

Swiss Energy: Efficiency is the watchword

6th Annual Report of SwissEnergy (2006/2007)



SwissEnergy: Firmly established in the energy field

The SwissEnergy programme, which is based on partnerships in the areas of energy efficiency and renewable energy, started the second stage (2006–2010) of its programme with a flourish. The programme's overall impact on energy use increased over the previous year by approximately 26 per cent – the highest gain since the programme was initiated in 2001 and this despite lower funding than in that year.

The programme brings influence to bear on the development of energy and climate policies in Switzerland with concrete projects and voluntary measures. The programme network is made up of cantonal and municipal authorities, industrial, consumer and environmental associations, and public and private-sector agencies.

On the basis of the Energy Act and the CO₂ Act, the programme management is aiming to reach the following goals by 2010:

- Reduction of CO₂ emissions by ten per cent compared to the 1990 level,

- Limiting the increase in electricity consumption to a maximum of five per cent compared to the 2000 level,
- Doubling the proportion of new renewable forms of energy used in electricity and heat production in comparison to the level in 2000.

In order to attain these targets SwissEnergy maintains a network supported by approximately 30 partners all of whom are party to various service mandates and target agreements.



No mean results

Six years into the programme Swiss Energy is able to present positive results:

- Since the programme began in 2001, voluntary measures introduced by SwissEnergy have led to a 1.8 per cent reduction in overall energy consumption compared to the reference trend (excluding energy saving features).
- Taking into account the voluntary measures introduced as part of the previous programme, Energy 2000, energy consumption in Switzerland in 2006 would have been about 4 per cent higher compared to the reference trend.
- Even taking legislation into consideration, today's overall consumption of fossil energy would be more than 8 per cent higher and use of electricity would have increased by approx. 4.5 per cent without the SwissEnergy programme and the previous Energy 2000 programme.
- The continuing impact of all voluntary measures introduced by Energy 2000 and SwissEnergy combined rose by 7 per cent to 31.2 peta-joules (PJ) compared to the result in 2005.
- Between 2001 and 2006, the supplementary impact of the SwissEnergy

programme on energy consumption increased by more than 160 per cent. Growth was continuous in all years.

- The SwissEnergy network makes a major contribution to the economy: In 2006 the programme generated gross investment totalling approximately 1,085 million Swiss francs. Now the net effect on employment is equivalent to approximately 5,900 person-years.

In view of what has been achieved, today SwissEnergy is a significant factor in Switzerland's energy and climate policy: Together with the Energy Act and the CO₂ Act, the CO₂ tax and the "climate cent", the programme constitutes the framework for a credible modern energy and climate policy that also strives to conserve the environment.



Figure 1 – SwissEnergy goals for 2010, situation in 2006 and estimated situation in 2006 without Energy 2000 and SwissEnergy.

	Targets for 2010	Situation in 2006	Estimated situation in 2006 without E2000 and SwissEnergy ⁴
Rational energy use			
Consumption of fossil fuels ^{1/2}	-10%	+2.4%	+10.7%
Electricity consumption	≤+5%	+10.3%	+15.3%
CO₂ emissions^{1/3}			
CO ₂ emissions ^{1/3}	-10%	+0.6% ⁷	+8.1% ⁶
from combustibles	-15%	-4.6% ⁷	+4.8% ⁶
from vehicle fuel	-8%	+9.1%	+13.5%
Renewable forms of energy			
Hydropower ^{2/5}	stable	+2.3%	not available
Other renewable forms of energy²			
Electricity ²	+0.5 TWh (+1 percentage point)	+0.33 TWh	+0.25 TWh ⁸
Heat ²	+3.0 TWh (+3 percentage points)	+1.88 TWh	+0.34 TWh ⁸

1 Excluding flights abroad; inland principle, in line with the CO₂ Act

2 With a reference to 2000

3 With a reference to 1990

4 Based on the impact analysis and the trend projection ex-post analysis

5 Average production anticipated

6 CO₂ emissions from electricity production not included

7 Corrected for variations in the climate

8 Status in 2006 without the SwissEnergy programme



Energy related impacts in 2006

Emphasis on programme priorities proves fruitful

In the second stage of the SwissEnergy programme (2006 to 2010) the priorities designated by the programme management will be building modernisation, energy efficient mobility, energy efficient appliances and electric motors, renewable forms of energy and rational use of energy and heat throughout industry.

Determined pursuit of the five programme priorities proved fruitful in 2006:

- The energy-related impact achieved through voluntary measures and cantonal promotional projects increased to approximately 4.4 PJ. This constitutes an increase in impact of 26 per cent (2005: 3.5 PJ).
- Around 3 PJ of combustibles, 0.4 PJ of vehicle fuel and 1 PJ of electricity could be either saved or substituted using renewable energy sources.
- In 2006, the additional impacts in the renewable energy sector increased in comparison to the previous year by approximately 34 per cent – which means

this sector is on track to reach targets for both the heating and power sectors.

