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Swiss Confederation

Federal Department of the Environment,
Transport, Energy and Communications DETEC

Federal Office of Energy FOE

Office for the Exemplary Role of the Confederation in Energy ERCE

The Confederation: exemplary in energy

How the Confederation and parastate enterprises
perform their exemplary role in energy

The Swisscom example



Initial report 2014

www.confederation-exemplary-in-energy.ch

Masthead

Publisher

Office for the Exemplary Role of the Confederation in Energy ERCE,
Federal Office of Energy FOE, 3003 Bern, www.confederation-exemplary-in-energy.ch

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Translation

Adapta-traductions Sàrl, Geneva

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Federal Office of Energy FOE

Bern, November 2014

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Heading together into the energy future

Implementation of the Energy Strategy 2050 will only be successful if we all contribute to it. This applies to private individuals just as much as it does to companies and the public sector. It is all the more important that the Federal Administration and the parastate enterprises should set a good example. They should meet their own power and heat requirements as far as possible from renewable energy sources and implement the “best practice” principle in all sectors.

The ETH Domain, the Federal Department of Defence, Civil Protection and Sport DDPS, the Federal Office for Buildings and Logistics FBL along with the Resources and Environmental Management programme of the Federal Administration RUMBA and the parastate enterprises Swiss Post, Swiss Federal Railways, Skyguide and Swisscom are together responsible for more than 2% of Switzerland’s energy consumption. This is a significant proportion.

It is true that, compared with other countries, the energy efficiency of the above-mentioned organizations and enterprises is good and above-average. But this good initial situation must not encourage us to do nothing. Instead, it should be used as a basis for future activities. Because only in this way can we achieve our ambitious objectives. Specifically, the individual organizations should improve their energy efficiency by 25% by 2020.

This report shows where the Federal Administration and the parastate enterprises stand today in the performance of their exemplary role. Regular reporting should ensure that the spotlight is kept on the development of the Confederation’s exemplary role in future. This creates transparency, allows for monitoring and can encourage other organizations and enterprises in the public – but also in the private – sector to take energy-efficiency measures themselves.

I am very pleased that the Federal Administration and the parastate enterprises are progressing jointly along this challenging road. Only in this way can the role model really be propagated.

Federal Councillor Doris Leuthard

Head of the Federal Department of the Environment, Transport, Energy and Communications (DETEC)

Setting a good example

Energy efficiency in the Confederation and parastate enterprises should improve by 25% between 2006 and 2020.

The Federal Council's mission

On September 4, 2013 the Federal Council adopted the message on the first package of measures of the Energy Strategy 2050 and forwarded it to Parliament. The Confederation's exemplary role in the energy sector is one of twelve explicitly stated measures in this first package. Its role is defined as follows in the Federal Council's message:

"In future, the Confederation – which is responsible for about 2% of Switzerland's total energy consumption – is to take appropriate measures to reduce and optimize energy consumption. In this way it is performing its exemplary role in the framework of the Energy Strategy 2050."

According to the message, the Confederation level comprises the federal administration, the Federal Department of Defence, Civil Protection and Sport (DDPS), the ETH Domain and the parastate enterprises that are strategically managed by the Federal Council (Swiss Post, Swiss Federal Railways, Skyguide and Swisscom – and others later on). Starting from the base year 2006, the objective is to increase energy efficiency by 25% by 2020. Efficiency is measured in relation to full-time equivalents (FTE), the number of passenger kilometers travelled or other suitable reference variables, depending on the sector. For this purpose, appropriate performance mandates are to be formulated.

The existing objectives and measures of the organizational units are to be aligned more closely with the objectives of the Energy Strategy 2050. In principle, it is necessary to include the administrative activities, the services and products as well as the employees' user behaviour.

A coordination group has been established for overall control and coordination of the Confederation's exemplary role in energy. It has adopted the name "The Confederation: exemplary in energy". The office of the coordination group CG-ERCE is run by the Federal Office of Energy. The Confederation: exemplary in energy works on a consensus basis. It defines the joint action plan for performing the Confederation's exemplary role in the Energy Strategy 2050 and coordinates communication of the results.

The Confederation intends to motivate

The measures of The Confederation: exemplary in energy plan are based on existing structures (Resources and Environmental Management programme of the Federal Administration RUMBA and large consumers in the Confederation) as well as on the experience gained from already-completed projects and programmes. One priority for the work is reporting; the aim is to publicize The Confederation: exemplary in energy plan and to motivate further enterprises and organizations to make contributions to the Confederation's Energy Strategy 2050.



The overriding aim of a 25% improvement in energy efficiency should be targeted both as a group and by each individual actor. In addition to 39 joint measures, company-specific measures are also being implemented, in which the respective actors make use of their own additional leeway for action.

In terms of content, The Confederation: exemplary in energy has defined the following areas of action for the joint measures:

- buildings and renewable energy
- mobility
- data centers and Green IT

Cooperation within The Confederation: exemplary in energy is defined in a joint declaration of intent by all partners.

Earlier initiatives

The large energy consumers in the Confederation, which include the most important parastate enterprises, have already been active in the EnergieSchweiz programme of the Federal Office of Energy for more than ten years. An exchange of experience took place and regular reporting was conducted.

Since 1999 the Federal Administration has, in addition, been pursuing the objective of recording and continually reducing its operating and product-related environmental impact under the RUMBA programme (an acronym for Resources and Environmental Management programme of the Federal Administration). The topic of energy forms a part of it.

And finally, in June 2012 the group CEOs of the parastate enterprises Swiss Post, Skyguide, SBB and Swisscom presented at a media event with federal councillor Doris Leuthard practical measures on how they intend to further reduce their energy consumption subsequent to the Energy Strategy 2050.

But The Confederation: exemplary in energy goes further: with the objective of improving energy efficiency by 25% between 2006 and 2020 and with specific action plans, the individual actors want to show that they are taking the Confederation's Energy Strategy 2050 seriously.

The Confederation and the parastate enterprises want to set an example in energy.



Federal councillor Doris Leuthard, together with CEOs from parastate enterprises, at the media conference to implement the Energy Strategy 2050 in Bern in June 2012.

Exemplary role models are also needed at the European level

The European Union has set its energy efficiency targets within the framework of the “20-20-20” objectives. In addition to reducing greenhouse gas emissions by 20% and increasing the proportion of renewable energies in final energy consumption to 20%, the EU is pursuing the objective of reducing primary energy consumption by 20% by the year 2020, all compared with the 2007 reference value.

Binding legal requirements have been adopted in order to achieve the overriding target of increasing energy efficiency by 20% by the year 2020. They include the Energy Efficiency Directive¹, which came into force at the end of 2012: it obliges the Member States to define a national energy efficiency target.

The public sector’s exemplary effect is explicitly noted: for example, from the beginning of 2014 onwards, 3% of the total floor area of heated and/or cooled buildings owned and occupied by the central government have to be renovated each year. In addition, requirements are laid down for taking energy-efficiency aspects into consideration in public procurement. Member States have to report every three years on the progress they have made towards their targets. However, the drafting of further-reaching measures to achieve the targets, and cooperation within the public sector have still not taken shape much in practice in the EU.

In 2014 Germany drew up a “National Energy Efficiency Action Plan” which determines the targets, instruments, financing and responsibility of the individual actors with regard to energy efficiency. The public sector has an exemplary role, for example when complying with energy-efficiency requirements for public buildings.

In Austria, the principle of obligating the federal government to implement its exemplary influence, in particular in the renovation of existing and the construction of new federal buildings, is enshrined in law.

