

Swiss Federal Office of Energy SFOE |

Facts & Figures 2003/2004





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Take the "W" RBS train at the Berne
 central railway station to the Papiermühle stop.

By car, leave the motorway at
 the Bern-Wankdorf exit. There are four
 visitors parking places available.

Brief description of the SFOE

The Swiss Federal Office of Energy (SFOE) is the Division of the Federal Department of Environment, Transport, Energy and Communications (UVEK) that is responsible for all questions relating to the supply and utilisation of energy.

The SFOE ...

- ... defines the general conditions for securing an energy supply that is adequate, broad-based, safe, crisis-proof, economical and ecological, as well as for ensuring efficient energy use. Wherever possible, these conditions are to be co-ordinated at the international level.
- ... gives the highest priority to safety for human beings and the protection of the environment. This especially applies to the use of nuclear energy, electricity supply and the operation of high-pressure oil and gas pipelines.
- ... regulates the network-based energy markets while preserving public services and securing a long-term energy supply. It monitors deregulated markets in order to prevent market dominance and protect consumers at all levels, and takes any measures that may prove necessary.
- ... promotes technologies in the areas of energy efficiency and renewable energies that are both economical and in close proximity to the market. It takes account of long-term potentials and opportunities for innovation in all areas relating to energy, and pays close attention to sustainability. It also supports and promotes hydropower.

(Slightly modified extract from the defined strategy of the SFOE)

The job of the **Energy Industry and Energy Policy Division** is to evaluate and further develop Swiss energy policy, and to oversee the organisation of the energy industry. It prepares decision-making supports including statistics and forecasts. It develops energy policy measures such as energy labels for automobiles, establishing the conditions under which independent producers can connect to the electricity grid. The Division prepares, and disseminates a wide variety of information for decision makers and interested members of the public. It also helps to draw up position papers, recommendations, guidelines and federal decrees for the implementation of energy policy at the practical level.

The **Programme Division** manages the SwissEnergy Action Programme which is the main instrument for implementation of the federal government's energy and climate policy objectives, and in particular for reducing CO₂ emissions to 10% below the level of 1990 by the year 2010. Its duties include the control, constant optimisation and further development of the SwissEnergy programme; overall responsibility for communications; controlling the activities of partners including local, cantonal and federal, private sector, environmental organisations, private agencies and grid companies; the research, development and marketing of new energy-efficient technologies; the implementation of federal energy-saving measures; and the introduction of renewable sources of energy.

The **Legal and Nuclear Energy Division** has two distinct sections. The Legal Section provides all the legal expertise required by the Swiss Federal Office of Energy (SFOE) and deals with the legal side of all SFOE activities. Its tasks include preparation of energy legislation and the authorisation procedures for nuclear energy, high-voltage transmission lines and for natural gas and oil pipelines. The Nuclear Energy Section is responsible for ensuring that Switzerland meets its obligations with regard to the nuclear fuel cycle, as well as for protecting nuclear installations and materials from sabotage. It is the authority responsible for controlling exports of nuclear materials. It lays down the ground rules for the disposal of radioactive waste and coordinates efforts to ascertain the cost of decommissioning nuclear reactors and of radwaste disposal.

