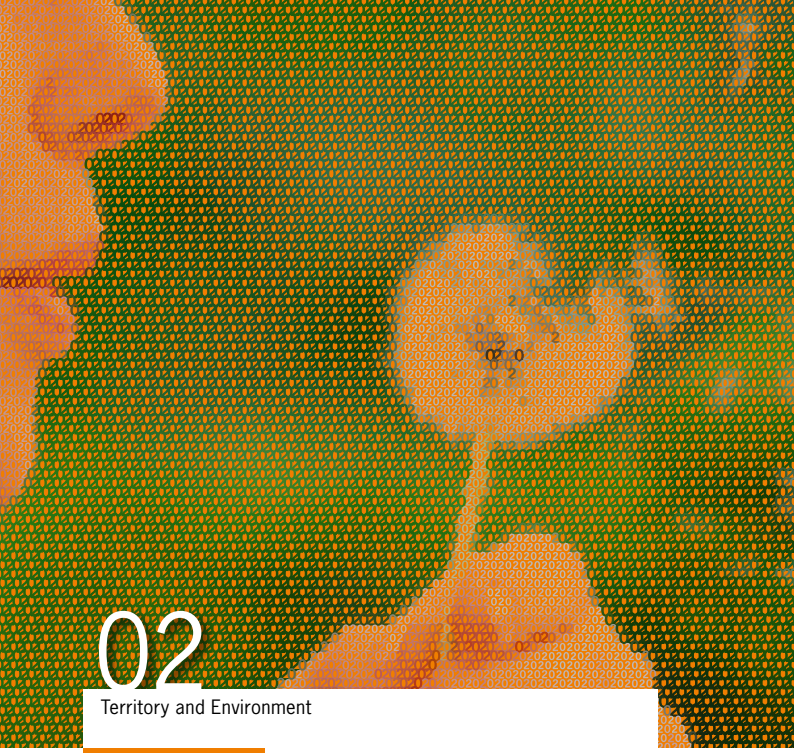

02

Territory and Environment

694-1100

Swiss Environmental Statistics
A Brief Guide 2011

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Swiss Confederation

Federal Statistical Office FSO

Federal Office for the Environment FOEN

Neuchâtel, 2011

REMARKS

Index
Trends in totally different variables can be directly compared using indices, on condition that the same year is chosen as a basis (e.g. 1990=100).

Rounded figures
Figures are rounded up or down, which may mean that their sum differs from the total given.

Glossary
Terms in *italics* are explained in the glossary (page 37).

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SWISS ENVIRONMENTAL STATISTICS
A BRIEF GUIDE 2011

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1 Population and households

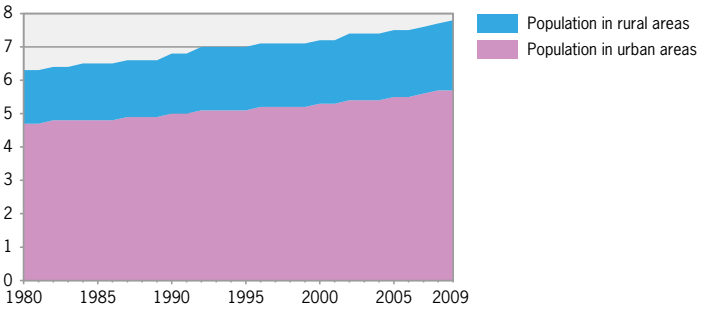
At the end of 2010, just under 7.9 million people lived in Switzerland. This is 1% more than in the previous year and 24% more than in 1980.

Between 1980 and 2009, the number of private households increased by 39%.

In 1980 households were composed on average of 2.5 persons, in 2009 2.2 persons.

In the 1980s and early 1990s population growth in rural areas was greater than in urban areas. The town became increasingly the place of work and the surrounding countryside the place of residence. The consequences of this trend are increased building in rural areas as well as growing commuter flows. Since 1999 growth in urban areas has once again been greater than in rural areas.
Changing housing habits also affect the environment: The desire for more living space has led to a greater number of households in proportion to population growth – the number of people per private household has fallen.

Population
Permanent population at the end of the year, in millions



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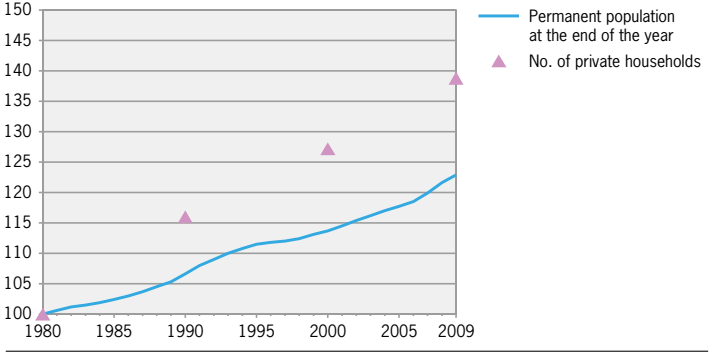
www.statistics.admin.ch → Topics → Population

Population and households
Index 1980=100



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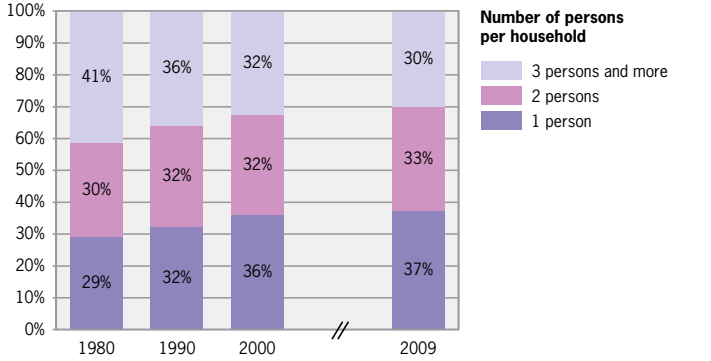
Household size (private households)
Percentage of all private households



Source: Federal Statistical Office

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2 Agriculture

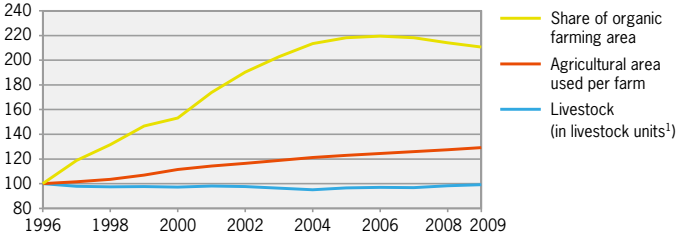
After growth at the end of the 1990s, the proportion of organic farmland has been falling since 2007. In 2009, 11% of utilised agricultural area was used for organic production.

Since 1990 agriculture's nitrogen surplus has decreased by 22% and stagnated since 2000.

In 2009 agriculture was responsible for 84% of methane and 79% of nitrous oxide gas emissions (totalling 12% of all greenhouse gas emissions).

The proof of ecological performance (ÖLN) constitutes the basis for the implementation of environmental criteria in agriculture, and is a prerequisite for federal payments. The conditions include the well-balanced use of fertilisers, a minimum of 7% ecological set-aside areas, crop rotation, appropriate protection of soils and livestock and the restrained and specific use of crop protection agents. Since 2001, the Ordinance on Ecological Quality (ÖQV) offers additional financial support for ecological compensation areas of particular biological quality and for the interconnection of such areas. These measures are intended to favour natural biodiversity, reduce the pollution of rivers and lakes and promote animal-friendly conditions for livestock.

Changes in agriculture
Index 1996=100



[1] With livestock units (LU) different productive livestock can be compared to one another. 1 LU equals feed consumption, manure and slurry of a cow weighing 650 kg.