Special mention should be made of Ireland and Portugal, which in addition to the country-specific energy-efficiency targets, have defined explicit energy-efficiency objectives for the public sector. In Portugal, this is 30%, compared with the country-specific target of 25%. Ireland has set its public sector’s energy-efficiency target at 33%, which is 13% higher than the country-specific energy-efficiency target of 20%.

Objectives of the international industry federations

The European members of the International Union of Railways (UIC) and the members of the Community of European Railway and Infrastructure Companies (CER) want to reduce final energy consumption by 30% compared with 1990 by the year 2020 (measured in passenger kilometers and metric ton kilometers). The aim is to halve consumption by 2050. The International Post Corporation (IPC) has set itself the goal of reducing emissions of greenhouse gases by 20% between 2008 and 2020. A 19.2% reduction has already been attained. Therefore a new objective is currently being developed and an efficiency target is to be approved in 2015. ETNO, the European telecoms association, deals mainly with topics such as reducing energy consumption through more efficient networks and data centers and the use of Green IT. Skyguide’s environmental targets are determined by the European Commission within the framework of the performance plan of the FABEC countries (Belgium, Germany, France, Luxembourg, Netherlands and Switzerland).

¹ (2012/27/EU)

The Confederation: exemplary in energy – the actors

The members of The Confederation: exemplary in energy do not all have the same leeway for action. But they all want to make a contribution to the Confederation's Energy Strategy 2050. The initiative is being taken forward by CEOs, presidents and directors.

Some very different actors are engaged in The Confederation: exemplary in energy. They differ in respect of their task, organizational form, size and their relationship with the Confederation:

- The Confederation is represented by the Federal Office for Buildings and Logistics (FBL), the Resources and Environmental Management programme of the Federal Administration RUMBA and by the Federal Department of Defence, Civil Protection and Sport (DDPS).
- Of the parastate enterprises, Swiss Post, the Swiss Federal Railways, Skyguide and Swisscom have signed up. The Confederation sets these organizations strategic objectives, which in some cases also concern energy targets or at least require a sustainable corporate strategy.
- The Federal Institutes of Technology and four research institutes are grouped together in the ETH Domain. In the ETH law, the Confederation has determined the purpose of the two institutes of technology and four research institutes; a performance mandate from the Federal Council and Parliament translates the corresponding objectives into practice.

Implementation of the Energy Strategy 2050 requires a great effort from all actors in The Confederation: exemplary in energy plan. By using their leeway for action, they make an important contribution to the credibility of the Energy Strategy. In addition, they can position themselves as organizations that act sustainably and energy-efficiently vis-à-vis employees, customers, business partners, investors and lenders. And finally, energy efficiency also means cost effectiveness for one's own organization: anyone who saves energy also saves money.

On the next four pages you will find a brief portrait of all the actors involved in The Confederation: exemplary in energy plan, and a summary of their respective energy strategy.

Federal Administration – FBL / RUMBA programme

In the federal administration, the RUMBA programme coordinates the activities of the specialized agencies and sensitizes the employees, the aim being to reduce the environmental impact of the Federal Administration. The programme comprises 16,856 employees (full-time equivalents) in 51 organizational units. The Federal Office for Buildings and Logistics (FBL) provides buildings for the federal staff and procures working equipment.

Energy strategy

The Federal Administration would like to increase its energy efficiency by 25% by 2020. A main pillar of this strategy is the FBL's energy strategy, which aims to reduce energy consumption by 50% between 2006 and 2050 and greenhouse gas emissions by 75% per full-time job. The RUMBA programme reports regularly on the progress made.

www.rumba.admin.ch
www.bbl.admin.ch



Gustave E. Marchand, Director FBL

“Increasing energy efficiency and using renewable energies are important goals for us.”



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Federal Department of Finance FDF
Federal Office for Buildings and Logistics FBL

Swiss Post

As a mixed group, Swiss Post Ltd is active in the communication, logistics, retail finance and passenger transport markets. Every year Swiss Post carries about 2.2 billion addressed letters and over 115 million parcels. PostBus transports nearly 140 million passengers, while PostFinance has more than 4.6 million customer accounts. With over 54,000 employees in Switzerland (44,000 full-time equivalents), Swiss Post is one of the largest employers in the country.

Energy strategy

As the largest logistics company in Switzerland, Swiss Post operates an energy-intensive business. That is why it is planning to increase its energy efficiency by 25% by 2020. In addition, it is aiming to increase its CO₂ efficiency by at least 10% by the end of 2016 (base year 2010). To achieve these objectives, Swiss Post is renewing its vehicle fleet and building stock, is using more alternative drive systems and optimizing delivery rounds. Furthermore it is replacing fossil fuels with renewable energies.

www.swisspost.ch



Susanne Ruoff, CEO

“With its energy-intensive offering in logistics and transport, Swiss Post bears a particularly great responsibility in resource utilization.”



ETH Domain

Academic achievements at the highest level: this is what the ETH Domain provides with over 19,000 staff members, more than 28,000 students and doctoral students and a faculty of about 800 people. The ETH Domain encompasses the two Federal Institutes of Technology in Zurich (ETH Zurich) and Lausanne (EPFL), the four research institutes Paul Scherrer Institute (PSI), Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Swiss Federal Laboratories for Materials Science and Technology (Empa) and the Swiss Federal Institute of Aquatic Science and Technology (Eawag), along with the ETH Board as the strategic supervisory body.

Energy strategy

As part of the Energy Strategy 2050, the ETH Domain is increasing the training opportunities in teaching and is supplementing existing research activities. In infrastructure, it is aiming for a 25% improvement in efficiency from 2006 to 2020, in particular by means of large-scale projects in waste heat recovery.

www.ethrat.ch



Fritz Schiesser, President of the ETH Board

“Exemplary action in teaching, research and operations is a declared objective of the ETH Domain. We are continually increasing our energy efficiency and utilizing more and more renewable energies.”



Swiss Federal Railways SBB

With about 31,000 employees, the Swiss Federal Railways move people and goods, open up and connect centers and different parts of the country at home and abroad. As an efficient, forward-looking and sustainable railway, SBB provides its customers with positive travel experiences and transports their goods reliably and resource-efficiently. With its sustainable and energy-efficient mobility options, SBB contributes significantly to the implementation of the Confederation's Energy Strategy 2050.

Energy strategy

From 2025 onwards, SBB intends to operate with electricity from 100% renewable energies. To do so, about 20% of the annual consumption forecast for 2025 – or a total of 600 gigawatt hours of electricity – is to be saved with a comprehensive package of measures.

www.sbb.ch



Andreas Meyer, CEO

“When using SBB, our customers are travelling energy-efficiently, sustainably and with little impact on global warming.”



Skyguide

On behalf of the Federal government, the Swiss air navigation services provider Skyguide provides safe, efficient and economical management of air traffic in Swiss airspace and in delegated neighbouring areas. Its 1,500 employees work around the clock at 14 locations in Switzerland. Skyguide controls civil and military air traffic and cooperates closely with the Swiss Air Force and international industry associations.

Energy strategy

Resource-efficient management of air traffic is an important aspect of Skyguide's mandate. Skyguide is committed to reducing emissions from air transport and its own energy consumption through operational improvements. To this end, Skyguide invests in efficiency measures on the ground and in improved traffic management in the air. And does so with consistently high and, where possible, enhanced safety standards.

www.skyguide.ch



Daniel Weder, CEO

"Safety and efficiency are omnipresent at Skyguide: thanks to innovation and the exceptional abilities of our staff, we are continually optimizing our own energy consumption and that of our customers."



Swisscom

With around 6.4 million mobile phone customers, 1 million television subscribers and 2 million broadband connections, Swisscom is the leading telecommunications company in Switzerland. In 2013, 20,108 employees earned a turnover of approx. CHF 11.434 billion. Swisscom operates all over Switzerland with services and products for mobile, land-line and Internet Protocol (IP)-based voice and data communication. In addition, the company is one of Switzerland's largest providers of IT services.