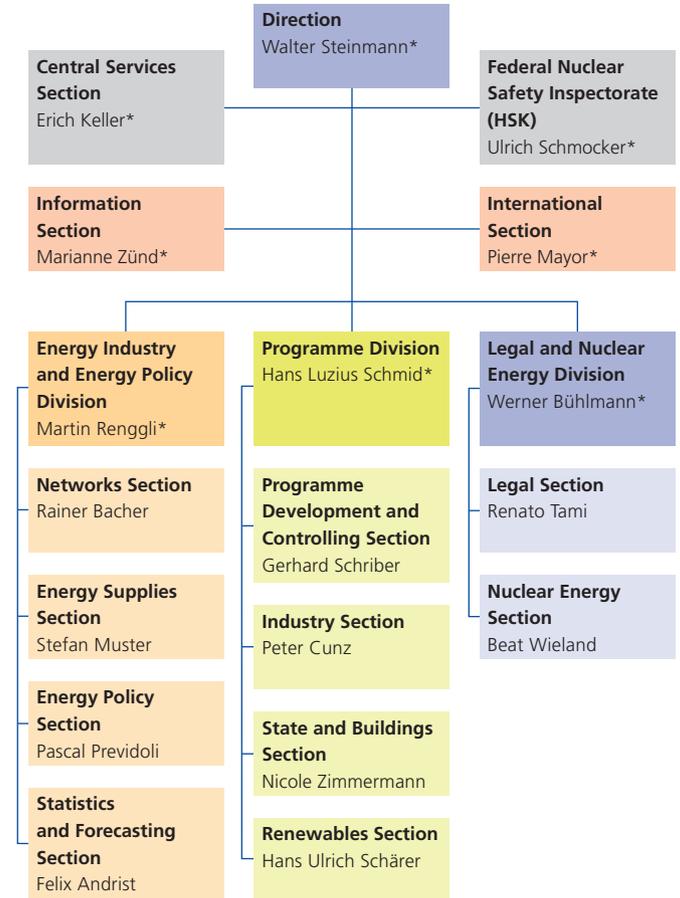
The **International Section** ensures liaison between those responsible for Swiss energy policy, the specialised international organisations, and similar authorities in neighbouring countries. It represents Switzerland in the executive committees of the two OECD organisations – the International Energy Agency (IEA) and the Nuclear Energy Agency (NEA) – as well as the International Atomic Energy Agency (IAEA) of the United Nations. It also participates in multilateral negotiations in the energy policy field, particularly those that deal with climate protection, sustainable development, non-proliferation of nuclear weapons and co-operation in Europe.

The **Central Services Section** provides support for all other SFOE sections. It includes organisational services, the personnel service, the financial service, translation service, general administration, support services, the Secretariat of the Directorate and the information technology service.

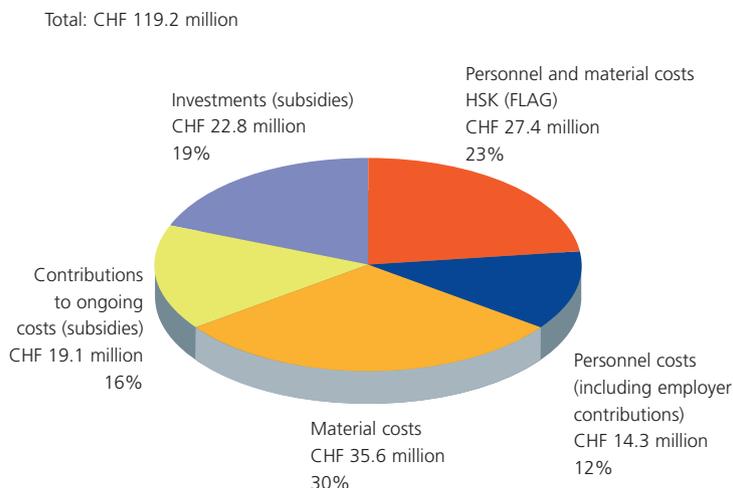
The **Information Section** looks after public relations in all areas for which the SFOE has responsibility. It coordinates all information activities, in particular those aimed at the media.

The **Swiss Federal Nuclear Safety Inspectorate (HSK)** is the government's supervisory authority for nuclear installations. It oversees and assesses these installations from the point of view of safety and protection against radiation in particular. The Inspectorate is situated in Würenlingen in canton Aargau, where its 95-odd employees occupy a building in close proximity to the Paul Scherrer Institute (postal address: HSK, CH-5232 Villigen-HSK). Additional information can be accessed at the HSK's own homepage www.hsk.ch. The Swiss Nuclear Safety Inspectorate will be included in the FLAG (management with service agreement and global budget) reform project in 2004.