Source: Federal Statistical Office

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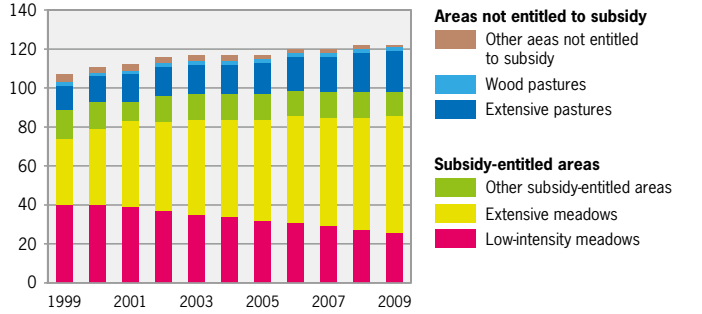
More about this topic:

www.statistics.admin.ch → Topics → Agriculture, forestry
www.foag.admin.ch

Ecological compensation areas

Subsidy-entitled areas and areas not entitled to subsidy (excluding standard fruit trees), in thousand hectares



Source: Federal Office for Agriculture

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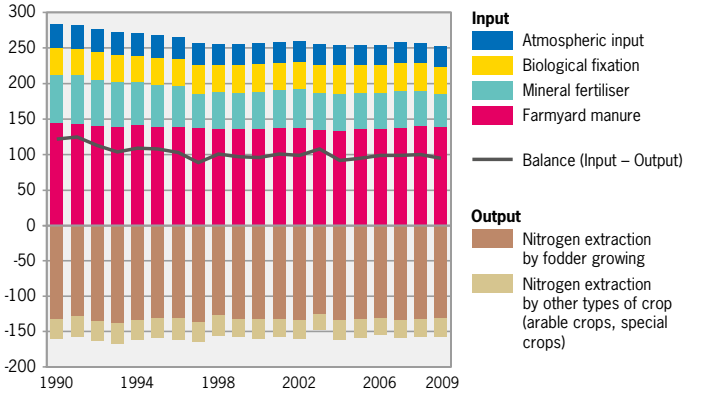
Nitrogen balance of agricultural areas

Amounts of nitrogen entering agricultural soils or extracted from them, in thousand tonnes



Source: Federal Statistical Office

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3 Consumption

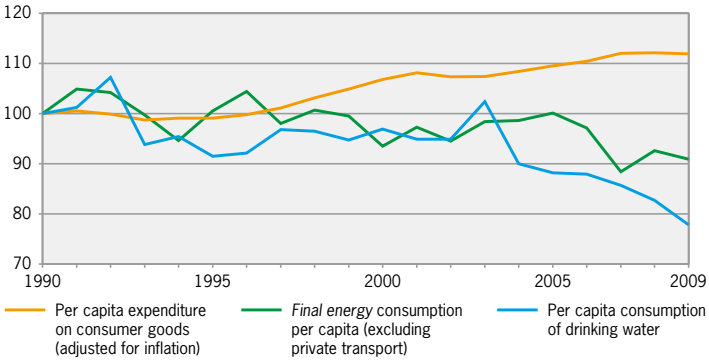
Between 1990 and 2009, average consumer spending per person increased by 12% (inflation-adjusted).

In 2009, households (excluding private transport) accounted for 29% of *final energy* consumption.

In 2009, the daily consumption of drinking water per person was 202 litres.

Our life-style and consumption habits are closely linked to our consumption of energy, drinking water and materials as well as with the amount of waste produced. In spite of declining consumption per capita, overall consumption can still increase due to the growing population.

Household expenditure on consumer goods, consumption of drinking water and energy
Index 1990=100



Sources: Federal Statistical Office; Federal Office of Energy; Swiss Association of Gas and Water Suppliers

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www.bafu.admin.ch/products

4 Energy

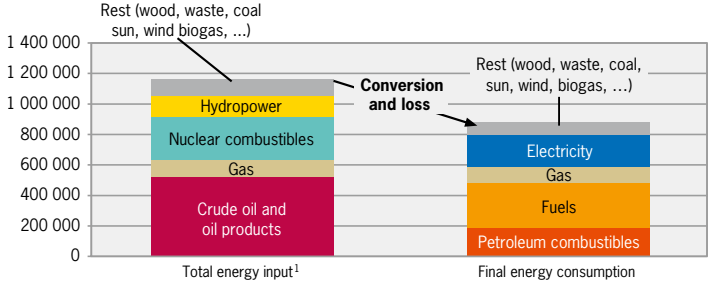
Between 1990 and 2009, *final energy* consumption rose by 9.9% but in comparison to 2008 it fell by 2.5%.

In 2009, 19% of final energy consumption was derived from *renewable* sources (including wood and hydro-power).

In 2009, 39% of electricity generated in Switzerland came from nuclear power stations.

Short term energy consumption is dictated by the economic situation and weather conditions. In the longer term, however, population and economic growth as well as technological and lifestyle changes are also determining factors.
Representing around a third of *final energy* consumption, transport is proportionally the largest consumer group. Households account for a quarter (excluding private transport, in particular heating energy), industry, services and agriculture for the rest. Four-fifths of Switzerland's energy needs are supplied from abroad, particularly by importing oil, natural gas and nuclear combustibles. Fossil fuels (oil, natural gas and to a lesser extent coal) account for around two-thirds of the energy consumed in Switzerland. Extraction, production and consumption of energy have an effect on the environment. Air pollutants and greenhouse gases are released into the atmosphere during burning processes.

Total energy input and final energy consumption, 2009
By energy source, in terajoules



[1] incl. export surplus of electricity (0.7%)

Source: Federal Office of Energy

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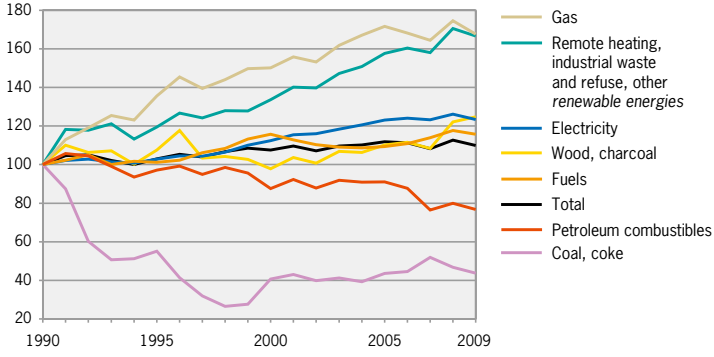
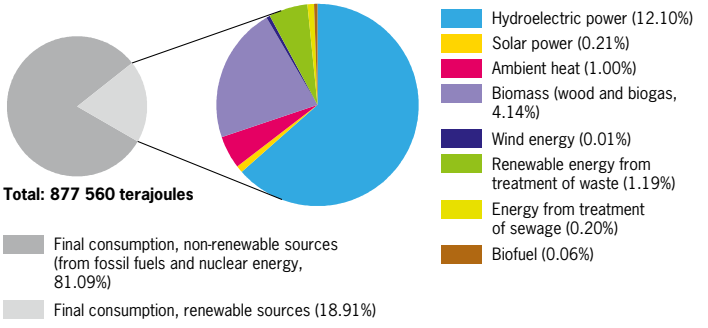
Final energy consumption by energy carrier
Index 1990=100



Source: Federal Office of Energy © FSO

Share of _renewable energy_ in _final energy_ consumption, 2009
By technologies



Source: Federal Office of Energy © FSO

5 Transport and mobility

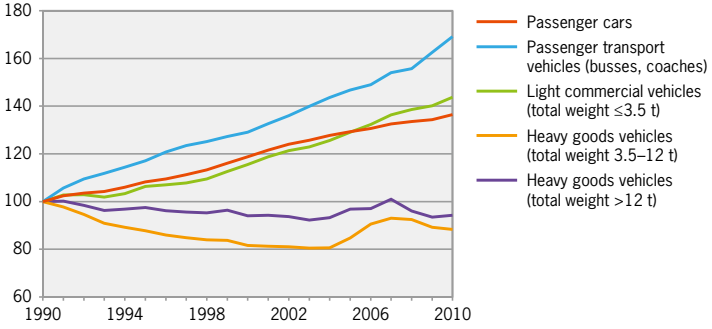
In 2009 private motorised transport was responsible for three-quarters of passenger transport on land.

In 2009, 64% of freight transport performance was carried out by road.

In 2010, 4.1 million passenger cars were registered in Switzerland.

There are many aspects to the downside of increased mobility: noise pollution, land use and landscape fragmentation resulting from an expanding transport infrastructure, the *emission* of *greenhouse gases* and increasing air pollution: these are all a burden on the environment. Although technological improvements have led to a reduction in the emission of air pollutants per kilometre travelled, due to the increase in traffic these successes can only be seen as relative.