Energy strategy

Swisscom meets 100% of its electricity requirement from domestic renewable energy. Swisscom aims to increase its energy efficiency by 25% by 2015 compared with the reference year 2010 and then by an additional 35% by 2020. Overall, Swisscom intends to have reduced its direct CO₂ emissions by 60% by the end of 2015 compared to the reference year 1990.

www.swisscom.ch



Urs Schaeppi, CEO

"We are aiming to ensure that by 2020 our services will enable our customers to save twice as much CO₂ as we generate with our entire operation."



Federal Department of Defence, Civil Protection and Sport (DDPS)

The DDPS is divided into five sectors: Defence, Civil Protection, Sport, armasuisse and the Federal Intelligence Service. The department's core activities are security and physical exercise: security, protection and assistance from the armed forces and civil protection, physical exercise and health through sport. In 2013, the DDPS employed 11,408 people full-time, while the armed forces performed 6,052,376 days of service.

Energy strategy

The DDPS adopted an energy concept for the department for the first time in 2004. This was renewed in 2013. The aim is to anchor modern and resource-efficient environmental and energy management in the DDPS and to achieve the specific targets based on the EnergieSchweiz programme by 2020.

www.vbs.admin.ch



Brigitte Rindlisbacher, Secretary General, DDPS

“The DDPS has had its own energy concept since 2004. The focus of this concept is on reducing energy consumption and CO₂ emissions and on utilizing renewable energies.”



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Federal Department of Defence,
Civil Protection and Sport DDPS

The Federal government is looking for further actors

We are looking for further actors in the federal government domain for The Confederation: exemplary in energy plan.

The Office for the Exemplary Role of the Confederation in Energy will be pleased to provide you with further information, tel. 058 462 56 39.

Further users needed

The Confederation: exemplary in energy invites interested companies, organizations, cantons, cities and municipalities to transpose some of its individual measures to their own areas of activity. Every contribution is welcome in order to implement the Energy Strategy 2050.

The Office for the Exemplary Role of the Confederation in Energy will be pleased to provide you with further information, tel. 058 462 56 39.

On the road to energy efficiency

All actors of The Confederation: exemplary in energy are committed to pursuing ambitious goals, within the limits of their capabilities. Thus the targeted 25% increase in energy efficiency should be achieved not only on average, but by each actor individually.

The Federal Council has determined 2006 as the base year for calculating the increase in efficiency under The Confederation: exemplary in energy plan. In doing so, it is taking account of the fact that some actors have already been working for a long time on improving their energy performance – e.g. under RUMBA or the EnergieSchweiz programme of the Federal Office of Energy.

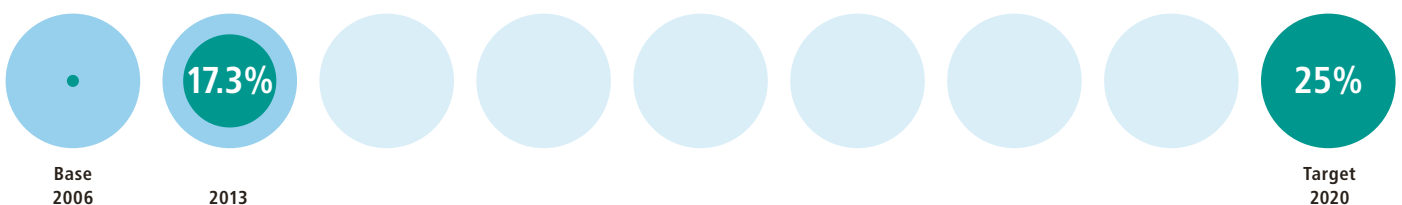
Since the Federal Council adopted its message on the first package of measures for the Energy Strategy 2050 in September 2013, the status at the end of 2013 serves as a first comparative value. On average, the actors increased their energy efficiency by 17.3% from 2006 to 2013. As the bar chart of absolute final energy consumption by energy source on page 16 shows, this does not mean that consumption has decreased since then. Individual organizations have grown strongly, and so their consumption also increased. SBB, for example, has a significantly higher corporate output today than it had in 2006.

Individual reference variables and system limits

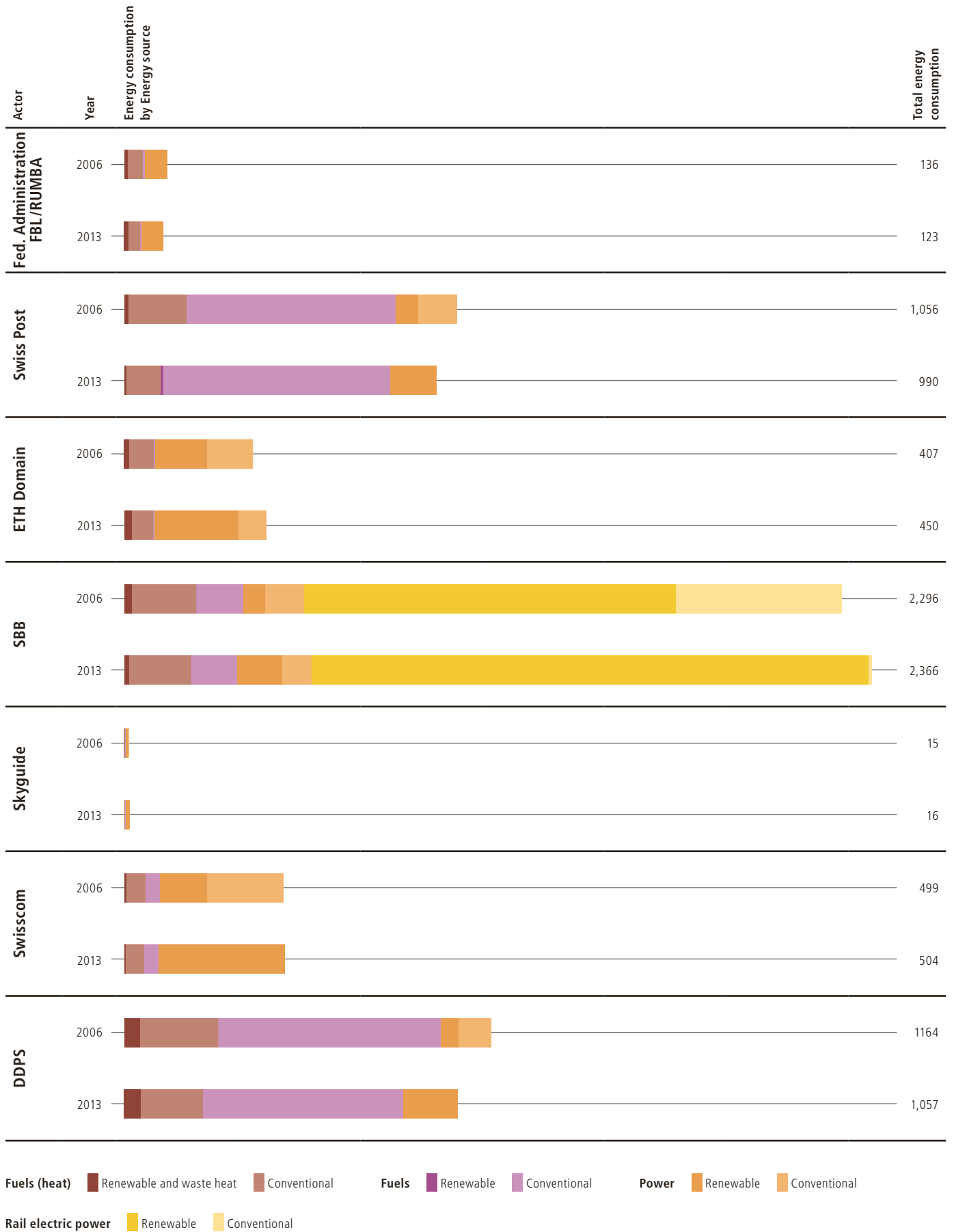
So as not to punish actors for their growth, efficiency is calculated not on the basis of absolute energy consumption but of specific consumption. In order to represent growth optimally, the actors have selected individual reference variables (see p. 17). The calculation methodology for energy efficiency was left open for the actors, so that they can select it according to their existing environmental reports (see www.confederation-exemplary-in-energy.ch). But they all remain ambitious. Final energy consumption and efficiency were calculated for the actors' own buildings, infrastructure and vehicles in Switzerland. But the precise system limits were defined differently for all actors (see p. 18).