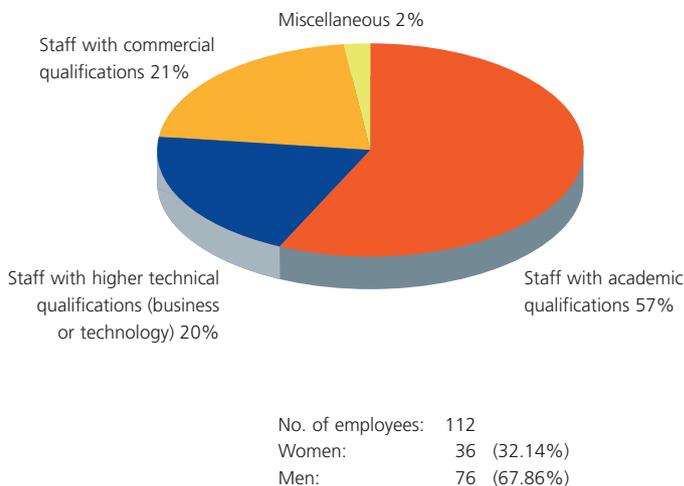
SFOE organisation chart



* Member of the Management Board



Professions within SFOE (Berne), 2003



	2010 target	2002 status	2002 status without Energie 2000 & SwissEnergy ⁴
Efficient energy use			
Consumption of fossil fuels ^{1/2}	-10%	-0.5%	+5.7%
Electricity consumption ²	≤+5%	+3.2%	+8.2%
CO ₂ emissions ^{1/3}	-10%	-0.7%	+5.6 to 8.8% ⁶
from combustibles ³	-15%	-5.1%	+3.5 to 8.4% ⁶
from motor fuels ^{1/3}	-8%	+6.6%	+9.1 to 9.4% ⁶
Renewable energy			
Hydropower production ^{2/5}	stable	+1.6%	not disposable
Other renewable energies ²			
Electricity ²	+0.5 TWh (+1%)	+0.051 TWh	0.0265 TWh
Heat ²	+3.0 TWh (+3%)	+0.63 TWh	0.18 TWh

¹ Excluding international flights, domestic principle in accordance with CO₂ Act

² Versus 2000

³ Versus 1990

⁴ Estimate according to impact and ex post analyses

⁵ Mean anticipated production

⁶ Depending on assumption concerning electricity mix (Switzerland or EU)

Selected SwissEnergy highlights

- End energy consumption in Switzerland fell by 5.9% in 2002 thanks to SwissEnergy and its predecessor, Energy 2000
- As of the end of 2003 there were approximately 2,500 buildings in Switzerland that comply with the MINERGIE standard
- Up to the end of 2003, the Energy Agency for Industry was able to negotiate target agreements with approximately 1,000 companies aimed at enhancing energy efficiency and reducing CO₂ emissions
- As of the end of 2003, more than 100 municipalities in Switzerland had qualified for the award of the "energy city" label
- During 2003, some 40,000 drivers received instruction in ecological driving (Eco-Drive® programme)

Electricity industry ordinance

A federal law is to counteract the unregulated market liberalization, to regulate network access, guarantee public service and the security of supply. Furthermore, it is to create a legal basis compatible with the EU provisions which will become effective on 1 July 2004. The commission entrusted with the preparation of the legislation will complete its work by spring, followed by a political consultation procedure.

SwissEnergy buildings campaign

Together with its partners, SwissEnergy will launch a campaign involving newspaper advertisements, an Internet portal and the media to demonstrate that there is significant energy efficiency potential in the area of buildings. The MINERGIE standard makes it possible to divide energy consumption for heating purposes by two.

Nuclear energy ordinance

The new Nuclear Energy Act is expected to come into effect at the beginning of 2005, and associated legislative work is currently under way. This includes a Nuclear Energy Ordinance, plus a variety of other associated decrees and ordinances. The Nuclear Energy Ordinance concretizes several provisions of the Nuclear Energy Act (e.g. operation and decommissioning of nuclear facilities, and the disposal of radioactive waste). The consultation procedure concerning this ordinance is scheduled for late spring 2004.