Pool of road motor vehicles
Index 1990=100



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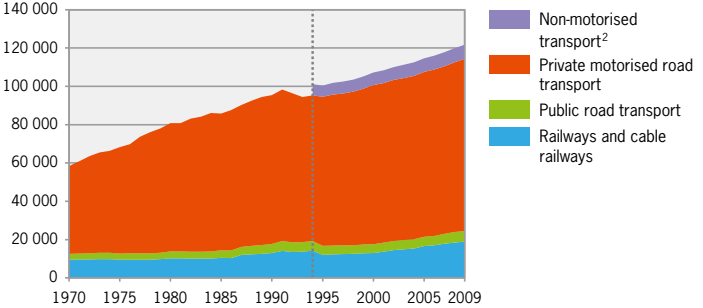
Passenger transport performance
Million person-kilometres[1]



[1] Person-kilometre: one kilometre travelled by one person
[2] Non-motorised transport registered since 1994

Source: Federal Statistical Office

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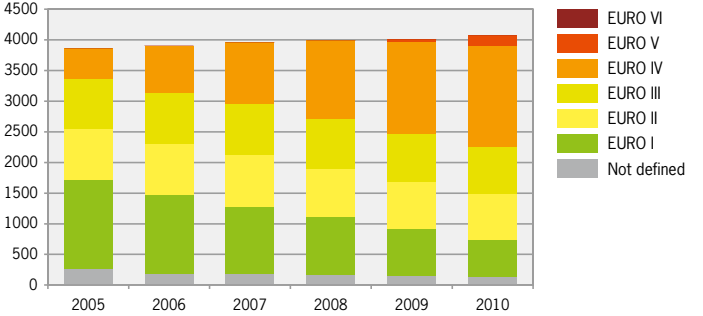
Passenger cars by *emission* categories
Number of vehicles that meet the relevant Euronorm[1], in thousands



[1] The Euronorms define limits for pollutant emissions (carbon monoxide, hydrocarbons, nitrogen oxides and particulate matter) for new cars. The higher the norm, the stricter are the requirements.

Source: Federal Roads Office

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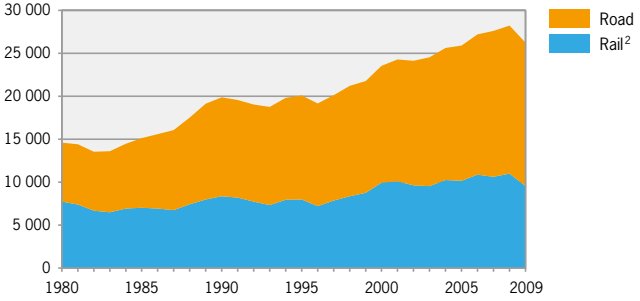
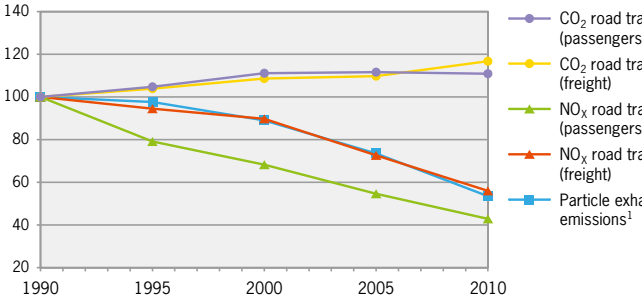
Freight transport performance
Million tonne-kilometres[1]



[1] Tonne-kilometre: transport of one ton for one kilometre
[2] Net tonne-kilometres: not including weight of freight transport vehicles (and trailers), containers and mobile bodies in combined transport

Source: Federal Statistical Office © FSO

CO_2, nitrogen oxide (NO_X) and particle (PM) stemming from exhaust *emissions* caused by road traffic
Index 1990=100



[1] Particle exhaust is only a part of fine dust emissions *(PM10)*. Fine dust also includes those particles which enter the atmosphere through abrasion and resuspension.

Source: Federal Office for the Environment © FSO

6 Noise

In 2009, 15% of the population was exposed during the day to noise from road traffic that exceeded the legal limit set by the Noise Abatement Ordinance.

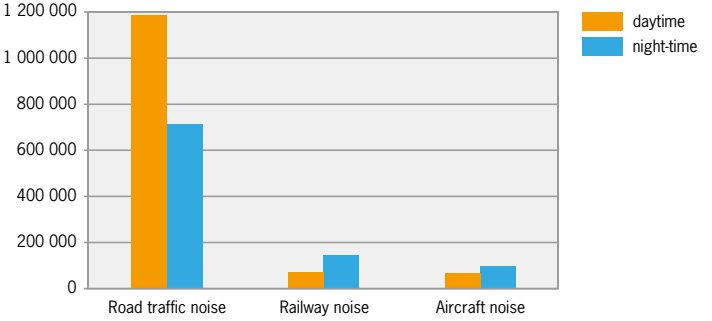
Between 1985 and 2009, CHF 1.6 billion was spent on road noise reduction.

Between 1985 and 2009 about 148 km of noise protection walls were erected for rail noise reduction.

People are subjected to noise in their surroundings, their job and their leisure time. Noise pollution consists of undesirable sounds whose effects of disturbance are highly subjective. The main source of noise pollution is traffic. Both the psychological effects (discomfort, stress, communication and sleeping problems) and the physical effects (damage to hearing, high blood pressure) of noise on health are often underestimated. At the same time, noise pollution can also have economic consequences such as the difficulty to let certain properties and rising spatial development costs, or indeed social consequences.

Persons affected by noise

Number of persons exposed to noise immissions over the legal limit, 2009



Source: Federal Office for the Environment

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More about this topic:

www.bafu.admin.ch/state-noise

7 Non-ionising radiation

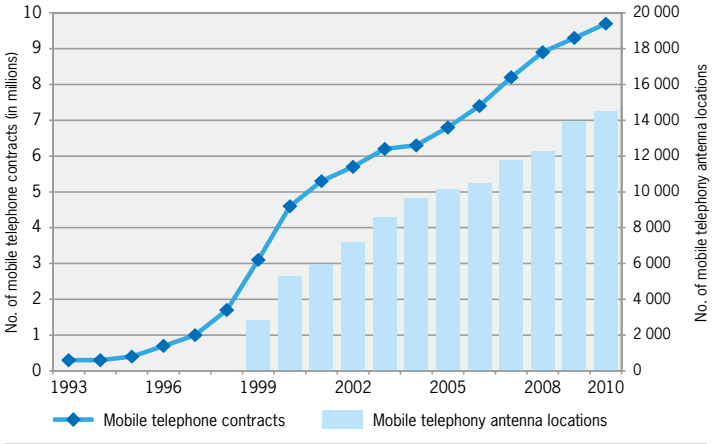
Since 2007, the number of registered mobile phone subscribers outnumbers the population. At the end of 2010 there were 124 mobile phone contracts for ever 100 persons.

In 2010, mobile telephony antennas were situated at almost 14,500 locations.

The threshold levels for *immissions* are generally respected.

Technologically produced non-ionising radiation (NIR) – commonly known as electrosmog – is the product of installations that supply electricity, electrical appliances and emitters for various telecommunication uses. To date science is unable say if and to what extent long-term exposure to non-ionising radiation may be harmful to health.

Mobile telephone contracts and mobile telephony antennas



Source: Federal Office of Communications

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More about this topic:

www.bafu.admin.ch/state-electrosmog

8 Chemicals

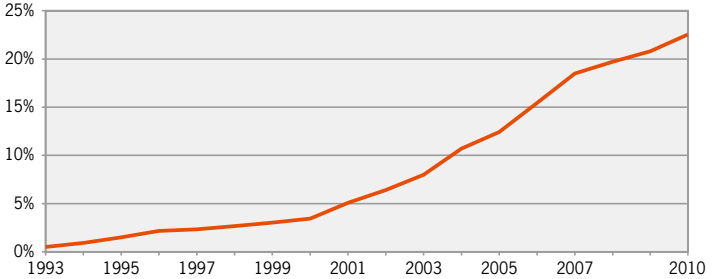
Worldwide some 100,000 chemical substances are used for commercial purposes.

In 2010, 29 new substances were registered in Switzerland.

With a share of about 4% of worldwide exports of chemical and pharmaceutical products, Switzerland was the seventh largest exporting country in the world in 2010 in this product range.

Substances are natural or manufactured chemical elements and compounds. Although much pollution has been reduced, countless chemicals whose origin, effects and behaviour are only partly known are still found in the environment. Against this background the testing of new substances on the market, but also of well-known ones, for their environmental compatibility plays a central role.
The same applies to nano materials and their wide number of application possibilities which could prove to be positive for the environment but at the same time pose a certain danger for human beings and the environment.