The greatest possible transparency should apply in The Confederation: exemplary in energy. By 2020, the trend in energy efficiency will be subject to annual monitoring.

Increase in the average energy efficiency of all actors



Actors' final energy consumption to produce their output* in GWh/y



Reference variable(s) selected by the actor*	Increase in energy efficiency attained*		
	2006	2013	Target 2020
Full-time equivalents (FTE)	Base	26%	25%
Depends on the corporate unit: Number of consignments, customer business, passenger kilometers, transactions, energy reference surface area, full-time equivalents (FTE)	Base	19%	25%
Efficiency key figure 1: based on full- time equivalents (FTE), energy reference surface area, no. of instrument days, patient treatments (PSI) Efficiency key figure 2: calculation as for 1, but including efficiency increase on mainframe computer	Base	14.8% Key figure 1 26.3% Key figure 2	25%
Efficiency key figure 1: based on operating output in passenger and net tonne kilometers and traction energy consumption (final energy) Efficiency key figure 2: calculation as for 1, but based on primary energy	Base	13.7% Key figure 1 93.2% Key figure 2	25%
Depends on the corporate unit: full-time equivalents (FTE), energy reference surface area, number of flights	Base	20%	25%
Efficiency calculation based on energy efficiency measures imple- mented (Energie-Agentur der Wirtschaft EnAW methodology)	Base	24.5%	25%
Staff level in full-time equivalents (FTE); work days are converted into FTE	Base	3%	25%
Average of all actors**			
	Base	17.3%	25%

* You will find the detailed description (including the calculation methodology of the individual actors) at www.confederation-exemplary-in-energy.ch

** Key figure 1 is taken into account for the ETH Domain and SBB when calculating the average.

Consumption and increase in efficiency per actor

Even if absolute consumption increases,
an actor may have increased efficiency
if its organization is growing.
This is represented by individual
reference variables.

System limits

The Confederation: exemplary in energy selected the scope for consumption data and the efficiency target as far as possible according to the existing system limits of the environmental reporting of the individual organizations.

With or without subsidiaries, with or without regional branches: the system limits vary greatly from one actor to another. Furthermore, in some cases the action plan's measures have an impact outside of these limits – on the employees' private energy consumption or on the consumption of the actors' customers.

Federal Administration FBL / RUMBA programme

The energy data comprise the energy consumptions of the 51 organizational units of the Federal government that are part of the RUMBA programme. They do not include the foreign locations of the Federal Department of Foreign Affairs and the many small facilities of the Swiss Customs.

Swiss Post

The data cover the Group, management and service divisions of Swiss Post and its fully-consolidated subsidiaries with a head office in Switzerland. In addition, all the processes needed to provide Swiss Post's services were taken into account, in particular also those carried out by subcontractors.

ETH Domain

The data of the institutions in the ETH Domain include all the teaching and research activities and the entire infrastructure, including the particularly energy-intensive large-scale research facilities.

SBB

Energy consumption relates to the SBB group with its Passenger and Cargo, Real Estate and Infrastructure divisions. The key figure for energy efficiency contains tractive energy (electric power and diesel) for SBB's passenger and cargo traffic in Switzerland.

Skyguide

The data comprise the air traffic control centers in Geneva, Wangen near Dübendorf, the control towers in Geneva, Zurich and Bern and the radar stations on La Dôle and Lägern. Locations at regional airports are not covered as they account for only a small part of total consumption.

Swisscom

The system limits comprise Swisscom AG and all fully-consolidated subsidiaries in Switzerland. Concerning the networks, the consumptions of the basic network, the access network and the radio and TV network up to the house connection are included.

DDPS

The energy consumption data shown comprise the DDPS's administration and troop service, but exclude foreign interventions. The data cover energy consumptions for both real estate and vehicles and aircraft. The energy consumption of aircraft is not included in the calculation of the key figure for energy efficiency.

The Confederation: exemplary in energy

Action plan

The joint action plan of The Confederation: exemplary in energy can be shown in simplified terms by the following equation: **Joint measures plus Specific measures equals an Increase in energy efficiency. However, it conceals a multi-faceted and individually defined set of many measures.**

Joint measures

plus

Specific measures

equals an

Increase in energy efficiency

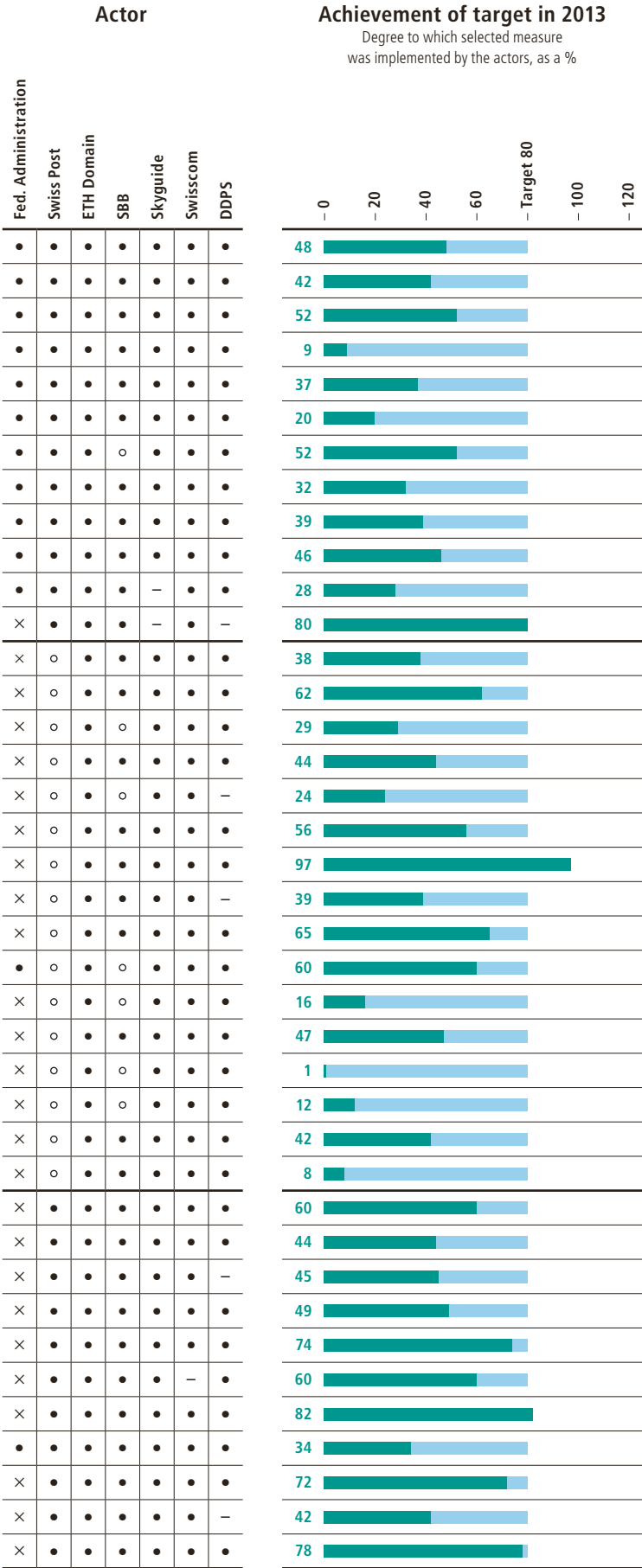
The Confederation: exemplary in energy plan has defined 39 joint measures in three areas of action in which most actors have some leeway for action: Buildings and renewable energy, mobility, data centers and Green IT. Each player has to attain a target achievement rate of 80%, averaged over all measures, by 2020. The joint measures make possible synergies and the exchange of experience between actors.