- In 2006, the impact of continuing voluntary measures from Energy 2000 and SwissEnergy combined increased by 7 per cent to 31.2 PJ.
- Only 0.2 centimes of funding were required to achieve savings of one kilowatt-hour of energy in 2006. In comparison, in 2003, 0.6 centimes were required.
- The overall supplementary impact on energy use achieved by measures implemented by SwissEnergy in the year of



the report corresponds to approximately 0.5 per cent of Switzerland's energy consumption in 2006.

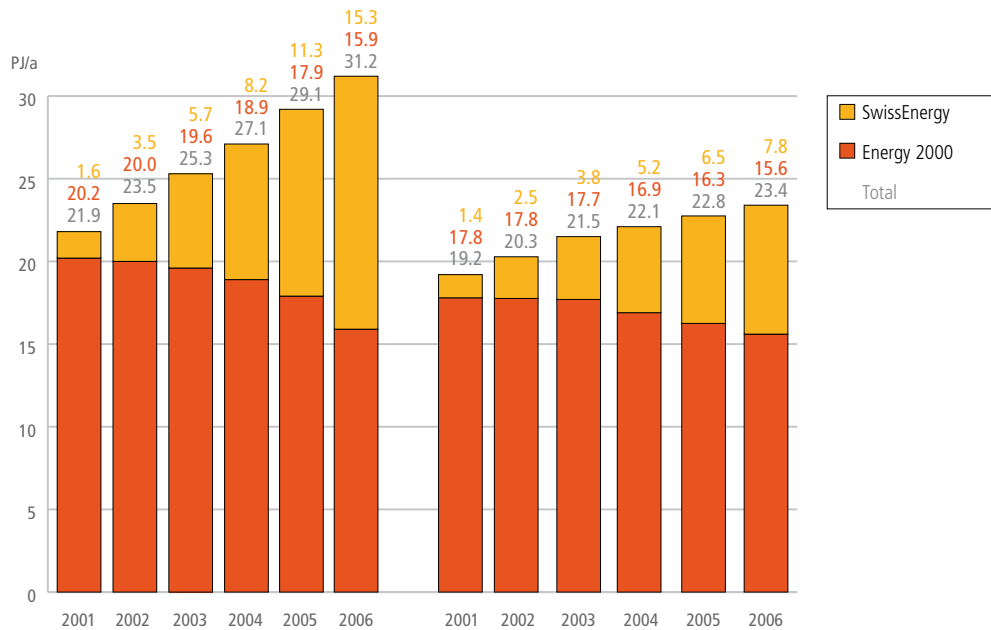
These outstanding results were achieved with a programme budget of 42 million francs (including 14 million francs in global subsidies to cantons), a budget similar in size to the previous year, corresponding to the lowest budget ever since the programme began in 2001.

As in the previous year, the most significant supplementary impact on energy

savings was achieved through the energy models introduced by industry followed by SwissEnergy for municipalities, and the sectors energy from wood, heat pumps and MINERGIE.

The only sector with disappointing results was mobility: the average fuel consumption of cars sold in 2006 fell to 7.62 litres per 100 kilometre, a reduction of a mere 0.05 l/100 km. Therefore it is no longer likely that the target reduction goal of 6.4 l/100 km can be achieved by 2008.



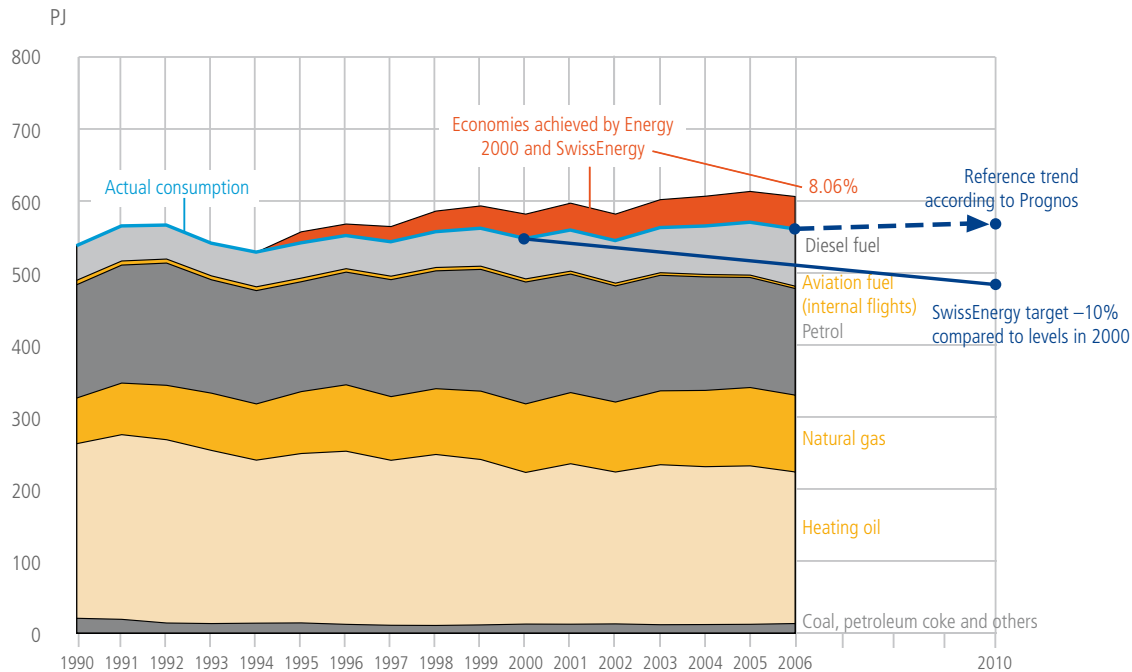


¹ Based on the INFRAS impact analysis

² Based on the Prognos ex-post analysis; values for 2005 and 2006 based on trend projection

