

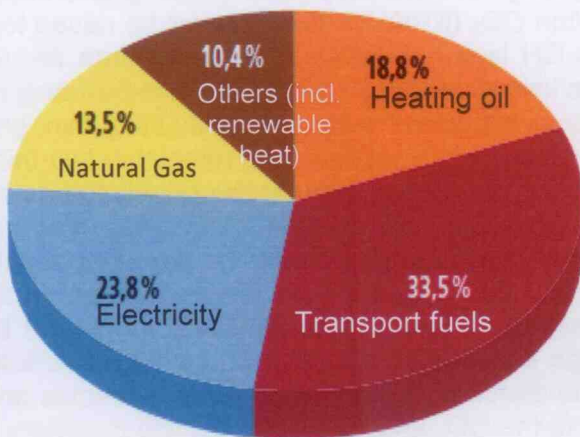


Switzerland's Energy and Climate Strategy

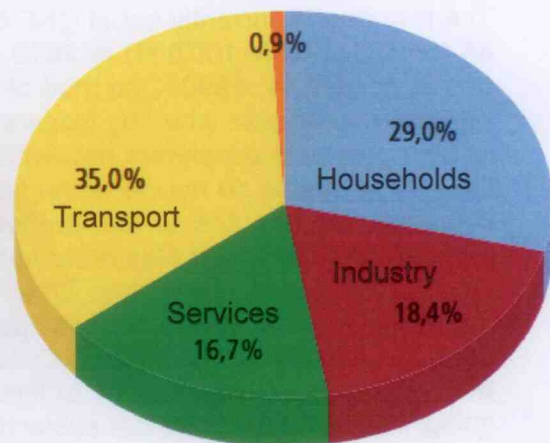
Key Figures

Switzerland relies for up to **80% on energy imports**. Hydropower and other renewables are the only domestic energy sources. Switzerland has a **low energy use** and low CO₂ emissions by international standards because its electricity mix is almost CO₂-free and because it has no heavy industry. Switzerland is closely interconnected with European electricity and gas networks. It holds a pivotal position in European **electricity trade**: some 18% of cross-border electricity flows in Europe cross the Swiss borders. In summer, Switzerland exports its excess electricity, while it is an importer in winter. Its pump-storage and reactive hydropower plants facilitate the integration of volatile renewables (wind, solar) in Europe.

Switzerland Total Energy Mix (2013)



Switzerland Energy Use by Sector (2013)



Source: IEA (2012)	Korea	Switzerland
Population (million)	51.0	7.93
GDP (billion US\$2005)	1078	440
GDP PPP (billion US\$2005)	1400	314
Total primary energy supply (Mtoe)	263.4	25.6
Electricity supply (TWh)	517.3	63.1
CO ₂ emissions (million tons)	592.9	41.3
Energy demand per capita (toe)	5.27	3.23
Electricity demand per capita (kWh)	10346	7953
CO ₂ emissions per capita (ton)	11.86	5.20
Energy demand per GDP	0.24	0.06
Energy demand per GDP PPP	0.19	0.08

Nuclear Phase-Out

After Fukushima, the Swiss Government, soon followed by Parliament, decided to gradually **phase out nuclear power**. By law, any new nuclear power plant would have been subject to a likely referendum.

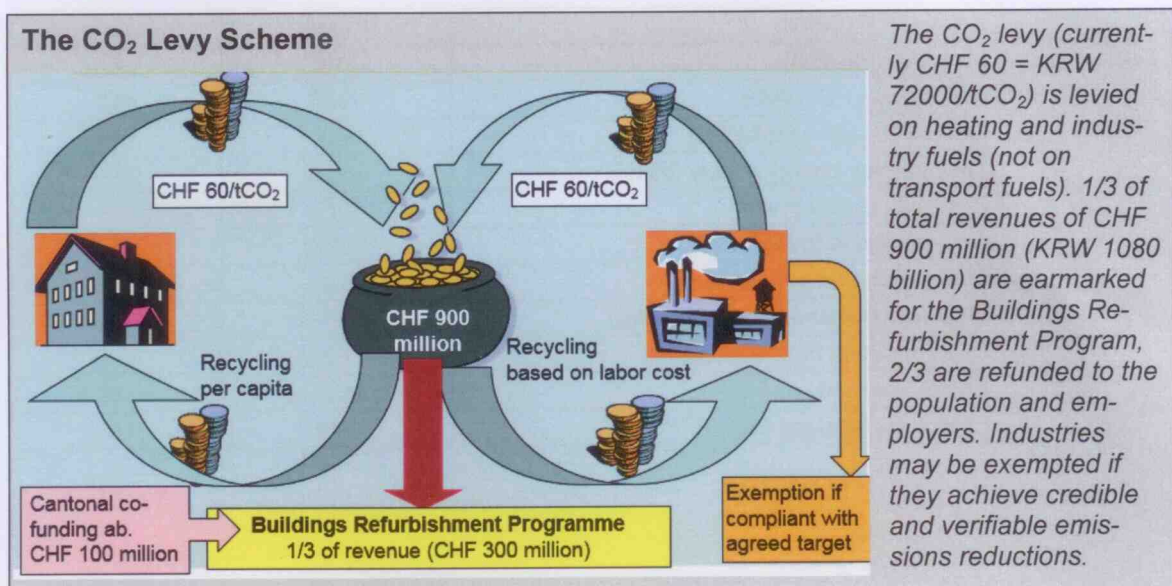
Today, Switzerland's **five nuclear plants** account for some 38% of electricity supply, while some 56% come from hydropower, nearly 4% from other renewables, and less than 2% from fossil fuels. Contrary to Germany, Switzerland has no fixed shut-down dates for its plants: these may run for as long as they are considered safe by the Nuclear Safety Inspectorate. A first plant will be closed in 2019. The most recent plants may run well into the 2030s.