The leeway for action of most actors is not yet covered by the joint measures. That is why each actor has, in addition, defined several specific measures which allow it to tap into its individual potential for increasing energy efficiency. In some cases it is not just a matter of increasing one's own efficiency but also of increasing the energy efficiency of customers and partners.

The action plans of the individual organizations and companies are the key instrument of the Confederation: exemplary in energy plan. Progressive implementation of joint and specific measures leads to an increase in energy efficiency. The objective is a 25% improvement by the end of 2020 – individually and as a group of organizations and companies. By implementing the measures beyond their system limits as well, the actors achieve a positive effect and energy efficiency improvements in third parties.

Joint measures of all actors
Detailed descriptions of the measures on pages 22 to 26

Area of action	Number	Measure	Performance target
Buildings and renewable energy	01	Energy-efficient new and converted buildings	100% from 2016
	02	Analyses of potential of waste heat and renewable energies	available from 01.09.2016
	03	CO ₂ -free heating systems	100% from 2016
	04	Full cost accounting of energy efficiency	1–2 case studies available from 01.01.2017
	05	Energy-efficient lighting	100% from 01.01.2016
	06	Energy-efficient cooling machines	100% from 01.01.2016
	07	Energy-efficient Sanitary Sector	100% from 01.01.2016
	08	Energy-efficient electromotors	100% from 01.01.2016
	09	Building technology with operating optimization regime	60% by 2020
	10	Procurement of green power and hydroelectricity	20% and 80% respectively by 2020
	11	Mobility concepts for buildings	100% from 01.01.2016
	12	Creation of ecofunds	100% by 2020
Mobility	13	Integration of mobility management	100% of the employees
	14	Central information and booking platform	80% of the employees
	15	Encouragement of home offices	30% of the employees
	16	Promoting work hubs	100% of the sites
	17	Promotion of video and web conferencing	30% / 70% of the employees
	18	Incentives for using public transport	see detailed description on page 24
	19	Providing or co-financing PT season tickets	half-fare card or contribution to PT season ticket
	20	Criteria for choosing mode of transport	air travel less than 20%
	21	Active parking space management	100% of parking spaces
	22	Provision of bicycle parking spaces	100% of the sites
	23	Provision of bicycles and e-bikes	100% of the sites with over 100 employees
	24	Criteria for procuring energy-efficient vehicles	100% of newly-procured cars
	25	Eco-Drive training courses for frequent car users	100% of employees
	26	Promoting the use of car sharing agencies	80% of employees
	27	Joint use of a company carpool	see detailed description on page 25
	28	Provision of charging stations for electric vehicles	100% of sites with over 500 employees
Data centers and Green IT	29	Full cost accounting of energy efficiency in procurement	100% of the appliances in new calls for tender
	30	Specifications for new servers and new data center hardware	100% of new calls for tender
	31	Highly-energy-efficient data centers	see detailed description on page 25
	32	Pushing passive cooling solutions in data centers	see detailed description on page 25
	33	Encouraging server virtualization in data centers	over 85% by 2020
	34	Bundling of data centers / Outsourcing of IT services	100% checked by end of 2015
	35	Monitoring and evaluation of new technologies	at least one evaluation per year
	36	Promotion of waste heat recovery	50% by 2030 (data centers > 250 sq. m.)
	37	Promotion of economy mode at computer workstations	over 90% by 2015
	38	Promotion of energy-efficient printing solutions	see detailed description on page 26
	39	Promoting re-use of appliances	100% by 2015



Joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas buildings and renewable energy, mobility and data centers and Green IT. From this catalogue, each actor has selected those measures in which it sees leeway for action. Each player aims to attain a target achievement rate of 80% on average by 2020. The green bar indicates the extent to which the actors have implemented a measure on average. Blue is the difference with the average target value of 80%. Over-achievement of individual measures is possible up to the value of 125%.

- selected measure
 - selected, no data yet
 - no leeway for action
 - ×
- green = implemented
blue = difference with the average target rate of 80%

The 39 joint measures of all actors in detail

The Confederation: exemplary in energy plan has defined 39 joint measures in the three action areas buildings and renewable energy, mobility, and data centers and Green IT. You can read here the detailed descriptions with indicator and target.

Action area buildings and renewable energy

01 Energy-efficient new and converted buildings

The actors each define their own standards for their buildings, guided by the best practice principle. They are based as much as possible on existing labels, such as MINERGIE-P-ECO®. For sites, strategies with an aggregate energy review are appropriate. Indicator: standards existing, published and complied with.

Target: 100% compliance with the standards from January 1, 2016.

02 Analyses of potential of waste heat and renewable energies

The actors each draw up an analysis of potential. It is intended to show the extent to which waste heat could be recovered and renewable energy produced on their sites and in their buildings and what this would cost. The FOE is consolidating these analyses and drawing up a master plan "New renewable energies in the federal government and parastate enterprises".

Indicator: analysis of potential available.

Target: available from September 1, 2016.

03 CO₂-free heating systems

The actors no longer build any fossil-fuel operated heating systems in their buildings. This also applies explicitly when replacing existing systems. Justifiable exceptions are possible, for example for special sites or functions. In such cases renewable substitute energies such as biogas should be used or, as the second priority, emissions should be offset by CO₂ reduction measures.

Indicator: Newly-installed CO₂-free heating systems.

Target: 100% from January 1, 2016.

04 Full cost accounting of energy efficiency

In order to evaluate energy efficiency measures, the actors use "life cycle costs" (LCC) or "Total Cost of Ownership" (TCO) approaches. Investments in energy efficiency measures that pay for themselves over the life cycle of a measure are implemented. The application of the methodology is made public in a strategy paper.

Indicator: 1–2 case studies available.

Target: available from January 1, 2017.

05 Energy-efficient lighting

The actors now only procure lighting that is guided by the best practice principle, i.e. which is based on the latest and most energy-efficient technology. In the case of outdoor lighting, special attention is paid to nature-related issues, especially light pollution. Indicator: Internal standards available and complied with.

Target: 100% from January 1, 2016.

06 Energy-efficient cooling machines

The actors plan, procure and operate cooling machines to best practice standards: first of all, generation of heat/cold has to be designed integrally and, if possible, without a cooling machine (taking account of the annual heat/cold curve, use of waste heat, free cooling). If a cooling machine is nevertheless required, it has to be implemented according to the latest SIA standard; in addition, a greenhouse gas effect evaluation should be carried out.

Indicator: proportion of cooling machines procured in compliance with the requirements.

Target: 100% from January 1, 2016.