Full revision of the Federal Nuclear Energy Liability Act

The total revision is intended to enable the ratification of the international Conventions of Paris and Brussels, and to increase the liability cover which today is fixed at 1 billion

Swiss francs. The consultation procedure will be launched during the first half of the year.

Disposal of radioactive waste

The basis for Switzerland's disposal strategy is to be defined by the end of 2004. The main elements are a new selection procedure and proposals for structural and organisational modifications. The technical evaluation of a suitable disposal site for high-level radioactive waste (Opalinus clay project) will be finished in 2004.

Electricity labelling and remuneration of additional costs of feeding electricity from small-scale power plants into the network

The provisions governing implementation and enforcement of these measures are to be drawn up in 2004. The proposed electricity label will provide information about the production method and country of origin. The additional costs incurred by electricity distribution companies in association with the intake of electricity from small-scale hydropower plants, photovoltaics systems, etc. are now to be covered by the operators of ultra-high-voltage networks. The consultation procedure is scheduled for mid-2004.

Bonus/penalty system for motor vehicle tax

Energy-efficient vehicles with low CO₂ emissions are to be promoted through a fiscally neutral modification of the motor vehicle tax. At the time of the first registration the most ecological vehicles will receive a bonus from a fund supplied by an increase of this tax of 4% to 6% or 8%. The necessary legal basis will be elaborated in 2004, and the consultation procedure is scheduled for the second half of the year.

Total final consumption of energy sources in Switzerland

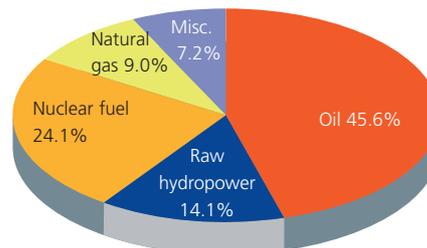
12

Energy source	Final consumption in original units		Final consumption in TJ	
	2000	2002	2000	2002
Petroleum products including	11 966 000 t	11 662 000 t	510 360	497 390
Fuel oil including	5 094 000 t	5 110 000 t	217 110	217 820
Extra light heating oil	4 803 000 t	4 836 000 t	204 610	206 020
Medium-grade oil	14 000 t	120 000 t	6 010	4 940
Heavy-grade oil	16 000 t	20 000 t	560	700
Petroleum coke	129 000 t	134 000 t	5 930	6 160
Miscellaneous				
Motor fuel including	6 872 000 t	6 552 000 t	293 250	279 570
Petrol	3 983 000 t	3 795 000 t	169 280	161 290
Aviation fuel	1 582 000 t	1 380 000 t	68 300	59 340
Diesel	1 307 000 t	1 377 000 t	55 940	58 940
Electricity	52 373 GWh	54 029 GWh	188 540	194 500
Natural gas	26 451 GWh	26 990 GWh	95 220	97 160
Coal	208 000 t	205 000 t	5 850	5 730
Wood and charcoal	2 301 000 m ³	2 420 000 m ³	19 970	21 000
District heating	3 689 GWh	3 798 GWh	13 280	14 320
Municipal and industrial waste	–	–	15 740	16 610
Other renewable energies¹	1 758 GWh	1 933 GWh	6 330	6 960
Total final consumption	–	–	855 290	853 670