Figure 2 – Energy related impacts from 2001 to 2006 based on measures introduced since 1990 as a result of the Energy 2000 and the SwissEnergy programmes.

Figure 3 – Consumption of fossil-based energy, 1990 to 2006, economies brought about by Energy 2000 and SwissEnergy and target according to SwissEnergy and reference trend.



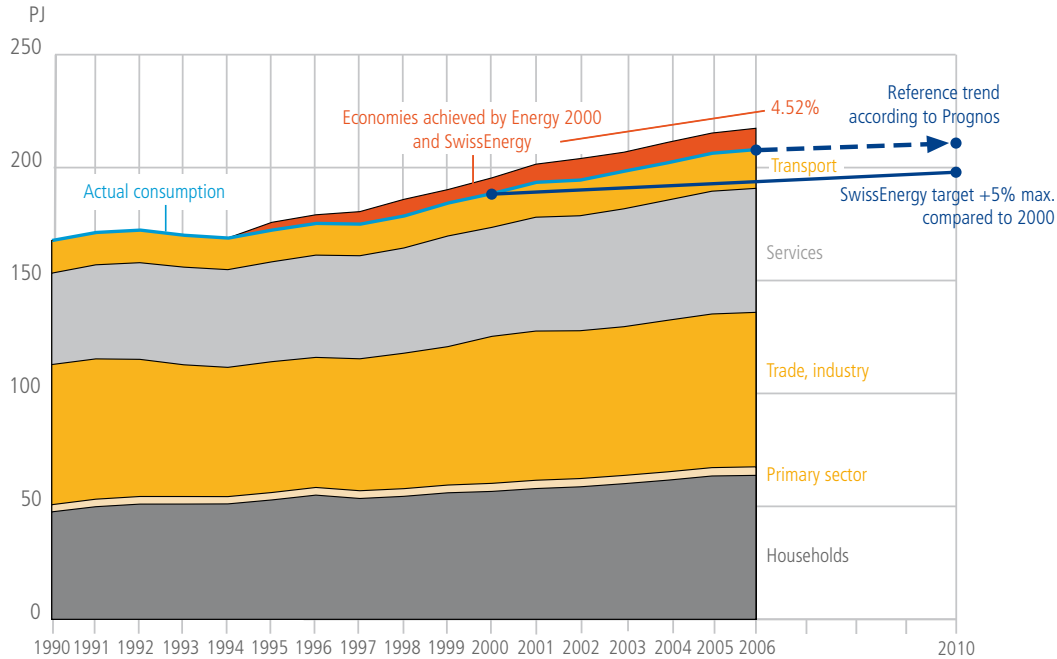


Figure 4 – Electricity consumption, 1990 to 2006, economies brought about by Energy 2000 and SwissEnergy and target according to SwissEnergy and reference trend.