07 Energy-efficient Sanitary Sector

Cold water alone is the standard for hand-washing and similar activities in toilet blocks and comparable facilities in new and renovated buildings. In addition,

the actors now only procure sanitary ware in energy class A, except for showers (energy class B).
Indicator: Internal standards available and complied with.
Target: 100% from January 1, 2016.

08 Energy-efficient electromotors

When installing (in new and replacement buildings) new electrical building apparatus (ventilation, air-conditioning, cooling, sanitary), electromotors and other electrical apparatus (e.g. lifts, conveying equipment, compressors), the actors use the most efficient electromotors in each case (best practice strategy).
Indicator: Internal standards available and complied with.
Target: 100% from January 1, 2016.

09 Building technology with operating optimization regime

The actors subject their building apparatus to continuous operating optimization (OO). Recognized measures for increasing energy efficiency are being implemented constantly. In addition, whenever a new apparatus is commissioned in a building, an acceptance procedure is consistently carried out; any defects are rectified.
Indicator: % of consumption of apparatus with a continuous OO regime out of total annual energy consumption.
Target: 60% (by 2020).

10 Procurement of green power and hydroelectricity

The actors will gradually increase their proportion of green power ("naturemade star" or equivalent) to 20% by 2020. The remaining power requirement should be met by no later than January 1, 2020 exclusively with hydroelectric power.
Indicator: 1. % of green electricity out of total consumption, 2. % of hydroelectric power out of total consumption.
Target: 1. 20% (by 2020), 2. 80% (by 2020).

11 Mobility concepts for buildings

From now on, the players only construct new buildings with more than 50 permanent jobs when there is an overriding mobility concept and take the traffic volume into consideration already when choosing the location. The concept comprises minimum requirements for opening up areas with public transport (PT) and non-motorized traffic, as well as measures to reduce induced traffic and promote energy-efficient mobility.
Indicator: % of new buildings (> 50 permanent jobs) out of all new buildings (> 50 permanent jobs) with a mobility concept.
Target: 100% from January 1, 2016.

12 Creation of ecofunds

The actors each create an ecofund of their own. These ecofunds are financed out of the reimbursement of the CO₂ and VOC levies and out of further reimbursements of monies in connection with environmental incentive levies, provided that these are not to be used by law or under a performance agreement for other purposes, or from other financing sources. The ecofunds finance measures in the energy or environmental sector.
Indicator: % of reimbursed environmental incentive levies that flow into the ecofund
Target: 100% (by 2020).

Action area mobility

13 Integration of mobility management

The actors implement structures and processes for regular assessment and effective management of employee mobility in terms of their environmental impact.
Indicator: % of employees for whose business divisions such structures and processes are implemented.
Target: 100% (by 2020).

14 Central information and booking platform

The actors provide a central, web-based information and booking platform that allows easy access to planning and decision-making tools, guidelines and other information on service offers from the mobility sector.
Indicator: % of employees having access at their workplace to a mobility information platform.
Target: 80% (by 2020).

15 Encouragement of home offices

The actors enable forms of work that allow employees with suitable job profiles to choose, as freely as possible, their time and place of work (e.g. at home, when travelling, at other company sites). This includes equipping them with the necessary devices (e.g. mobile devices with remote access to the corporate network) and creating the cultural preconditions by picking a central theme in management and staff development.
Indicator: % of employees who regularly use mobile-flexible work forms, out of all workers with a suitable job profile.
Target: 30% (by 2020).

16 Promoting work hubs

The actors provide work hubs at which employees from other sites or other companies and organizations can work temporarily. In addition, they create the

cultural preconditions for working at work hubs.
Indicator: % of office locations (> 50 employees) with work hubs, to which employees from other sites have access.

Target: 100% (by 2020). In addition, reviews are conducted on the extent to which premises can be opened reciprocally within the Confederation: exemplary in energy plan.

17 Promotion of video and web conferencing

The actors' employees have access to video and web conferencing or, as applicable, corporate collaboration solutions, which make personal exchanges possible over great distances.

Indicator: % of employees who regularly use video/web conferencing, out of all employees with a suitable job profile.

Target: 30% of the workforce, 70% of the employees making several international business trips per year (by 2020).

18 Incentives for using public transport (PT)

The actors ensure that employees can be reimbursed through expenses for business travel with PT even if they use PT season tickets they have paid for themselves, and that the expense regulations do not give them any incentive to use their own car. The use of private cars requires approval from one's superior in keeping with clearly-defined criteria, and is only reimbursed with a cost-covering per-kilometer rate.

Indicator: Amount of expenses reimbursement for using private cars per km.

Target: Mobility's maximum kilometer rate for business customers 2014 (Combined category). The ticket price (based on the half-fare railcard) can be reimbursed as expenses, even if self-paid PT season tickets are used.

19 Providing or co-financing PT season tickets

The actors encourage the use of PT for business and commuter journeys by providing a half-fare railcard and/or by making a financial contribution to other PT season tickets (zone, point-to-point or network-wide season tickets).

Indicator: minimum contribution to PT season tickets for employees.

Target: all employees are entitled to a half-fare railcard or a corresponding company contribution to a PT season ticket.

20 Criteria for choosing mode of transport

The actors introduce a guideline with clearly-defined travel distances for rail or air travel as well as criteria for using video conferencing, provide a simple decision-making tool and account for all international business travel via expense statements or a travel agency.

Indicator: proportion of air travel over distances that can be covered by train from Basel, Zurich or Geneva in a maximum of five hours.

Target: less than 20% (by 2020).

21 Active parking space management

The actors charge for employee parking spaces at usual market rates and allocate them using clear criteria such as level of service by PT at place of domicile, time difference between using a private car and PT to travel to work, working hours, participation in car sharing agencies and/or energy efficiency of the vehicle. New sites are planned with a minimum number of parking spaces.

Indicator: proportion of parking spaces with clear allocation criteria and usual market rates.

Target: 100% (by 2020).

22 Provision of bicycle parking spaces

The actors provide covered and secure parking spaces for two-wheelers and the associated infrastructure (changing rooms with showers). Minimum requirements are, for example, safe access, frames to which bikes can be padlocked, or (lock-up) compartments for helmets, pumps and rainproof gear.

Indicator: % of sites with a number of bike parking spaces to match demand, as per minimum requirements.

Target: 100% (by 2020).

23 Provision of bicycles and e-bikes

At larger sites, the actors provide self-rental bikes and e-bikes for mobility between nearby sites (e.g. PubliBike stations, company bicycles).

Indicator: % of locations (> 100 employees) with access to bicycles.

Target: 100% (by 2020).

24 Criteria for procuring energy-efficient vehicles

The actors apply clear energy-efficiency criteria such as the energy label when procuring vehicles. For all new vehicles (incl. delivery vans), the fuel consumption/CO₂ value is weighted as an evaluation criterion with at least 15% in the benefit analysis.

Indicator: % of newly-procured cars with up to a max. of 5 seats in energy efficiency class A, not counting all-wheel-drive vehicles and intervention vehicles such as ambulances.

Target: 100% (by 2020).

25 Eco-Drive training courses for frequent car users

Employees who drive more than 10,000 kilometers a year on business are trained every three years on an Eco-Drive course. In the case of employees who use the company fleet, the employer supports privately-attended Eco-Drive courses with a 30% contribution to costs.

Indicator: % of employees driving more than 10,000 kilometers a year who have attended an Eco-Drive course in the last three years.
Target: 100% (by 2020).

26 Promoting the use of car sharing agencies

The actors provide access to car sharing agencies for arranging lifts and to carpools in commuter traffic.

Indicator: % of employees who depend on the car to travel to work and who have access at their workplace to a car sharing agency.
Target: 80% (by 2020).

