

City of Zurich, Energy Officer

The 2000-Watt concept

Motivation

The 2000-Watt society aims for a sustainable use of energy and natural resources as well as a fair distribution on a global level. In addition, greenhouse gas (GHG) emissions are to be reduced so that climate change can be limited. For Switzerland as well as its regions and cities this concept asks for a reduction of total primary energy (PE) demand to 2000 watt per person and GHG emissions to 1 tonne CO_{2eq} per person and year.

The concept of primary energy

In order to supply energy to the customer (final energy) energy is needed for generating, converting, refining, transporting and distributing this energy. For each energy source the cumulated input of primary energy resources is calculated. This resource demand is valued with eigen-values and summed up. The result is the primary energy demand per unit final energy delivered (primary energy factor).

contact: martina.blum@zuerich.ch
stadt-zuerich.ch/energiebeauftragter.ch

February 2016, with information and pictures from «Bilanzierungskonzept 2000-Watt-Gesellschaft» 2014, CBS and internet

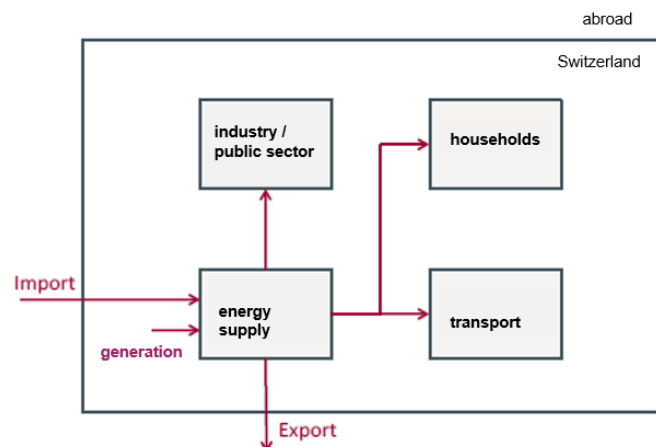
Primary energy factors and GHG emission coefficients

	category	technology	PEF (MJ-eq)	GHG (kg-eq)
energy	fossil	heating oil	1.23	0.0827
		natural gas	1.07	0.0633
	biomass	wood	1.14	0.0029
		biogas	0.34	0.0366
transport	fossil	gas	1.27	0.0886
		diesel	1.21	0.0840
heating	district heating	heating oil	1.68	0.112
		incineration	0.06	0.001
electricity	grid	nuclear	4.22	0.007
		black coal	3.94	0.344
		water	1.20	0.004
		wind	1.29	0.007

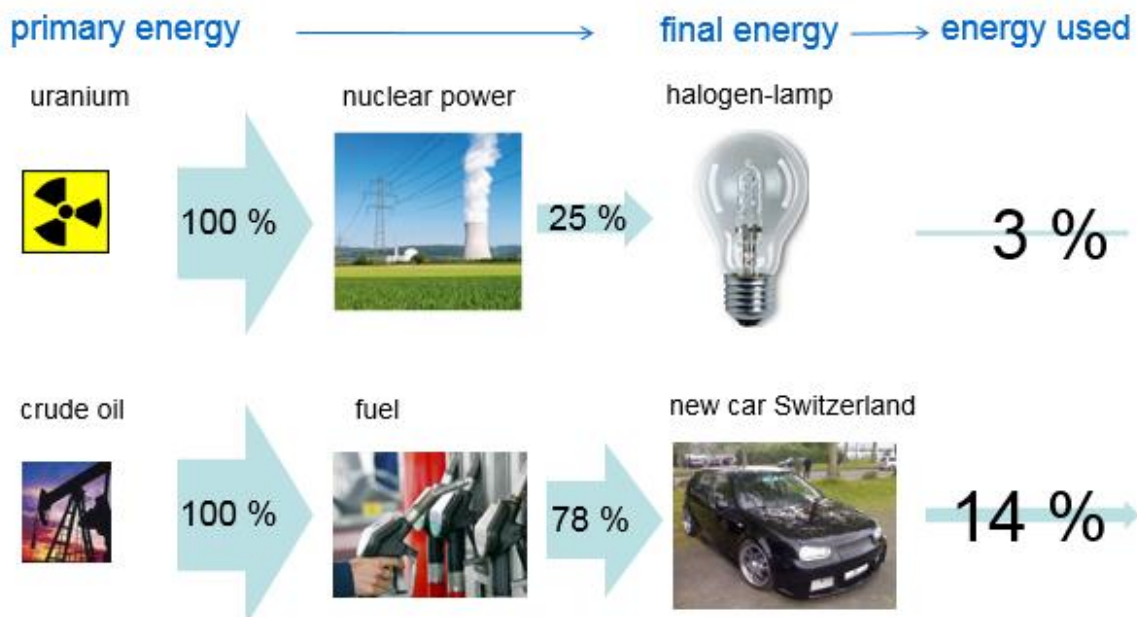
selection from KBOB / eco-bau / IPB 2009/1:2014

Accounting and system boundary

The final energy consumption (red arrows) of a territory is the basis of calculating PE and GHG emissions



Conversion losses



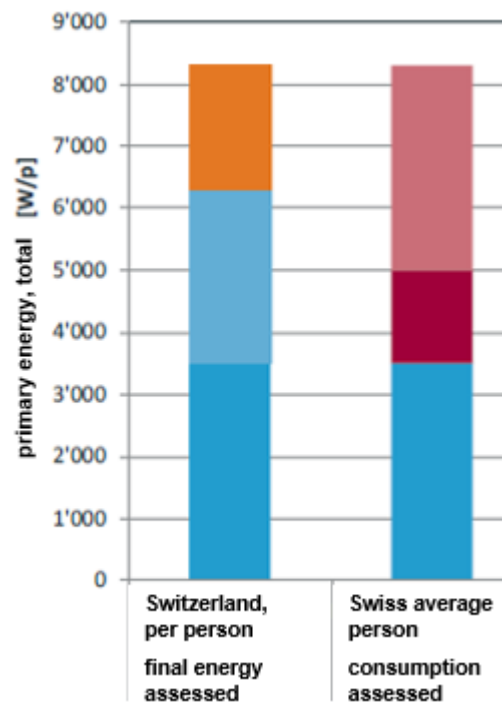
Typical conversion losses in energy and transport, e.g. halogen lamp powered with nuclear energy: from one unit of original energy source only 3% is used to produce light, the rest is used for energy supply and emitted in form of heat.

Consumption

The difference between PE of total consumption and PE according to the 2000-Watt society includes the following three elements:

- plus: PE for imported goods and services that are consumed in the country
- plus: PE of imported intermediate inputs used for producing goods and services for in-country consumption
- minus: PE of energy consumption for producing goods and services that are exported

Figure right: comparison of accounting PE according to final energy consumption on a territory (left) vs. individual consumption of goods and services (right).



This story was filed by CBS News correspondent Elizabeth Palmer.

[CBS news report](#)

„Can a City Cut Its Energy Use by 2/3?“

- difference (shadow balance)
- other consumption imports
- other consumption CH goods
- final energy industry
- final energy households