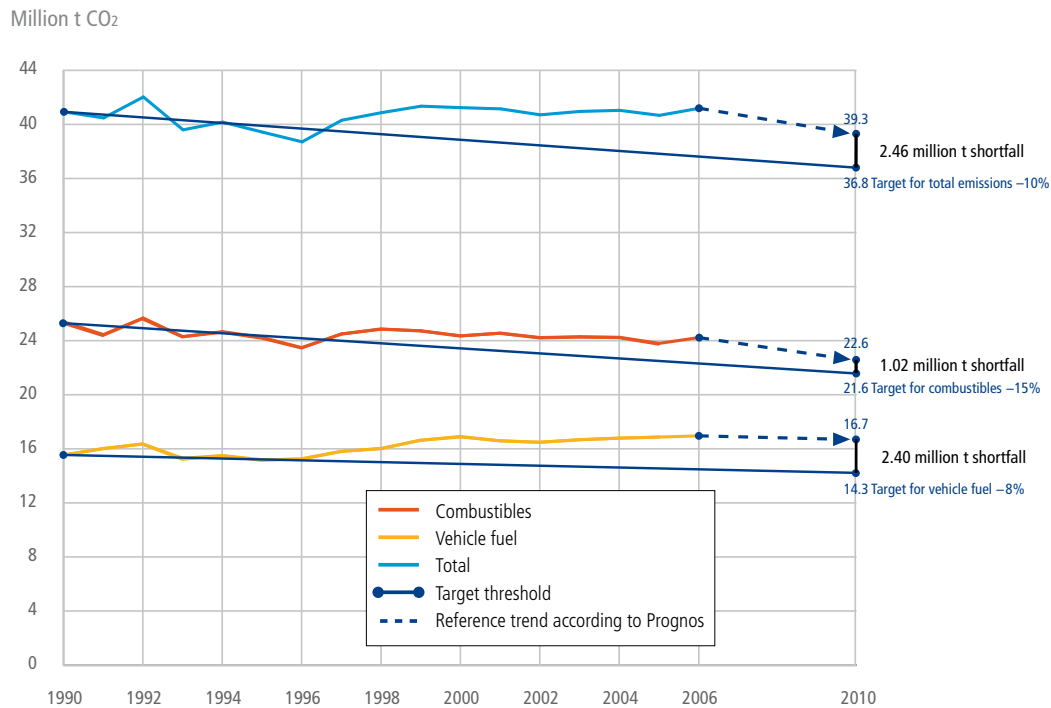
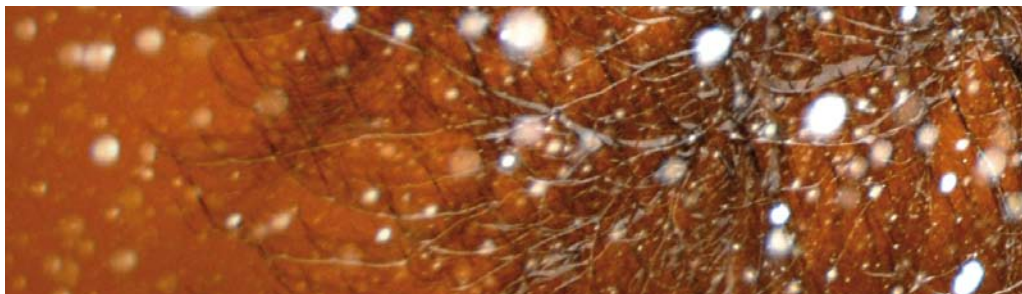


Figure 5 – CO₂ emissions 1990 to 2006, reference trend and targets according to CO₂ Act.



Impact on the economy

Funds employed efficiently

The programme management continued to employ the available funds efficiently in 2006: In spite of a slightly reduced budget of 42 million francs, the impact of the programme increased by a further 26 per cent compared to the previous year. Only 0.2 centimes of funding were required to save one kilowatt-hour of energy in 2006 (2003: 0.6 centimes).

Volumes of investment remain high

In 2006, with a budget of 42 million francs, SwissEnergy – together with its partners in the market and the target groups concerned – generated gross investment and other expenditure totalling approximately 1,085 million francs. This corresponds to an increase of 23 per cent over the previous year (2005: 880 million francs).

Permanent new jobs

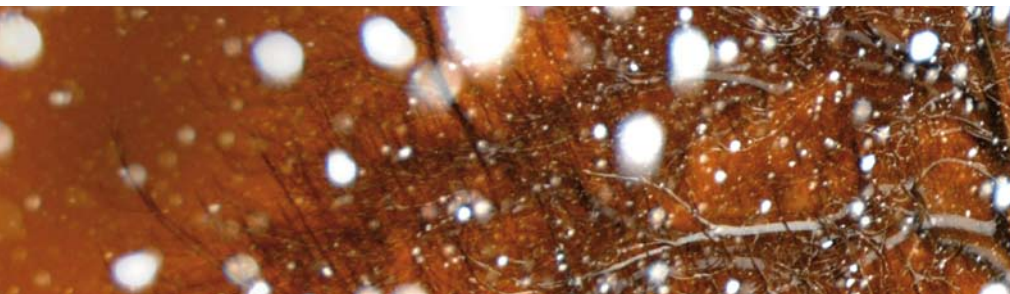
In 2006, the net impact on employment was equivalent to approximately 5,900 person-years. The market sectors Renewable energy and Public and construction are responsible for the greatest impact on employment because of the high volumes of investment and expenditure generated. Three-quarters of the estimated impact is consolidated in these sectors.



Additional revenue	Million CHF	Investment generated²	Million CHF
Income tax	33–62	Voluntary measures ³	1,085
Value Added Tax	3–27	Legislative measures ⁴	165
Unemployment Insurance (lower amounts paid out)	201–371	Total investment generated	1,250
Total additional revenue	237–460		
Expenditure			
Federal government funding of SwissEnergy ¹	42		
Funding generated by cantons as a result of the SwissEnergy programme	32		
Decrease in energy tax revenue	10		
Total expenditure	84		
Balance (positive)	153–376		

1 Including global subsidies of CHF 14 million to the cantons
2 Funding by the federal government, cantons and other partners of SwissEnergy (CHF 48.4 million)
3 Including cantonal promotional programmes
4 Estimated on the basis of the previous year

Figure 6 – Impact of SwissEnergy measures in 2006 on public finances and the unemployment insurance and investment generated by SwissEnergy funding in 2006.