27 Joint use of a company carpool

The number of business vehicles is reduced by inter-departmental use of carpool vehicles. A vehicle management tool is introduced and used regionally. Indicator: average length of time for which company vehicles are used (not counting intervention vehicles such as ambulances).

Target: Vehicles used for < 2 hrs. per day are incorporated into the vehicle pool.

28 Provision of charging stations for electric vehicles

Parking spaces at larger sites are equipped with charging facilities for ordinary electric vehicles, in particular electric scooters and e-bikes. In new buildings, plans must ensure the subsequent installation of charging stations for electric vehicles.

Indicator: % of sites (> 500 employees) with charging facilities for electric vehicles.
Target: 100% (by 2020).

Action area data centers and Green IT

29 Full cost accounting of energy efficiency in procurement

The actors assess and select for a predetermined specification their IT infrastructure according to the Total Cost of Ownership (TCO) approach, including energy consumption. Energy consumption must be disproportionately overweighted here, unlike with the purely TCO approach.

Indicator: % of the appliances evaluated according to the description of measures in new calls for tender.
Target: 100% from January 1, 2015.

30 Specifications for new servers and new data center hardware

The actors systematically call for joint state-of-the-art specifications when procuring new servers and

further data center hardware. The state-of-the-art specifications are based on existing labels (for example, 80 PLUS® Gold-Label or ENERGY STAR® Programme Requirements for Computer Servers) or standards.

Indicator: % of compliant servers and further hardware in the data center in new calls for tender.
Target: 100% from January 1, 2015.

31 Highly-energy-efficient data centers

The actors implement the most energy-efficient concepts and technologies in the data centers' infrastructure systems (ventilation, cooling, uninterrupted power supply, lighting).

Indicator: average PUE value (Power Usage Effectiveness) over all of the data centers. The PUE value is defined as the ratio of the total electrical energy consumption of the data center to the energy consumption of the IT equipment.

Target: < 1.3 by 2030. (In new and larger data centers, smaller PUE values are expected, while best efforts are expected in smaller data centers).

32 Pushing passive cooling solutions in data centers

The actors push the use of energy-efficient passive cooling solutions without cooling machines by using the air conditioning range permissible for servers as per current standards. As an immediate measure, in existing data centers with conventional cooling, the cold operating temperature is raised to at least 26 °C.

Indicator: 1st part: existing data center surface area with temperature > 26 °C; 2nd part: data center surface area with extended temperature range or with passive cooling.

Target: 1st part: 100% from 2015; 2nd part: 33% by 2025, 66% by 2035.

33 Encouraging server virtualization in data centers

The actors aim for a high server capacity utilization. To this end, increasing reliance is placed on server virtualization and on memory technology (SAN) in the storage area.

Indicator: % proportion of virtual servers: number of virtual servers / (number of virtual + physical servers).

Target: > 85% (by 2020).

34 Bundling of data centers / Outsourcing of IT services

The actors check potential for increasing energy efficiency as part of data center consolidations.

Indicator: Checked potential.

Target: 100% by the end of 2015.

35 Monitoring and evaluation of new technologies

The actors monitor or evaluate new technologies with energy-efficiency potential and operate a Technology Board within The Confederation: exemplary in energy plan.

Indicator: number of technologies evaluated.

Target: at least 1 per year.

36 Promotion of waste heat recovery

The actors promote the feeding of their surplus heat from civil IT production into district heating grids, provided that suitable heat customers exist and a contractor is prepared to take on the project in full. Financing, planning, construction and operation from the heat production site are a matter for the contractor.

Indicator: % use of surplus waste heat.

Target: 50% by 2030 (data centers of > 250 sq. m.).

37 Promotion of economy mode at computer workstations

The actors ensure that, when not in use, computer workstations switch to the idle state after a pre-determined time.

Indicator: % of workstations with active power management.

Target: 90% by 2015.

38 Promotion of energy-efficient printing solutions

The actors optimize the number of printers per employee and implement modern printing solutions in the office area, such as the Follow-me-printing function. As a result, printer operation is optimized and paper and power can be saved.

Indicator: no. of employees per printer; kg of paper per employee.

Target: 100 employees per printer or at smaller sites a maximum of 1 printer by 2020; 5 kg of paper per employee per year (= approx. 1,000 A4 sheets) by 2020.

39 Promoting re-use of appliances

The actors promote re-use of old, but still-serviceable, equipment by passing on old PCs to specialized companies, aid agencies or by giving them to employees. Equipment that has to be disposed of is processed only by certified recycling companies.

(In order to ensure energy efficiency, the actors can define additional criteria, such as for example, that only equipment less than 8 years old should continue to be used.)

Indicator: guidelines for recycling no-longer-used equipment are available.

Target: 100% by 2015.

You will find the detailed description of the measures at www.confederation-exemplary-in-energy.ch.

Federal Administration FBL/RUMBA programme

Action plan

In The Confederation: exemplary in energy plan, the Federal Administration is represented by the Federal Office for Buildings and Logistics (FBL) and the Resources and Environmental Management programme of the Federal Administration RUMBA. Final energy consumption decreased by 8.4% to 125 gigawatt hours (GWh) from 2006 to 2013. Energy efficiency was improved by 26%. RUMBA sets out to reduce the environmental impact caused by heat, power, water, garbage, paper and business travel by at least 20% from 2006 to 2020.



New building of the Federal Office of Information Technology, Systems and Telecommunication

Success story

Reduction of heat consumption per full-time job

The FBL manages the buildings of the RUMBA units. Heat consumption per full-time job decreased by 29% from 2006 to 2013. Consumption of heating oil and natural gas fell by 45% over the same period, from 2.7 to 1.5 MWh per full-time job. This trend was supported by exemplary building standards for new buildings, for example in the new building of the Federal Office of Information Technology, Systems and Telecommunication in Zollikofen, which was completed in 2013; it has been awarded the MINERGIE-P-ECO® label. The building marks the beginning of a project to build over the entire site, which with three further buildings will comprise a total of 2,500 jobs and will be very well served by public transport.

New buildings completed since 2012 are to the MINERGIE-P-ECO® standard, while renovations of entire buildings are carried out to exemplary standards in energy terms. The energy reference surface area per full-time job has decreased by 13% since 2006. Occupancy agreements ensure that occupancy of the buildings has been consistently optimized, for example, by switching from individual or two-person offices to open-space concepts.

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. Of this catalogue, 13 measures are within the FBL's area of responsibility; they are all to be implemented. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

02

Action area Buildings and renewable energy

- 01 ● Energy-efficient new and converted buildings
- 02 ● Analyses of potential of waste heat and renewable energies
- 03 ● CO₂-free heating systems
- 04 ● Full cost accounting of energy efficiency
- 05 ● Energy-efficient lighting
- 06 ● Energy-efficient cooling machines
- 07 ● Energy-efficient Sanitary Sector
- 08 ● Energy-efficient electromotors
- 09 ● Building technology with operating optimization regime
- 10 ● Procurement of green power and hydroelectricity
- 11 ● Mobility concepts for buildings
- 12 × Creation of ecofunds

Action area Mobility

- 13 × Integration of mobility management
- 14 × Central information and booking platform
- 15 × Encouragement of home offices
- 16 × Promoting work hubs
- 17 × Promotion of video and web conferencing
- 18 × Incentives for using public transport
- 19 × Providing or co-financing PT season tickets
- 20 × Criteria for choosing mode of transport
- 21 × Active parking space management
- 22 ● Provision of bicycle parking spaces
- 23 × Provision of bicycles and e-bikes
- 24 × Criteria for procuring energy-efficient vehicles
- 25 × Eco-Drive training courses for frequent car users
- 26 × Promoting the use of car sharing agencies
- 27 × Joint use of a company carpool
- 28 × Provision of charging stations for electric vehicles

Action area Data centers and Green IT

- 29 × Full cost accounting of energy efficiency
- 30 × Specifications for new servers and new data center hardware
- 31 × Highly-energy-efficient data centers
- 32 × Pushing passive cooling solutions in data centers
- 33 × Encouraging server virtualization in data centers
- 34 × Bundling of data centers / Outsourcing of IT services
- 35 × Monitoring and evaluation of new technologies
- 36 ● Promotion of waste heat recovery
- 37 × Promotion of economy mode at computer workstations
- 38 × Promotion of energy-efficient printing solutions
- 39 × Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action
- × adopted, responsibility for implementation open



Analyses of potential of waste heat and renewable energies

700 buildings with an energy reference surface area of approx. 1.07 mill. sq. m. were investigated. CO₂ emissions can be reduced by 8,750 metric tons by switching from fossil fuels to renewable energies in 277 buildings (32 GWh of heat). On well-aligned roof surfaces it is possible to produce approx. 4 GWh of solar power per year. 1 GWh of green power could, in addition, be generated from further sources (for example, biogas or wind power).