¹ Sun, wind, biogas, ambient heat

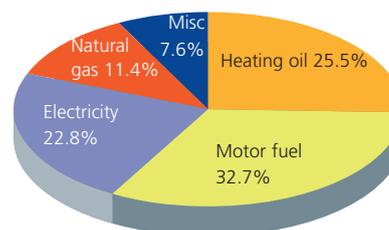
13

Energy utilisation and final energy consumption of Switzerland in 2002



**Total energy
utilisation**
1 163 100 TJ

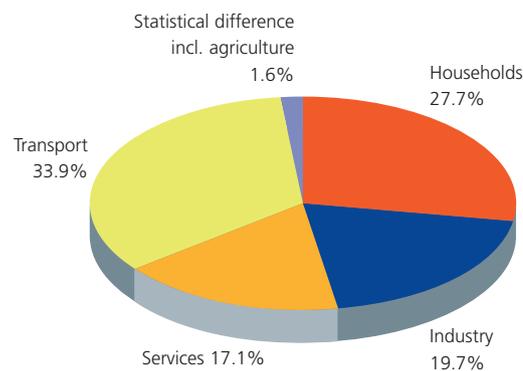
Total 101.4% of gross
consumption including
1.4% export
surplus of electricity



**Final energy
consumption**
853 670 TJ

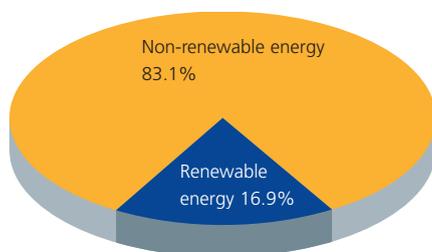
Not including export
surplus of electricity
or physical losses
from the transformation
of energy

Final energy consumption for 2002 of various consumer groups

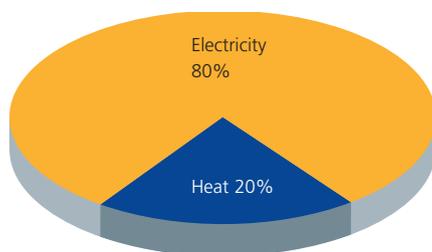


Proportion of renewable energies to end energy consumption in 2001

End consumption: total 872 630 TJ



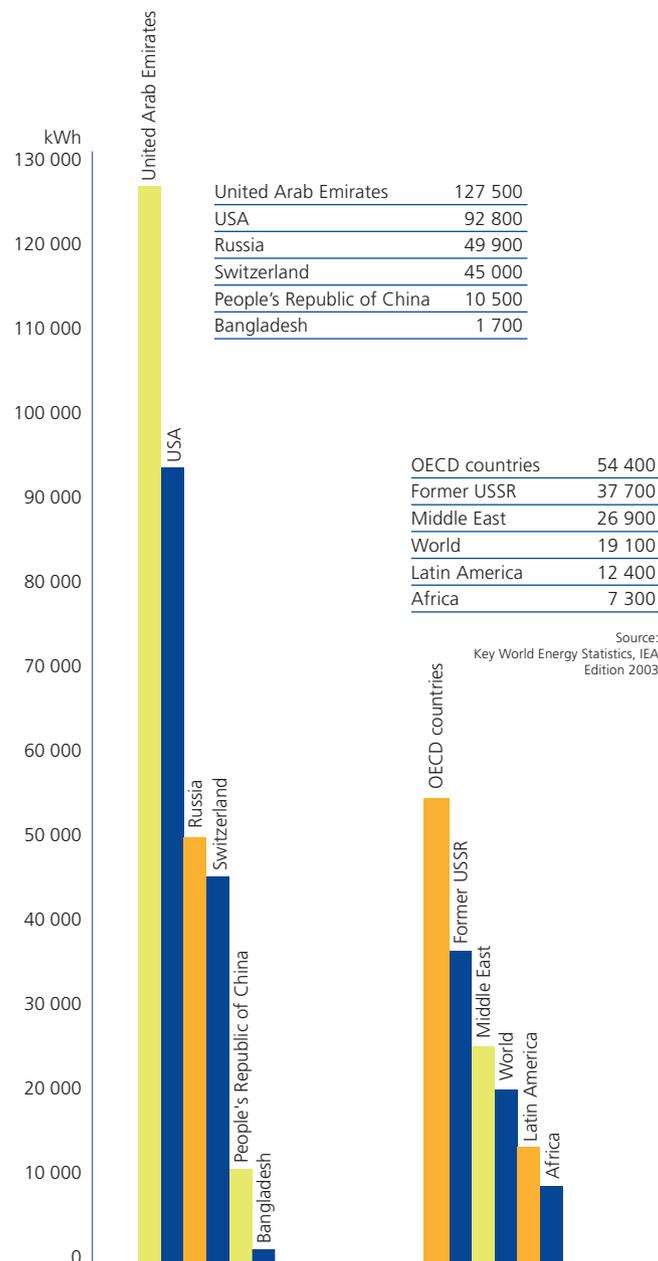
End consumption of renewable energy: 147 127 TJ