Activities in 2006

Energy Cities and MINERGIE still on the crest of the wave

- In 2006, ten further cities and towns received the Energy City label. On 1 January 2007 almost one third of the Swiss population now lived in one of the 137 Energy Cities.
- Both Baden and Basle were awarded the gold European Energy Award. The awarding of the label is seen as confirming the effectiveness of the successful, persistent campaign in the field of energy policy.
- MINERGIE® even more popular: At the end of 2006, in Switzerland, about 6,300

buildings were certified to MINERGIE and 116 to MINERGIE-P® standard; the new “MINERGIE Eco” and “MINERGIE P Eco” standards were introduced in the year of the report. The total energy reference area of all buildings conforming to these standards at the end of 2006 totalled approximately 6,000,000 m².

Companies lower costs, effect of Energy label apparent

- At the end of 2006, 1,657 companies and premises were involved in the Energy Agency for the Economy's (EnAW) CO₂

reduction process. Thus – including the Cemsuisse association – approximately 37 per cent of CO₂ emissions produced by Switzerland's industry sector are now the subject of target agreements.

- In 2006, there was also a further increase in the market share held by energy-efficient appliances and lights – classified as belonging to the A and B energy efficiency categories. Conclusion: Four years after SwissEnergy launched the Energy label the product has been effectively introduced into the market and now stands at the beginning of a growth phase.



Energy label for cars revised

- Since the Energy label for new cars was introduced, the market share of new vehicles designated as either class A or class B has increased steadily. The conditions for awarding the label were revised in mid-2006: the classification formulae for allotting cars to efficiency categories were revised which now means that the heavier the vehicle, the higher the threshold for classifying the car as either efficiency class A or class B. This makes sense because the fuel consumption of new car fleets only

declined by a mere 0.65 per cent. The gain in efficiency was mainly lost by vehicle weight gains. Once again the annual target reduction of three per cent, agreed between the federal government and the vehicle branch, was clearly not attained.

Renewable forms of energy: The boom continues

In 2006, the amount of electricity and heat generated using renewable forms of energy rose once again: an additional 131

GWh of electricity were produced from renewable forms of energy (excluding hydropower) in the year of the report corresponding to a 12 per cent increase over the previous year.

The heating sector presented a similar situation: In this sector the proportion contributed by renewable energy could be increased by a further 498 GWh (figure corrected for variations in the climate) to 10,788 GWh, so the proportion of renewable energy now used in heat production is 1,885 GW above that of the year 2000.



- Energy from wood is in demand: In 2006, wood accounted for 55 per cent of the total heat produced from renewable forms of energy. 4 per cent of electricity produced from renewable forms of energy was produced from wood.
- Heat pumps – Who still needs one? Sales of heat pumps broke all records in 2006. For the first time in the history of modern heating technology, approximately the same numbers of heat pumps were sold as oil-fired boilers. Compared to the previous year sales of heat pumps rose from 12,000 to about 16,000. Over 70 per cent of new buildings with heating requirements of up to 20 kilowatts were equipped with heat pumps.
- Interest in solar energy is still increasing: Solar energy's share in heat production increased by 5.2 per cent in 2006 compared to the previous year; the proportion of electricity produced increased even more impressively by 17.1 per cent.
- New biogas plants up and running: In 2006, heat produced from biomass (excluding wood) amounted to about 299 GWh with electricity produced reaching 155 GWh. Twelve new plants, each with an electrical rating of more than 100 kW, were attached to the grid. By the end of 2006, a total of 84 biogas plants were in operation on agricultural premises leading to a long-term annual increase in electricity production from biogas plants of approximately 7,000 MWh.
- Wind energy takes off: In the year of the report the 34 wind energy plants installed in Switzerland produced about 15.3 GWh of electricity. This constitutes an astounding increase over the previous year, namely 82 per cent. Thus, practical proof has now been provided showing



the feasibility of energy production from wind energy in Switzerland.

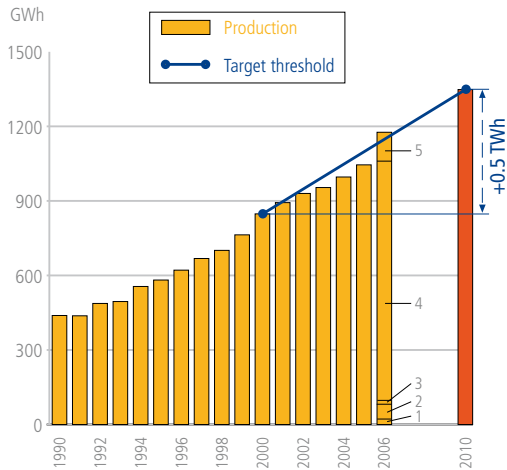
- Geothermal energy – Looking ahead: The earthquakes triggered by the geothermal energy project in the city of Basle in 2006 represented a significant setback for geothermal energy in general. As a further consequence in the coming years more research and further pilot projects will be needed to develop new technology to use the heat stored in the depths of Earth's surface.
- Small-scale hydropower plants in great demand: One of the traditional strengths

of the small-scale hydropower programme has been providing support in the form of preliminary studies and initial analyses. Seventeen preliminary studies were initiated for projects with an estimated annual production of more than 20 GWh and 44 initial analyses (rivers, streams and plant infrastructure) were done on projects involving almost 18 GWh, a major success for this sector. With a view to attaining the new targets for renewable forms of energy this is highly promising.