Share of hitherto assessed chemicals
100%=4638 OECD registered substances, of which annually at least 1000 tonnes are produced



Source: Organisation for Economic Cooperation and Development (OECD) © FSO

More about this topic:

www.bafu.admin.ch/state-chemicals

9 Biotechnology

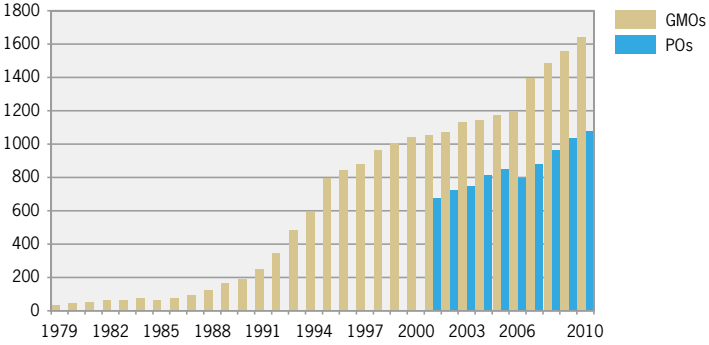
At the end of 2010, 60% of activity in the field of biotechnology in closed systems dealt with *genetically modified organisms* and 40% with pathogenic organisms.

In 2010, 251 notices and applications for work with genetically modified or pathogenic organisms in closed systems were registered.

In 2010, no new applications were made for the experimental release of genetically modified plants. Three already approved experiments involving the trial release of genetically modified plants were carried out.

Activity involving *genetically modified* or pathogenic organisms is strictly regulated in Switzerland. The principal aim of legislation in this respect is to protect human health and the environment. In addition, apart from taking into account ethical issues, the freedom of choice for consumers and the preservation of biodiversity have to be guaranteed.

Activities with *genetically modified organisms (GMO)* and pathogenic organisms (PO) in closed systems
Number of activities



Source: Federal Office for the Environment

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More about this topic:

www.bafu.admin.ch/state-biosafety

10 Waste and contaminated sites

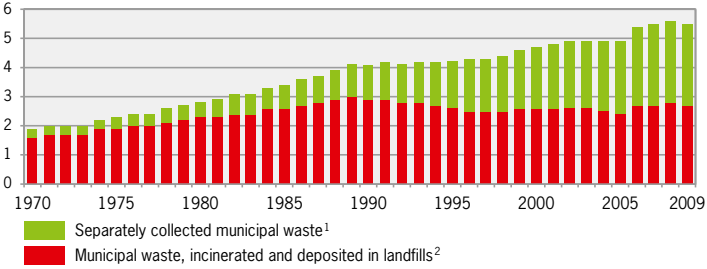
In 2009, 700 kg of municipal waste was produced per person. In 1990 this figure was 603 kg per person.

In 2010 a total of 6345 cubic metres of radioactive waste was stored in intermediate storage in Switzerland.

In Switzerland there are some 50,000 polluted landfill, treatment or accident sites. Around 4,000 of them are classified as *contaminated*.

Sooner or later every product becomes waste. In Switzerland over the past 40 years, with the exception of short-term economic-driven fluctuations, the annual amount of municipal waste has increased continually. Due to improvements in the infrastructure of waste management, the manufacture, transport and use of products often cause much greater environmental damage today than their disposal in accordance with regulations.
Contaminated sites present a different picture. Careless handling of environmentally hazardous substances and wastes over many decades has left its mark on the substratum. These contaminated sites are now undergoing remediation.

Municipal waste
Million tonnes



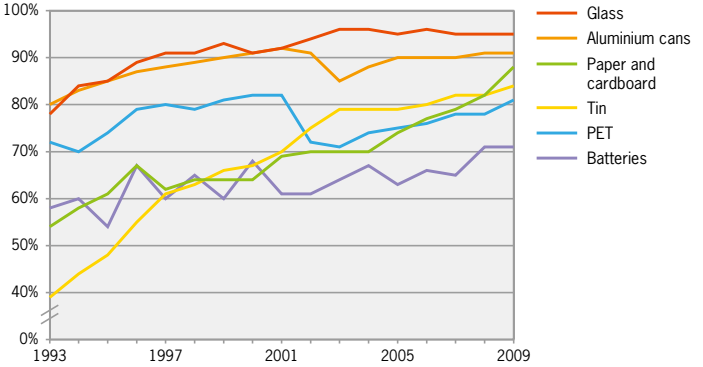
[1] Total comprising compost, paper and cardboard, glass, tin, aluminium, PET, textiles, batteries (since 1993), electrical and electronic devices (since 2001)
[2] The figures from 2004 include only domestic waste without imports.

Source: Federal Office for the Environment © FSO

More about this topic:

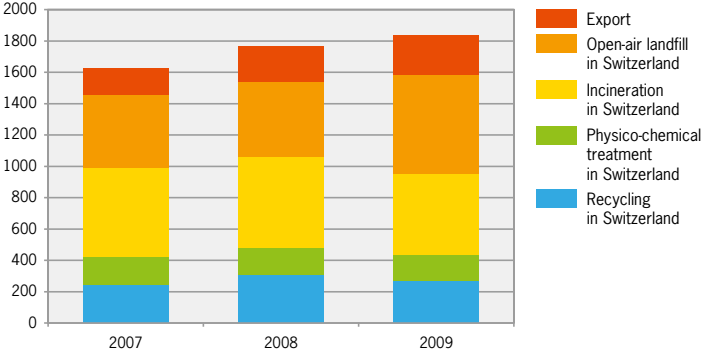
www.bafu.admin.ch/state-wastemanagement
www.bafu.admin.ch/state-hazardouswaste
www.bafu.admin.ch/state-contaminatedsites

Separately collected municipal waste (recycling)
Collection rate



Source: Federal Office for the Environment © FSO

Hazardous waste
By treatment type, in thousand tonnes



Source: Federal Office for the Environment © FSO

11 Landscape and spatial development

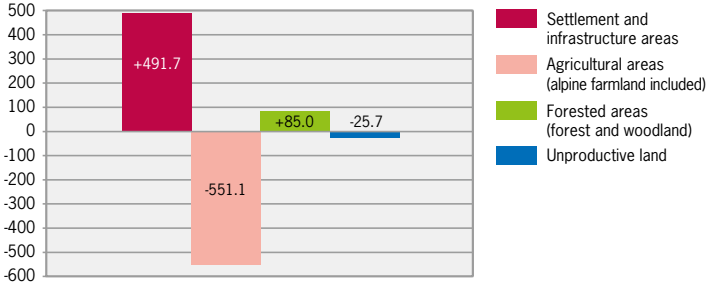
Between 1983 and 2007 settlement areas increased by 23% and agricultural areas (incl. alpine farming) decreased by 4.8%.

Between 2001 and 2007, the annual increase in landscape fragmentation was 1.6 times higher than between 1980 and 2001.

At the beginning of 2011, 4% of the total surface area of Switzerland was strictly protected. (e.g. national park, swamp and moorland).

Switzerland is rich in natural and rural landscapes, which play an important role in the standard of living and cultural diversity as well as constituting a major resource for tourism. The intensive use of natural resources puts a strain on the landscape. The increase in the expansion of built-up areas and of transport infrastructure is often achieved at the expense of agricultural areas. At the same time, the tendency to fragment the landscape more and more prevents wild animals from moving freely in their natural habitats. It is exactly this freedom of movement, however, which is an important prerequisite for reproduction and thus for maintaining the species.

Land use change over 24 years
In square kilometres, data base: 63.1% of Switzerland's surface area, 1983–2007



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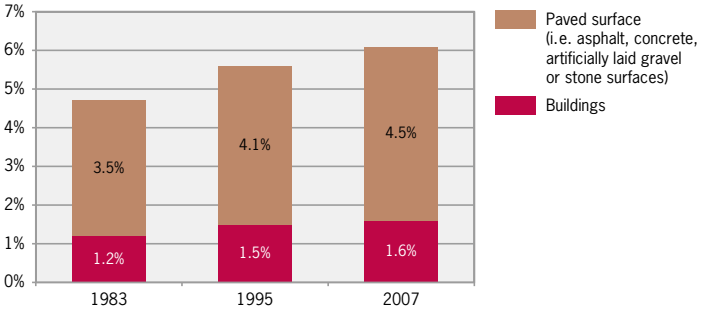
More about this topic:

www.statistik.admin.ch → Themen → Raum, Umwelt → Bodennutzung, -bedeckung
www.bafu.admin.ch/state-landscape

Soil sealing

Proportion of sealed areas as a percentage of total area, data base: 63.1% of Switzerland's surface area