Energy Strategy 2050

In continuation of Swiss policies, which had already focused on energy efficiency and renewable energies, the Swiss Government has elaborated its **Energy Strategy 2050**. The key components of the strategy are the following:

- **Energy efficiency** is to be stepped up, so as to **stabilise electricity demand** and to **reduce total energy consumption**. Stabilising electricity demand is particularly challenging since Switzerland witnesses continued demographic and economic growth. The largest savings potential resides with **buildings**, which consume some 50% of total energy.

The flagship policy instrument is a **CO₂ levy** on stationary fuels (heating and industry). The levy rate is currently set at CHF 60/ton CO₂ (KRW 72'000) and will be raised to CHF 84 ton CO₂ (KRW 100'800) in 2016 as CH lags behind its **2020 emissions reduction target** of **-20%** vs. 1990. One third of the levy revenue is earmarked for a **building refurbishment program**, whereby owners receive financial support for insulating their property. The goal is to accelerate renovation of existing buildings. The remaining two-thirds of the levy revenues do not go to the treasury, but are recycled to the population as health insurance refunds and to the economy as wage cost refunds. **Industries** may be exempted from the levy if they enter verifiable agreements with the Government to achieve credible emissions reductions. Small and medium enterprises (SMEs), which dominate Switzerland's economy, may also participate. These agreements are monitored by an agency similar to Korea's KEMCO. Large industries participate in the Swiss **emissions trading scheme**. Negotiations to link the Swiss and European trading schemes are ongoing. Transport fuels are not subjected to the CO₂ levy: however, vehicle importers must reach average fleet emissions targets or pay a fine. Furthermore, motor fuel importers are required to compensate for 10% of the CO₂ emissions caused by transport by 2020 with domestic measures.



Other energy efficiency policies include:

- Continuous tightening of **building codes**: The basic code was revised in early 2015 and mandates **near-zero-energy standards** for new buildings. For the existing building stock, CO₂ emissions are to be reduced gradually: 10% of energy is to be covered by renewable sources or efficiency when replacing a fossil heating system.
- Continuously more stringent **performance standards** and **labels** for appliances, vehicles, motors and other energy-consuming products, mostly in line with EU regulation.
- **Tenders** to finance efficiency projects with unfeasibly long payback periods.
- Increased **awareness-raising** and **training & education** programs.
- Accelerated promotion of **renewables**: Switzerland introduced a **feed-in tariff** in 2009. To prevent costs from soaring, the total sum allocated for renewables has been capped. Currently, the support is 1.1 Swiss cent/kWh (KRW 13.2/kWh), due to rise to 1.3 Swiss cent/kWh (KRW 15.6/kWh) as per 2016. Capping of finance has led to a long project wait list. The system has been partly reformed by offering investment grants to small photovoltaics instead of feed-in tariffs. Further reform is planned to introduce more market elements. The largest potentials reside with hydropower (large and small), biomass, photovoltaics and wind. The potential of geothermal remains to be proven. Electricity-intensive industries are exempted from the feed-in tariff surcharge if they invest 20% of the exemption into efficiency measures. Renewables are to be elevated to the same level as landscape and heritage protection to accelerate permitting.
- Gradual nuclear phase-out (see above).
- A possible electricity supply gap is to be covered by **increased electricity imports**. Energy imports will always be part of Switzerland's energy mix.

Implementation of the Energy Strategy 2050 requires several **legislation changes**, which are currently debated in Parliament. Some elements of the Energy Strategy have already been enacted, such as a 25% increase in public spending on **energy R&D** to some CHF 250 million annually (KRW 300 billion).

First Proposal for Energy Levy Post-2020

As from 2020, the Energy Strategy 2050 foresees a gradual shift from the current subsidy ("market push") system to a "market pull" system. The key mechanism is to be **taxation of non-renewable energy** to incentivize consumers to switch to renewables and reduce demand (in German: *Lenkungsabgabe* = levy to "steer" demand). Revenues are to be fully recycled to the economy and the population through rebates on ancillary wage costs and health insurance. The Finance Ministry has made a first proposal for such an Energy Levy Post-2020.

Switzerland's 2030 Emissions Target

In February 2015, Switzerland announced its "Intended Nationally Determined Contribution" (INDC) ahead of the forthcoming Climate Conference COP-21. Switzerland intends to reduce its greenhouse gas emissions by **50% by 2030 compared with 1990 levels**. At least 30% of these reductions are to be achieved domestically.