Improved communication

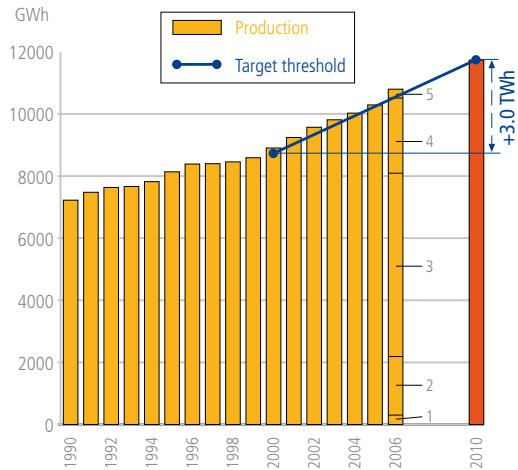
- In 2006, the SwissEnergy programme management launched the new broadly based communications strategy with the brochure entitled "Spot the difference!" In the brochure straightforward captions are used along with humorous illustrations to highlight both intelligent energy solutions and the products that are available; readers are shown which products give the same or greater comfort while using less energy and saving both money and the environment.





Electricity production
(excluding hydropower)

- 1 Solar power (1.9 %)
- 2 Biomass (5.1 %)
- 3 Wind Energy (1.3 %)
- 4 Proportion of renewable energy from waste (81.8 %)
- 5 Proportion of renewable energy from drainage (9.9 %)



Heat production

- 1 Solar power (2.8 %)
- 2 Ambient heat (17.4 %)
- 3 Biomass (54.8 %)
- 4 Proportion of renewable energy from waste (22.4 %)
- 5 Proportion of renewable energy from drainage (2.6 %)

Figure 7 – Production from renewable forms of energy (electricity and heat) 1990 to 2006 and production in 2006 from the various energy sources.



Finances

Public funds for the SwissEnergy programme

The Swiss Federal Office of Energy (SFOE) spent 42 million francs in 2006 to finance SwissEnergy's mandates. Of this sum 6.8 million francs was used in the Renewable energy sector (2005: 8.7) and 15.3 million francs for measures to promote rational use of energy in the sectors Public authorities and construction, Industry, Appliances and mobility (2005: 15.1). Not included in the foregoing amounts is SFOE expenditure for management, general marketing, controlling and continuous education and

training projects in the energy sector totalling 5.7 million francs (previous year: 4.6). Global subsidies to the cantons totalled 14 million francs.

Expenditure

In addition to the foregoing the SwissEnergy programme generated private investment in definite projects. Further, each agency supported by SwissEnergy has to obtain third party financing amounting to at least 60 per cent of its budget. Thus, the overall funds available to the programme network are substantially greater.



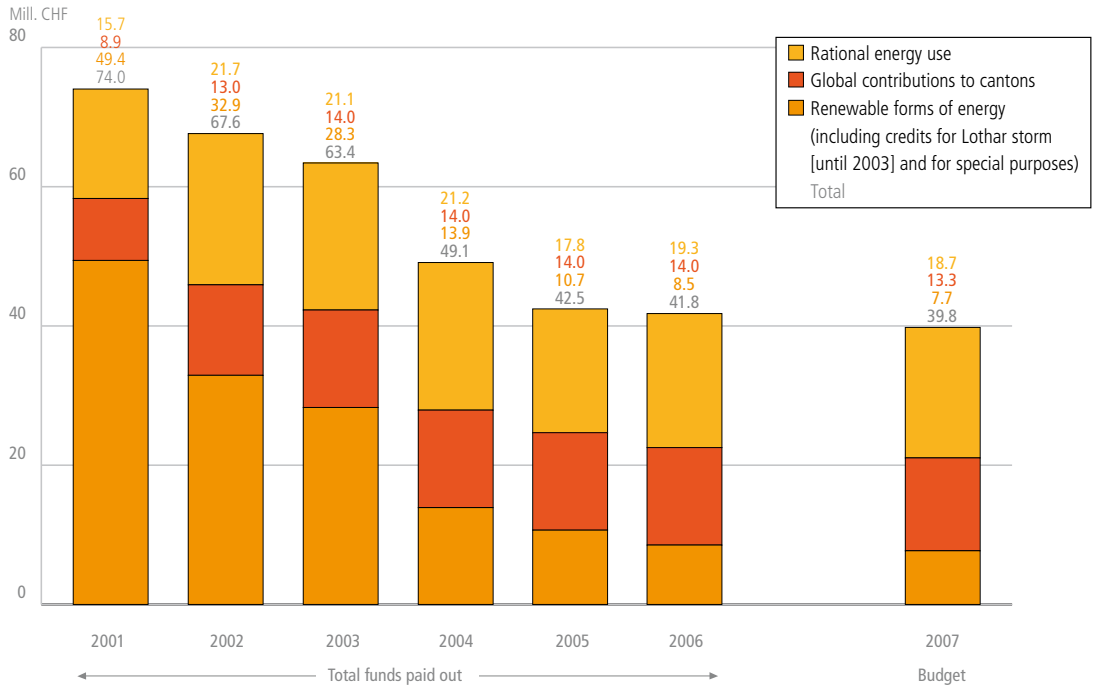
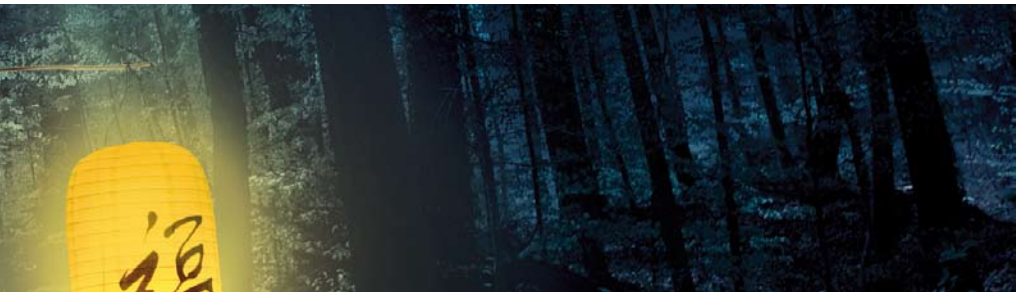


