

Only 14% of primary energy sources for Swiss end energy consumption are of domestic origin

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Russia's attack on Ukraine and the public discussion in view of the voting for the #Swiss #Climate-Protection-Act has led to discussions about the origin of the energy consumed in Switzerland and has strengthened the desire for greater energy self-sufficiency. With the help of life cycle assessment (#LCA), it is possible to track down the final energy used (electricity and fuels) to the countries where the energy sources were extracted. Here the total final demand for fuels and electricity consumed within Switzerland according to the energy statistics for 2021 are evaluated. Therefore, a former assessment is updated during a practical training. Currently, roughly 86% of Switzerland's primary energy demand is imported.

Switzerland consumes about 795 PJ (peta-joule = 10^{15} joule) of final energy. The primary energy demand for this is calculated to be 1'310 PJ-eq and includes the losses of energy in the supply chain. The most relevant energy sources are uranium with 392 PJ-eq, crude oil with 384 PJ-eq, natural gas with 222 PJ-eq and hydropower with 67 PJ-eq.

The primary energy was in 2021 predominantly sourced in Russia amounting to 27% or about 348 PJ-eq. Switzerland's considerable reliance on Russia for the provision of energy is mainly due to uranium (146 PJ-eq), but also because of natural gas (107 PJ-eq), oil (68 PJ-eq), and coal. Other important countries for the Swiss energy supply are the United States, Canada, Norway, and Nigeria, each delivering between 9-7% of the final demand.

Boycotts due to Russia's attack on Ukraine and the destruction of part of the North Stream pipelines for natural gas have reduced dependence on Russia, but these energy resources had to be procured from other countries in the following year 2022 (for which statistical data was not yet available for this evaluation).

The total cost of the imported energy in 2021 exceeds 5'000 million CHF. The largest money flow occurs between Switzerland and its largest energy importer Russia. Nigeria, the United States, and Norway account for 10-15% of the import costs, while 8% can be attributed to Libya. It is worth noting that almost half of the money goes to conflict-ridden countries.

For a reduction of Switzerland's dependency on energy imports, it is necessary to reduce the consumption of natural gas (e.g., used for heating), fossil fuels for transports and heating, as well as electricity from nuclear power plants. Heat pumps ([the installation of which is to be promoted by the Climate Protection Act](#)) can reduce dependence on imports, since about 2/3 of the heat is taken from air or water.

About 14% of the primary energy comes directly from Switzerland. Nearly all of this comes from renewable resources like hydro power, solar energy, wind, and biomass. There is some potential to increase this supply e.g., by giving higher priority to install photovoltaics and wind power plants and thus become more independent from foreign supplies.

In another evaluation, we already addressed the question of [how, based on the current situation, dependence on Russian energy supplies can be reduced through consumer choices](#).

It is self-explanatory that the implementation of the above measures, as e.g. planned in the Swiss Climate Protection Act, would also contribute to Switzerland becoming generally less dependent on energy imports from abroad. It is also known from our previous studies that switching to domestic and renewable energy resources would contribute significantly to

reducing the climate footprint and environmental impacts of Swiss consumption and production.

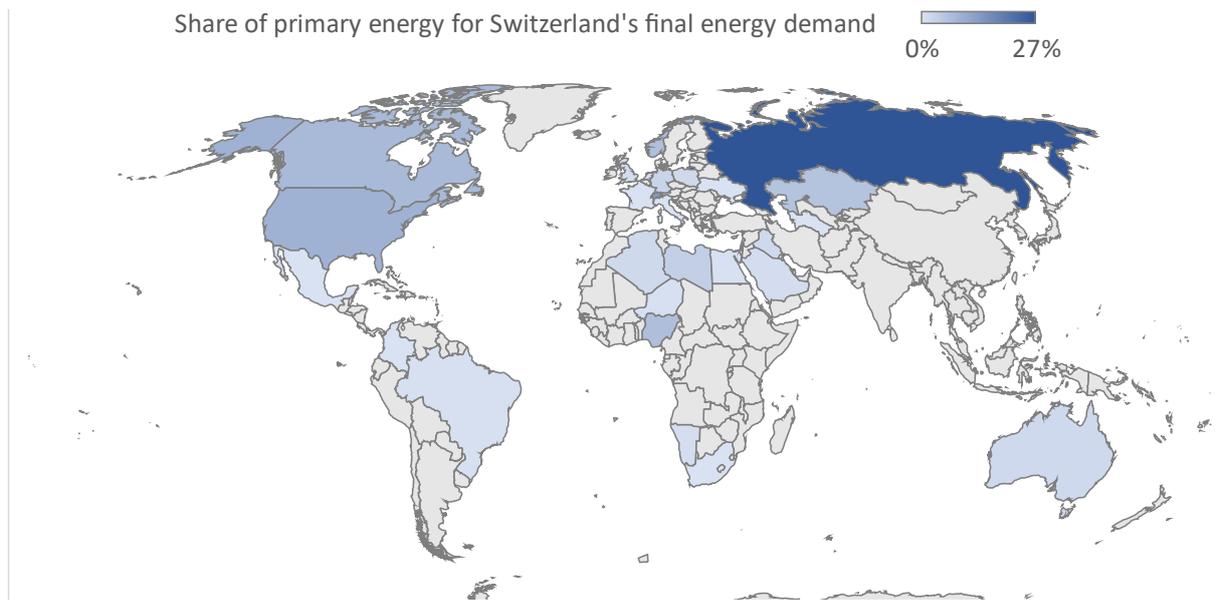


Figure 1 Share of different countries in the extraction of primary energy for the total final energy demand in Switzerland in 2021

<https://esu-services.ch/fileadmin/download/jungbluth-2023-Origin%20of%20primary%20energy%20demand%20for%20Swiss%20endenergy.pdf>

<https://www.linkedin.com/pulse/only-14-primary-energy-sources-swiss-end-consumption-domestic>