Wood	9.5%
Waste	5.5%
Environmental heat	3.5%
Biogas	0.8%
Solar energy	0.7%

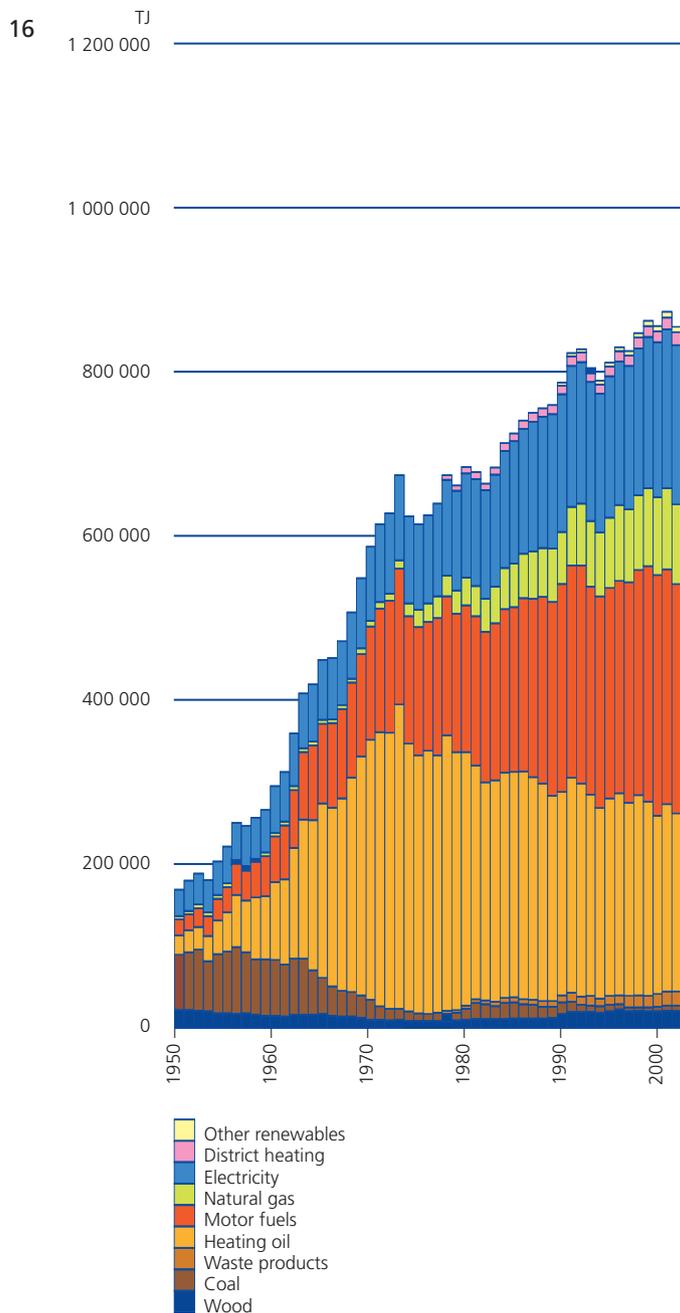
Hydropower	78.16%
Waste	1.68%
Biogas	0.12%
Photovoltaics	0.03%
Wind	0.01%

Primary energy consumption per capita and per annum for a selection of countries and regions