Figure 8 – Federal funds for the SwissEnergy programme 2001 to 2007 (funds for programme management, continuous education and training, evaluation and overall communications are shown divided proportionately between rational energy use and renewable forms of energy).



Outlook for 2008

Energy efficiency platform:

More impetus for sustainable energy

In early summer 2007 SwissEnergy presented a paper on efficient energy use to the general public entitled "Energy efficiency platform for a sustainable energy future". In the paper the programme management set down the following targets: Reduction of the consumption of fossil-based energy by 20 per cent by 2020 compared to 2000 levels and limiting the increase in electricity consumption to 5 per cent at most in the same time period.

To attain these targets the SwissEnergy strategy group proposes a bundle of measures bearing on all priority sectors – Building modernisation, Renewable energy, Energy-efficient appliances and motors, Rational energy and ambient heat use in industry and Efficient, low-emission mobility. These proposals consolidate the energy efficiency policies of both the federal government and the cantons and in specific points broaden such by adding new measures. The programme management will also support efforts to implement the following measures by 2010:

- The model cantonal provisions for construction (MuKE modules) will be reinforced, made binding and implemented throughout Switzerland.
- In co-operation with the cantons, the federal government will launch a comprehensive programme to promote building renovation with funding of between 150 and 200 million francs per year. The programme will be financed with designated funds from the CO₂ tax.
- The federal government will issue certification requirements for appliances and minimum energy standards for



categories of appliances and plant, such as heating systems and electric motors. These minimum requirements will harmonise with measures that already exist, or are planned, by the EU.

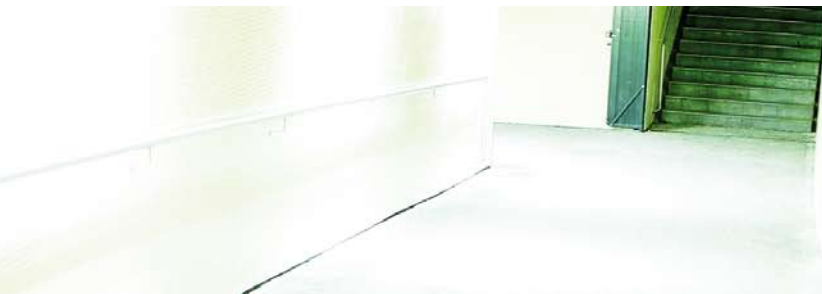
- The CO₂ tax on combustibles will be introduced in 2008 and increased by 2010 depending on its effectiveness.
- At the beginning of 2009 a call for projects in the energy efficiency sector will be launched for which annual funding of 16 million francs will be available.
- The tax on imported cars, which has been long in planning, will be based on

an energy bonus-malus system.

- Electricity suppliers will be encouraged to implement efficiency measures for power supplies.
- The measures will be harmonised to the extent possible with international developments and with those in the EU in particular. New EU Directives in the field of energy efficiency will also be applied in Switzerland as soon as possible.

In its efficiency paper SwissEnergy presents its long-term vision of the 2,000-Watt society, one in which only approximately

one third of today's levels of energy are consumed. However, voluntary agreements between the federal government and industry are no longer enough to realise this vision. The SwissEnergy programme management is therefore convinced that the time for voluntary measures alone has passed, in addition existing regulations need to be more strictly enforced and new legal instruments are required to guarantee a breakthrough for energy efficiency in all sectors.



The SwissEnergy strategy paper constitutes the basis for the energy efficiency action plan, which the Federal Council gave in mandate to the Swiss Federal Office of Energy SFOE in spring 2007. The action plan will contain definite measures to promote the efficient use of energy in Switzerland and be supported by an action plan for renewable energy.