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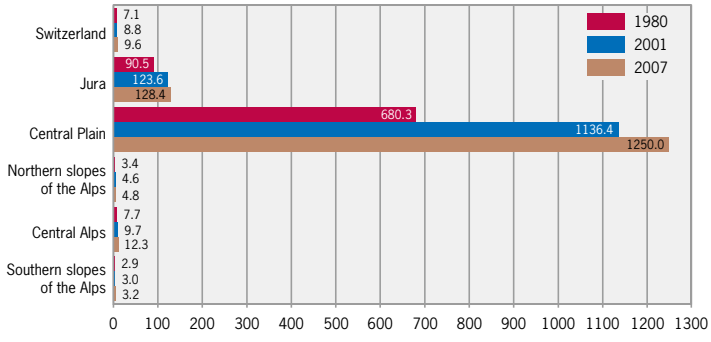
Landscape fragmentation

Effective mesh density (number of meshes per 1000 square kilometres), taking account of roads down to class 4



Source: Federal Office for the Environment, Landscape Monitoring Switzerland © FSO

12 Forest and timber

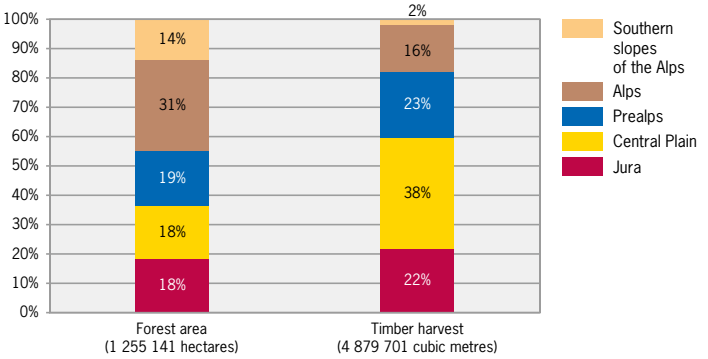
Just under a third of Switzerland's surface area is covered by forest.

In 2009, 4.9 million cubic metres of wood were harvested, of which 38% came from the Central Plain.

32% of the wood harvested in 2009 was used for energy.

The forest fulfils a multitude of functions and is expected to meet many demands. Forests offer protection from natural hazards such as avalanches, rock fall and landslides. They are an essential part of the Swiss landscape and are important for leisure and recreation activities. Forests provide an irreplaceable habitat for many animals and plants. In addition the forest is important for the climate (among other things as carbon absorbers) as well as for air and water quality.
The forest also provides an economic service in the form of the resource timber: timber is a renewable raw material and energy carrier.

Timber harvest and forest area, 2009
Distribution of timber harvest and forest area



Source: Federal Statistical Office

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More about this topic:

www.statistics.admin.ch → Topics → Agriculture, forestry
www.bafu.admin.ch/state-forest
www.bafu.admin.ch/state-timber

13 Soils

Between 1983 and 2007 the percentage of sealed soils rose from 4.8% to 6.2%.

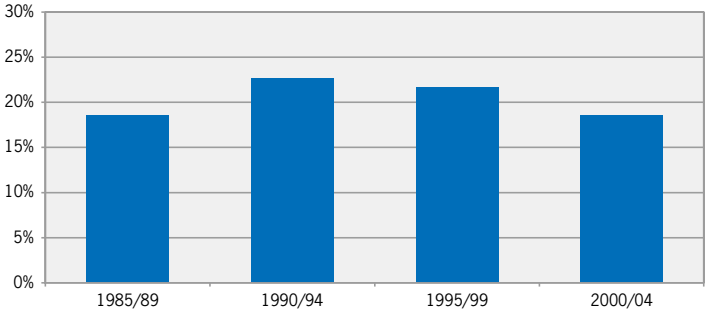
Concentrations of copper above threshold levels were found from 2000-2004 most frequently in soils used for intensive cultivation (44%), but never in forest soils (0%).

Concentrations of lead above threshold levels were found from 2000-2004 in 4% of measuring stations in forest soils but never in soils used for intensive cultivation (0%).

The soil is a vital natural resource for mankind and for millions of organisms. Whereas air and waters are likely to recover in a matter of weeks or a few years upon removal of a pollution source, soils often need centuries to regain a healthy condition. Pollutants that enter the ecological cycle, such as heavy metals and organic compounds which are difficult to break down, accumulate in the soil where they may obstruct important functions of the soil and enter the food chain through plants. They may subsequently harm animal and human health through direct or indirect consumption. In addition to these chemical processes, the fertility of the soil may also be affected through physical processes such as erosion or compaction.

Heavy metal soil pollution

Percentage of 97 monitoring stations with at least one measurement above guideline limits for lead, copper, cadmium or zinc



Sources: Federal Office for the Environment; Federal Office for Agriculture

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More about this topic:

www.statistik.admin.ch → Themen → Raum, Umwelt → Bodennutzung, -bedeckung
www.bafu.admin.ch/state-soils

14 Air

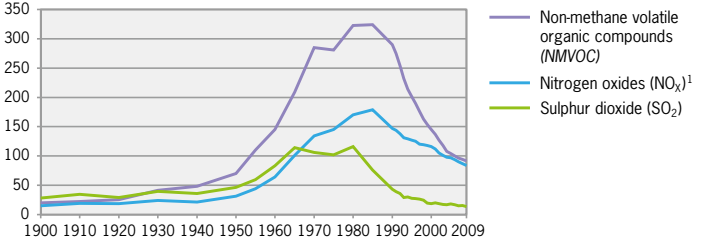
The threshold values for the *immissions* of nine out of twelve air pollutants are respected in the whole of Switzerland. This is not the case with ozone (O_3), nitrogen dioxide (NO_2) and fine dust particles *(PM10)*.

Between 1990 and 2010 medium particulate matter concentration in urban areas with heavy traffic fell by 59% and in rural areas by 45%.

The overall health cost of air pollution in Switzerland totalled CHF 5.1 billion CHF in 2005.

The *emission* of pollutants from transport, households, industry and agriculture has a negative impact on air quality. The main pollutants are nitrogen oxides (NO_X), particulate matter *(PM10)*, non-methane volatile organic compounds *(NMVOC)*, ammonia (NH_3), sulphur dioxide (SO_2), and ground level ozone (O_3).
Since the mid-1980's the quality of the air in Switzerland has improved. This trend has flattened out in recent years. Today air pollution remains below most of the threshold values. This is not the case, however, with ozone, nitrogen dioxide (NO_2) and fine dust particles.
Air pollutants can cause diseases of the respiratory tract and of the cardiovascular system in humans, as well as lead to an increase in the risk of cancer. Ecosystems are damaged through excess nitrogen and acidification.

***Emissions* of air pollutants**
Thousand tonnes



[1] NO_X comprises NO and NO_2. Emission values are given in NO_2.

Source: Federal Office for the Environment

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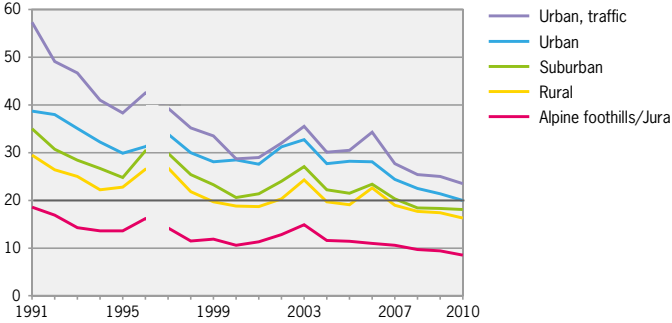
More about this topic:

www.bafu.admin.ch/state-air

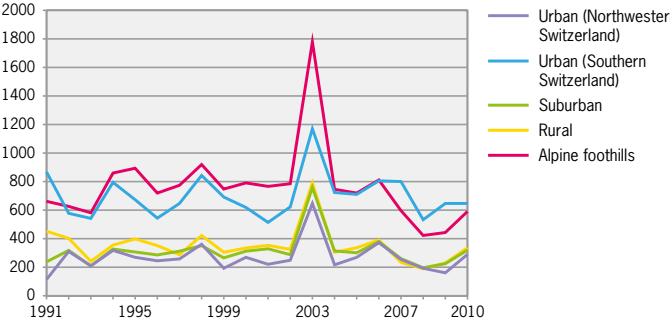
Concentration of particulate matter *(PM10)*
Annual mean in micrograms per cubic metre



Data prior to 1997 was collected by a different method.
Threshold limit (annual mean): 20 micrograms per cubic metre.

Source: Federal Office for the Environment © FSO

Ozone concentration
Number of hours with exceeded threshold value[1]



In 2003 the ozone level was extremely high owing to the persistent high summer temperatures.
[1] Threshold value (hourly mean): 120 micrograms per cubic metre

Source: Federal Office for the Environment © FSO

15 Climate

The first decade of the 21st century was the warmest since records began.