Source:
Key World Energy Statistics, IEA
Edition 2003

Final energy consumption of Switzerland 1950–2002



17

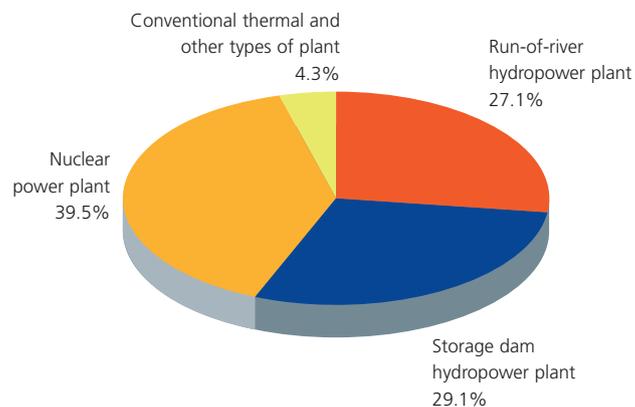
Key Swiss energy industry statistics

	2000	2002
Expenditures for final energy consumption		
in CHF m	23 990	22 500 ¹
% of GDP (nominal)	5.9%	5.4%
Import surplus		
CHF m	5 833	4 045
% of all exports	3.7	2.7
Dependency on foreign imports in %	80.1	80.1
Index of consumer prices		
1990 = 100, real		
Heating oil	119.5	95.1
Petrol	112.3	102.1
Natural gas	96.3	104.5
Electricity	104.8	102.2
Final consumption per capita		
(1990 = 100)	102.6	100.4 ²
Industrial production		
(1990 = 100)	127	119

¹ Estimate

² Provisional

Electricity production per type of power plant 2002



Decimal factors

Symbol	Factor	
kilo (k)	10 ³	1 000
mega (M)	10 ⁶	1 000 000
giga (G)	10 ⁹	1 000 000 000
tera (T)	10 ¹²	1 000 000 000 000
peta (P)	10 ¹⁵	1 000 000 000 000 000
exa (E)	10 ¹⁸	1 000 000 000 000 000 000

Units of measurement

Measurement	Unit	Symbol	Conversion
Output	watt	W	1 HP = 735 W
Energy	joule	J	
	watt-second	Ws	1 Ws = 1 J
	kilowatt-hour	kWh	1 kWh = 3 600 000 J = 3.6 MJ
	calorie	cal	1 cal = 4.186 J

Conversion factor

To:	J	TJ	kWh	GWh	cal
From:					
J	1	1x10 ⁻¹²	0.2778x10 ⁻⁶	0.2778x10 ⁻¹²	0.2388
TJ	1x10 ¹²	1	0.2778x10 ⁶	0.2778	0.2388x10 ¹²
kWh	3.6x10 ⁶	3.6x10 ⁻⁶	1	1x10 ⁻⁶	0.8598x10 ⁶
GWh	3.6x10 ¹²	3.6	1x10 ⁶	1	0.8598x10 ¹²
cal	4.186	4.186x10 ⁻¹²	1.163x10 ⁻⁶	1.163x10 ⁻¹²	1

For additional information:

- Swiss Federal Office of Energy (SFOE), Energy for the Swiss (available in German, French, Italian, English)
- Free subscription to “Energy Extra” providing essential SFOE energy news and info on the SwissEnergy programme, published six times each year in German and French
- Free subscription to ENET News – information on research in the energy field, published three times a year in German and French
- Making good progress
2nd annual report of SwissEnergy, 2002/2003 (available in German, French, Italian and English)
- SwissEnergy – a partnership programme to promote energy efficiency and renewable energies. Pocket-sized brochure (available in German, French and Italian)
- SwissEnergy – a who’s who. Pocket-sized brochure (available in German and French)

The above publications may be ordered from:
 SFOE, Information Section, 3003 Berne, Switzerland
 Phone 031 323 22 44 / Fax 031 323 25 10
 E-mail: office@admin.ch



Concept and realisation: Infel AG, 8021 Zurich

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