Viable prices for delivery to the grid

In future electricity suppliers will have to accept electricity produced from renewable energy sources and pay a viable price to producers under a new Act approved by Parliament in March 2007. Payments will be financed through a levy on electricity consumption of at most 0.6 cents per kWh making it possible to pay grants of CHF 320 million per year to promote re-

newable forms of energy. Half of this CHF 320 million may be claimed by hydropower – or small-scale hydropower plants with a capacity of up to 10 MW.

Amended Act on mineral oil tax

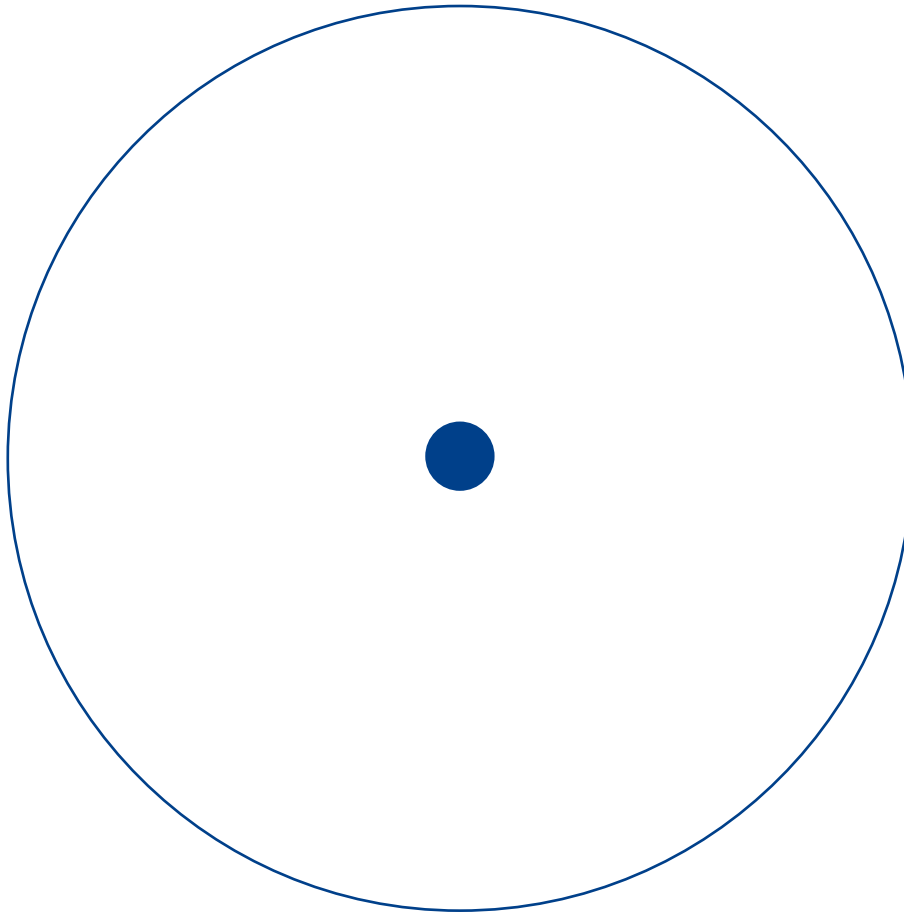
It is anticipated that the amended Act on the mineral oil tax will take force in Janu-

ary 2008. As a result of this Act all vehicle fuels produced from biological sources that meet minimum requirements of proof of a positive overall ecological balance and are produced under socially acceptable conditions will no longer be subject to the mineral oil tax.

“Climate cent”: Instrument for the reduction of CO₂ emissions

The climate cent, which amounts to a 1.5-centime levy on petrol and diesel fuels, is a voluntary measure implemented by industry to reduce the amount of CO₂ discharged throughout Switzerland. The Climate Centime Foundation collects the tax. As determined in a contract with the federal government, the Foundation has to implement effective climate protection projects to save at least 1.8 million tonnes of CO₂ each year in the 2008 to 2012 period – of which at least 0.2 million tonnes of CO₂ should be saved in Switzerland and a maximum of 1.6 tonnes abroad. Currently, the Foundation has a limited mandate that runs out at the end of 2007. Under the target agreement between the federal government and the Foundation, at the end of 2007 the federal government will decide whether or not to extend the mandate until 2012 depending on how goals are met.





Contents of the CD-ROM

- 5 documents relating to controlling, evaluation and impact analysis
- 10 documents concerning the federal government and the cantons
- 20 documents concerning agencies and networks
- 12 documents concerning towns and cities, companies, organisations

CD-ROM



Alain Bucher, www.alainbucher.ch



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Verena Gerber-Menz,
www.gerber-menz.ch



Masato Yokoyama,
www.masato.ch



Jeroen Seyffer, www.seyffer.com

"image énergie"

High-voltage current or a flurry of camera flashes? What results when professional photographers specialising in advertising, people, the culinary arts or architecture focus on the topic of energy? Both SwissEnergy and the Swiss Association of Professional Photographers were interested in getting an answer to this question; together both organisations arranged a photo competition.

The pictures used to illustrate the annual report were submitted by members of the Bernese section as part of its competition and were selected by an independent, national jury of experts. The booklet of postcards from the competition is available from SwissEnergy at the address below.

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