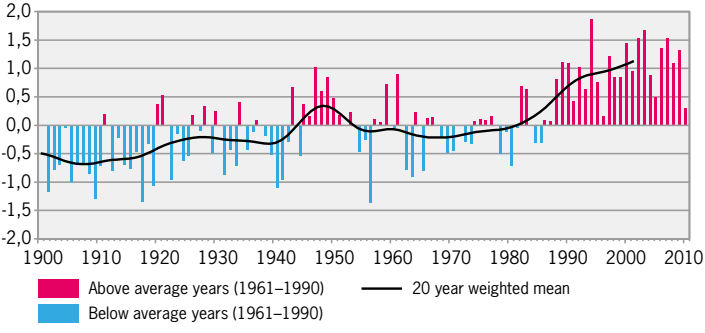
Emissions of *greenhouse gases* rose by 1.8% between 1990 and 2009 (the aim according to the Kyoto protocol is to reduce greenhouse gases by 2008–2012 to a level of 8% below that of 1990 incl. forest sinks and certificates).

Since the mid-1970s alpine glaciers have lost an average of 1% of their volume.

Since the middle of the 20th century, global warming of the atmosphere has been observed that cannot be explained by natural influences alone (e.g. fluctuations in solar activity). Human activities are contributing to climate change by increasing the greenhouse effect, particularly through the burning of fossil fuels and the resulting emission of the greenhouse gas carbon-dioxide (CO_2). Climate experts assume that in the future climate change will modify rainfall pattern and cause a rise in sea-levels. The consequences for society and the economy are various; aspects such as water resources, tourism, agriculture, energy, health, insurance and infrastructure are likely to be particularly sensitive to such change.

Temperature changes

Deviation from the long-term mean (1961 to 1990), in degrees Celsius



Source: MeteoSwiss

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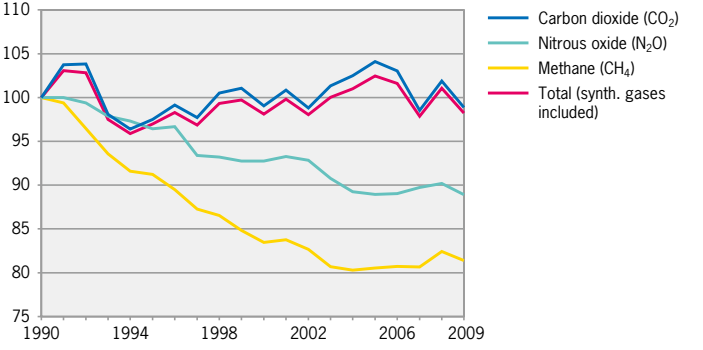
More about this topic:

www.bafu.admin.ch/state-climate
www.meteoswiss.ch → Climate

Greenhouse gas emissions
Index 1990=100



Source: Federal Office for the Environment

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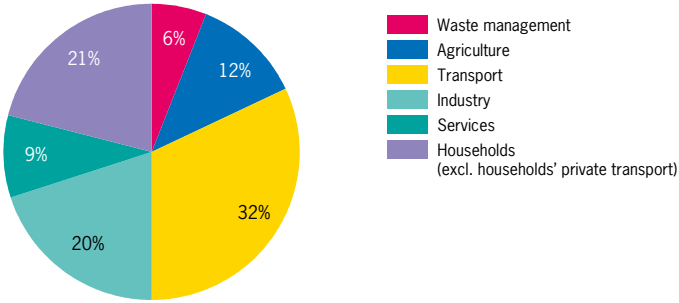
***Greenhouse gas emissions* by source, 2009**



Total: 51.8 million tonnes

Source: Federal Office for the Environment

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16 Water

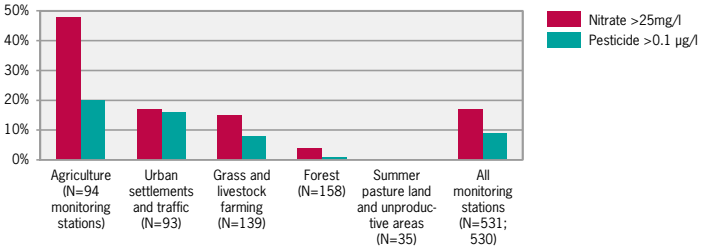
In agricultural and populated areas the concentration of crop protection agents in groundwater exceeded tolerance levels in 18% of the monitoring stations in 2009.

Phosphor pollution of surface waters has greatly decreased since the 1970s.

Some 22% (about 14,000 km) of all watercourses in Switzerland are severely obstructed, straightened or narrowed; around 100,000 artificial sills and ditches affect fish migration.

Human activity affects water in many ways. In addition to the introduction of organic trace-elements (e.g. pesticides or drugs), interventions such as watercourse corrections, control structures and culverts as well as changes in flow rates downstream from hydro-electric power stations (too little residual flow, water surges) compromise the function of flowing waters as habitat.
Around 80% of our drinking water comes from groundwater and some 20% from lakes. In agricultural areas in particular the nitrates concentrations and residue from crop protection agents measured in the groundwater are too high. In settlement areas traces of volatile organic compounds (VOC) from transport, industry and manufacturing are also found.

Nitrate and pesticide concentrations in groundwater, 2009
Proportion of stations with values exceeding the requirements of the Water Protection Ordinance, by main land use



Source: Federal Office for the Environment

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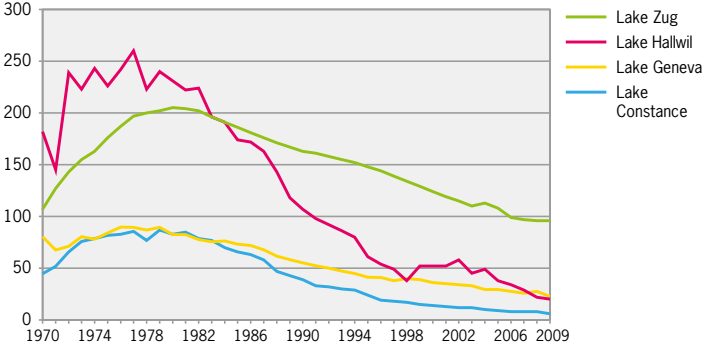
More about this topic:

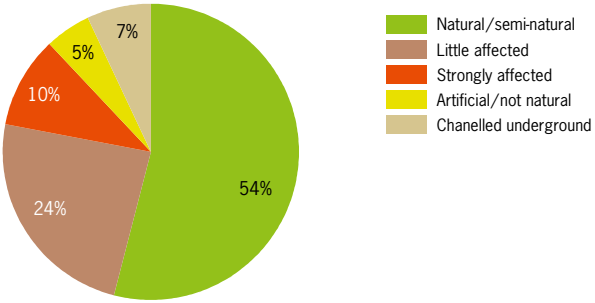
www.bafu.admin.ch/state-water
www.svgw.ch

Phosphorus levels in selected lakes
Yearly average in micrograms per litre



Source: Federal Office for the Environment © FSO

Watercourse structures, 2006
Share of watercourse kilometres, in %



Source: Federal Office for the Environment © FSO

17 Biodiversity

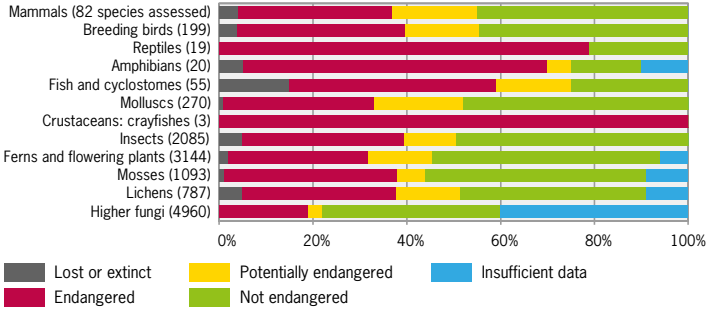
There are around 40,000 known species of flora, fauna and fungi in Switzerland.

30% of approximately 13,500 plant, fungal and animal species which were the subject of research, are on the red list (missing or extinct, endangered).

Around 100 invasive species are spreading in their new habitat at the expense of native species.

The variety of types of landscape found in Switzerland provides a multitude of different habitats for flora and fauna, thus creating favourable conditions for a rich *biodiversity*. Human activity puts a strain on the variety of species, however. While landscape modification by man can certainly create habitats for new species as well, the standardisation and intensive use of the landscape is leading to a decline in populations and to the loss of some species.
The introduction of foreign organisms can also cause ecological damage if they spread invasively at the expense of indigenous flora and fauna.

Species lost, endangered, possibly endangered or not endangered
Status 1994 to 2010, depending on the species groups



Source: Federal Office for the Environment

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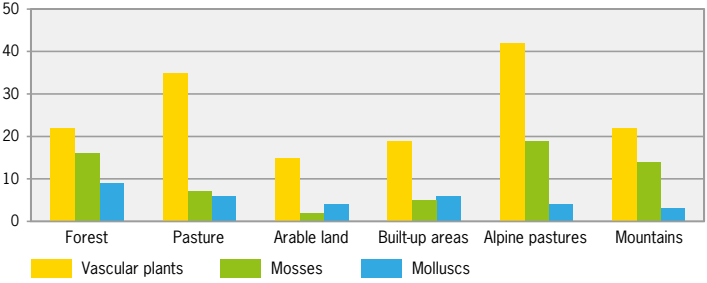
More about this topic:

www.bafu.admin.ch/state-biodiversity
www.biodiversitymonitoring.ch
www.vogelwarte.ch

Number of species in different habitats
Mean number of species within an area of 10 square metres, survey period 2005–2009[1]

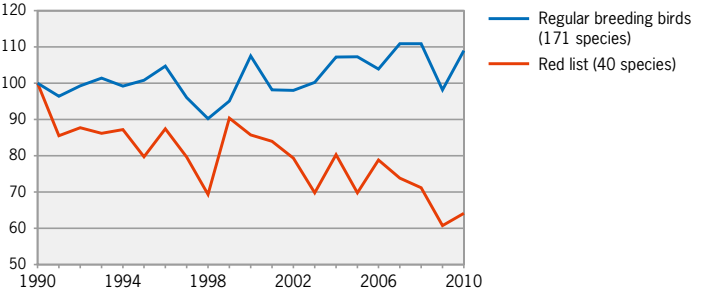


[1] Molluscs: 2004–2008

Aid to understanding: In Swiss forests an average of 22 species of vascular plants can be found within an area of 10 square metres.

Source: Federal Office for the Environment © FSO

Populations of breeding birds – Swiss Bird Index®
Index 1990=100



Aid to understanding: A positive trend can be detected for all of the 171 evaluated species of birds regularly breeding in Switzerland. As far as the 40 endangered and rare species on the red list (2010) are concerned, the trend is negative.

Source: Swiss Ornithological Institute Sempach © FSO

18 Natural hazards

Private businesses and governmental agencies invest almost CHF 3 billion annually in the prevention of damages caused by natural hazards.

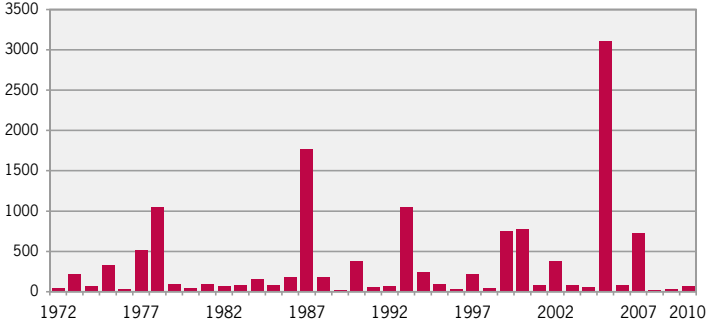
Between 1990 and 2010, natural disasters have caused material damage costing an average of just under CHF 400 million per year.

The 2007 flood claimed four lives and caused material damage totalling CHF 710 million.

Flooding, mudflows, avalanches, rock falls and landslides have always existed in Switzerland; however in recent decades they have caused greater damage than usual. This can be explained by the rise in potential for damage due to the extension of settlement areas in dangerous regions and increasing material values. Furthermore, extreme events have possibly become more intense as a consequence of climate change.

Costs of storm damage in Switzerland (floods, mudflows, landslides and rockfall[1])

Costs adjusted for inflation (base year 2010), in CHF million



[1] Rockfall taken into account since 2002

Source: Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) © FSO

More about this topic:

www.bafu.admin.ch/state-naturalhazards
www.wsl.ch

19 Eco-efficiency

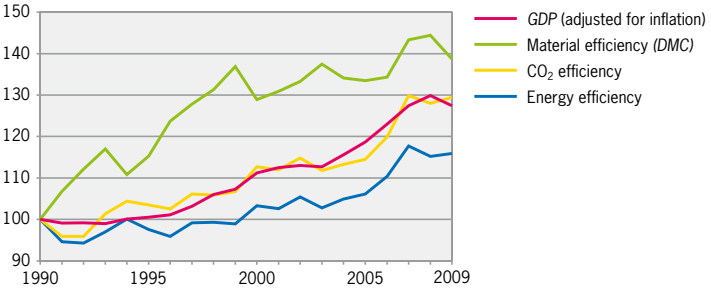
The emission of CO_2 into the atmosphere fell by 1.6% compared with 1990 and in 2009 totalled around 44 million tonnes.

Economic performance (measured by *GDP*) rose between 1990 and 2009 by 27% (adjusted for inflation).

CO_2 efficiency rose by 29% between 1990 and 2009.

The eco-efficiency of a national economy measures economic performance (e.g. using gross domestic product, *GDP)* against environmental pollution (e.g. use of energy, materials and CO_2 *emissions*): the larger the amount of money generated per unit of energy, materials or CO_2 emissions, the higher the efficiency. An increase in domestic eco-efficiency can have several explanations: on the one hand the use of technologies that are more environmentally friendly, so that fewer resources are used or fewer emissions released for the same output. On the other hand structural changes may reduce domestic pressure on the environment e.g. the growing importance of the services sector or the relocation of environmentally harmful production methods abroad.

Energy efficiency, CO_2 efficiency* and *material efficiency
Index 1990=100



Sources: Federal Statistical Office; Federal Office for the Environment; Federal Office of Energy

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More about this topic:

www.statistics.admin.ch → Topics → Territory and environment
www.bafu.admin.ch/economy

20 Material flows

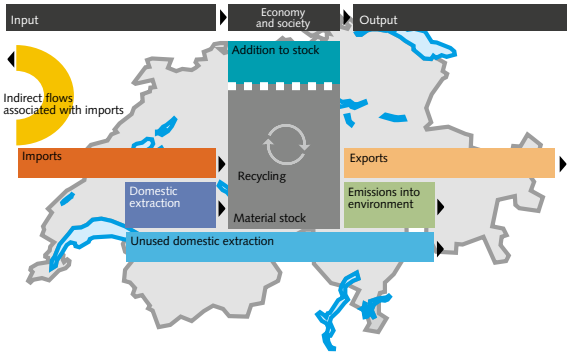
In 2009, the total material requirement *(TMR)* was about 42 tonnes per person.

In 2009, 66% of the required natural resources came from abroad or were used abroad, in order to produce Swiss imports.

In 2009, Switzerland's "material stock" (goods, buildings, infrastructure) was enlarged by 57.8 million tonnes. This is equal to approximately 7.4 tonnes per person.

There exists a direct link between the volume of materials consumed and environmental pollution caused, since sooner or later these materials return to the environment in the form of *emissions* or waste.
The strain exerted by a country on the environment can be quantified through material flow analyses. This involves comparing the materials that enter the economic chain (domestic extraction and imports) with the materials that leave it (exports and emissions) – with the exception of water and air. The input side also includes domestic extracted materials which do not enter the economic chain (e.g. straw that remains lying on fields or excavated material). Finally, indirect flows associated to imports are also taken into account. This includes all materials needed in the originating country in order to manufacture and transport Swiss imports of raw materials and goods.

Material flows



Source: Federal Statistical Office

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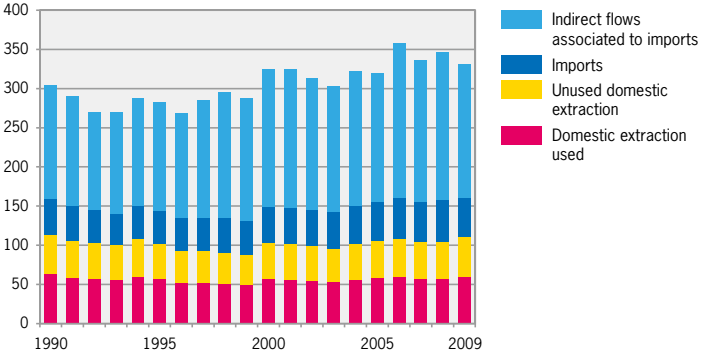
More about this topic:

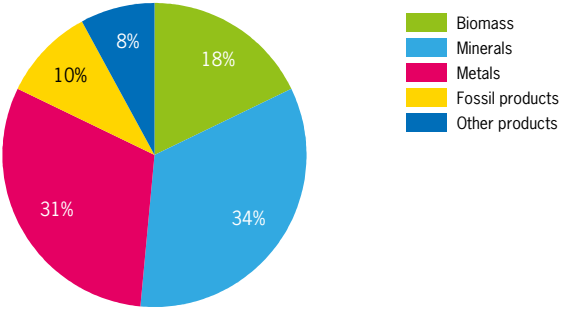
www.statistik.admin.ch → Themen → Raum und Umwelt → Umweltgesamtrechnung

Total material requirement *(TMR)*
By type of material flow, in million tonnes



Source: Federal Statistical Office © FSO

Total material requirement *(TMR)*
By category of material[1], 2009



[1] The categories also include material needed abroad for the production of imports (e.g. iron incl. iron ore).

Source: Federal Statistical Office © FSO

21 Environmental protection expenditure

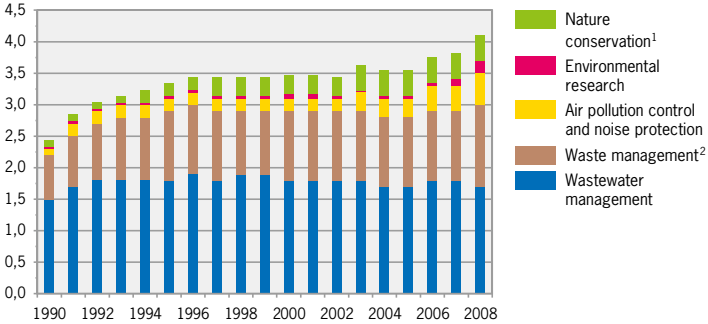
In 2009, the economy devoted CHF 2.75 billion for environmental protection.

In 2008, public expenditure for the protection of the environment amounted to CHF 4 billion. Net expenditure (less revenue from sewerage and waste taxes) was almost CHF 1 billion.

Total environmental protection expenditure in Switzerland (including businesses and households) was CHF 5.9 billion in 2003. This is 1.6% more than in 1993 (adjusted for inflation).

Expenditures that are made on environmental protection help to avoid other costs (e.g. health costs resulting from air pollution).
Moreover, efforts aimed at protecting the environment help to achieve economic growth and technological progress. The eco-industry sector, which has expanded over the past few years, is proof of this: this sector covers all activities linked with the provision of goods and services that help to reduce environmental pollution.

Public environmental protection expenditure
At current prices, in CHF billion



[1] since 1993: incl. governmental agri-environment subsidies
[2] excl. domestic waste incinerators

Source: Federal Statistical Office

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More about this topic:

www.statistik.admin.ch → Themen → Raum und Umwelt → Umweltgesamtrechnung

22 Environmental taxes and fees

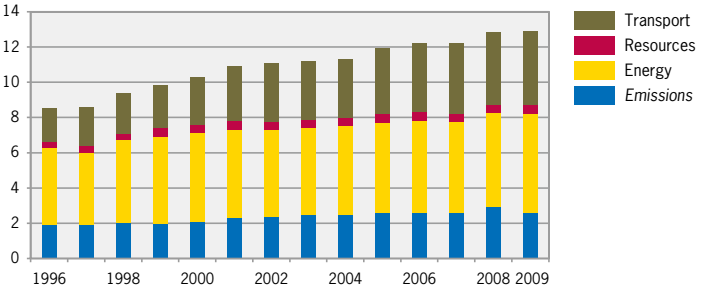
Of all taxes and social security contributions in 2009, the proportion of revenues from environmental taxes was about 6.6%.

In 2009, approximately 25% of revenue from environmental taxes and fees was environmental "in the narrower sense", i.e. arising from an environmental matter.

Cost coverage of public expenditure on wastewater treatment rose from 43% to around 72% between 1990 and 2008 (increasing application of "polluter pays" principle).

Environmental taxes and fees make environmentally hazardous goods and services more expensive, therefore encouraging households and enterprises to consider the ecological dimension when making consumer and production decisions. They also favour the increasing application of the "polluter pays" principle. Examples for environmental taxes are taxes on rubbish bags, taxes on petroleum or the performance-related heavy vehicle fee (LSVA). A tax is considered as "environmental in the narrower sense" if its introduction or application arises from an environmental issue (e.g. CO_2 tax on fuel). Revenue from environmental charges comes mainly from taxes and fees.

Revenues from environmental taxes
According to domain, in CHF billion



Source: Federal Statistical Office

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www.statistik.admin.ch → Themen → Raum und Umwelt → Umweltgesamtrechnung

23 The environment in European comparison

	CH[1]	FR	DE	IT	AT	BE	NL	DK
Population density, 2008 (per km^2)	191	101	230	203	101	353	487	128
Gross energy consumption per person, 2007 (tonnes oil equivalent per person)	3.6	4.3	4.1	3.1	4.1	5.4	5.2	3.8
Share of *renewable energies* in gross energy consumption, 2008	18.6%	7.4%	8.6%	7.8%	25.3%	3.7%	4.2%	18.1%
No. of cars per 1000 inhabitants, 2009	514	482[2]	509	606	522	483	462	471[3]
Household waste, 2008 (kg per person)	741	543	581	561	601	493	622	802
Share of organic farming area in total utilised agricultural area, 2007	11.0%	2.0%	5.1%	9.0%	11.7%	2.4%	2.5%	5.2%
***Emissions* of *greenhouse gases*, 2007** (tonnes per person)	6.8	8.4	11.6	9.3	10.6	12.4	12.7	12.2
Emissions of nitrogen oxide, 2006 (kg per person)	11.0	21.4	16.9	18.1	27.2	26.4	19.0	34.1
Threatened bird species as percentage of all known bird species (latest data available)	36%	19%	27%	18%	28%	25%	22%	16%
Threatened mammal species as percentage of all known mammal species (latest data available)	33%	19%	38%	41%	22%	36%	19%	22%
Share of environmental taxes in total tax and social contribution revenue, 2008	6.2%	4.9%	5.7%	5.7%	5.6%	4.4%	9.9%	11.9%

[1] Switzerland (CH), France (FR), Germany (DE), Italy (IT), Austria (AT), Belgium (BE), Netherlands (NL), Denmark (DK)
[2] Situation 2007
[3] Situation 2008

Sources: Federal Statistical Office; OECD; Eurostat

GLOSSARY

Biodiversity
Biodiversity (biological diversity) includes genetic diversity (within a population or among individuals of the same species), species diversity and habitat diversity.

Contaminated sites
Polluted sites of facilities, accidents and landfills that have been proven to cause harmful or noxious impacts upon the environment or for which there is a risk that such impacts may arise.

CO_2-efficiency
= *GDP* ÷ CO_2 *emissions*

DMC (**D**omestic **M**aterial **C**onsumption)
A country's domestic consumption of materials, i.e. the domestic extraction of materials domestically used plus imports minus exports.

Emissions
The release of pollutants, noise or radiation from natural sources or by humans into the environment.

Energy efficiency
= *GDP* ÷ *final energy* consumption

Final energy
The energy procured or produced by consumers in order to receive a certain utility, such as electricity for light or petrol for mobility. Final energy refers to the final link in the trading chain.

GDP (**G**ross **D**omestic **P**roduct)
GDP is used for measuring a country's economic performance over a period of one year.

Genetically modified organisms (GMOs)
Organisms (animals, plants, fungi, microorganisms) whose genetic material has been modified in a way that does not occur in nature by crossing or natural recombination.

Greenhouse gases
The Kyoto Protocol regulates the following greenhouse gases or groups of gases; carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

Hazardous waste
Waste which due to its composition and its physiochemical or biological characteristics requires special technical and organisational measures for its environmentally acceptable disposal.

Immissions
Levels of air pollutants, noise, vibration or radiation at their point of impact.

Material efficiency
= *GDP* ÷ *DMC*

NMVOC (**N**on **M**ethane **V**olatile **O**rganic **C**ompounds)
Volatile organic compounds that exclude methane and FCKW and are precursors for the formation of ozone, summer smog and *PM10*.

PM10 (**P**articulate **M**atter **<10** µm)
Dust particles with a diameter of less than 10 microns.

Renewable energies
Energy sources that are available for an unlimited period on a human timescale. They include the use of hydropower, solar energy, ambient heat, biomass, wind energy, the renewable fractions of solid wastes, and the energy extracted from sewage treatment plants.

TMR (**T**otal **M**aterial **R**equirement)
The total material requirement of a country measures the total volume of materials obtained from natural sources (with the exception of water and air).