Photo: Federal Office of Sport FOS, main building of the University of Sport, Magglingen

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, the Federal Administration has selected seven specific measures. A target and a target date have been defined for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts the Federal Administration is making to increase energy efficiency.

No. Measure
(target — target year — status)

- 01 Resources and Environmental Management programme of the Federal Administration RUMBA (incl. business travel)
2.3 GWh/y — 2020 — in implementation phase
- 02 Reduction of energy consumption from business travel
0.5 GWh/y — 2020 — in implementation phase
- 03 Energy-efficient enveloping system
75% saving — 2013 — implemented
- 04 Construction of new photovoltaic installations; replacement of fossil energy with renewable energy
0.17 GWh/y — 2017 — planned
- 05 Application of Swiss Standard for Sustainable Construction to CH embassies abroad
introduction — 2015 — planned
- 06 Update of "Ecological assessment data for the construction sector" to promote energy-efficient construction (KBOB)
every 2 years — 2020 — in implementation phase
- 07 Sensitizing employees to energy-efficient and environmentally compatible behaviour at the workplace
2 measures per year — 2020 — in implementation phase

01



2.3 GWh/y

Resources and Environmental Management programme of the Federal Administration RUMBA (incl. business travel)

The Federal Council launched the RUMBA programme in 1999. Its main objective is to reduce the environmental impacts of the Federal administration. Furthermore RUMBA serves to cut costs and increase efficiency, to coordinate the Federal Administration's environmental activities, to motivate employees and promote the Confederation's exemplary role in environmental matters. The environmental impact per full-time job is to be reduced by at least 10% compared with 2006 by 2016, and by at least 20% by 2020. In 2013 the reduction was 20.6%. Further targets apply to energy efficiency and CO₂ emissions.

Swiss Federal Administration environmental reports:
www.rumba.admin.ch/umweltberichte

02



0.5 GWh/y

Reducing energy consumption caused by business travel

In 2013 the business travel (by car/train/air) of the RUMBA units gave rise to an energy consumption in absolute terms of 45.8 GWh (2,718 kWh per full-time job). This corresponds to approx. 80% of heating energy consumption in the Federal Administration (3,430 kWh per FTE). Thanks to the RUMBA programme, the energy consumption caused by business travel decreased by 20% per full-time equivalent compared with 2006.

03



75% saving

Energy-efficient enveloping system

Two enveloping machines in the Federal Office for Buildings and Logistics were replaced by a significantly more efficient enveloping system. It enabled power consumption per envelope to be reduced by about 75%. The annual output is approx. 10 million envelopes.

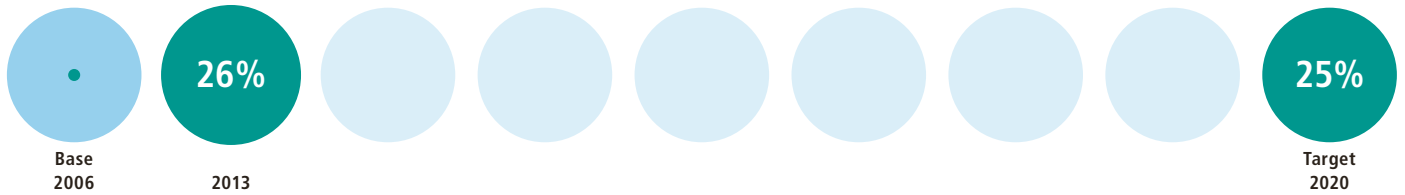
green = reduction target attained
blue = target

Federal Administration

Energy target 2020

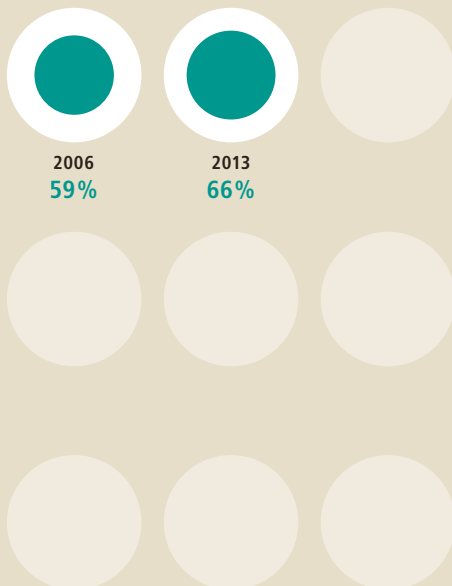
The energy efficiency of the Federal Administration was 26% higher in the year under review 2013 than in the base year 2006.

Increase in energy efficiency



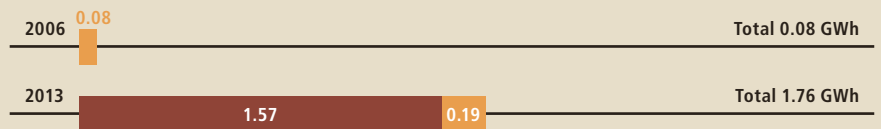
Renewable energy as a proportion of total consumption

The Federal Administration increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 59% in the base year 2006 to 66% in the year under review 2013.



Production of energy from renewable sources

The Federal Administration increased its production of renewable energy from 0.08 GWh in the base year 2006 to 1.76 GWh in the year under review 2013. Power and heat were produced from renewable sources.



Fuels (heating) ■ Renewable and waste heat
Fuels (transport) ■ Renewable
Power ■ Renewable

Swiss Post

Action plan

In 2013 Swiss Post's energy requirement amounted to 989.8 gigawatt hours (GWh). Despite partly strong growth of its business, the energy requirement decreased by 6% compared with the base year 2006. In the process, Swiss Post increased its energy efficiency by 19%. Measures that contributed to this success included increased use of alternative-drive vehicles, optimization of rounds and the use of heat pumps in operating buildings.



Postman on an electric scooter

Success story

Electric scooters save 9 gigawatt hours per year

With over 5,000 two- and three-wheel electric scooters used to deliver letters, Swiss Post runs the largest fleet of its kind in Europe. The fleet's power requirement is met entirely with "naturemade star"-certified green power, which is generated exclusively from renewable energies in Switzerland. Swiss Post's lithium ion battery-powered scooters are up to six times more energy-efficient than petrol-engine scooters.

Already today electric scooters save nearly 9 GWh of energy a year compared with a purely petrol-engine fleet. In addition, they produce virtually no emissions, are almost silent and are also economical to run thanks to their large charging capacity. The last petrol-engine scooters will be taken out of service by the end of 2016, when 7,000 electric vehicles will be on the roads for Swiss Post. Electrification of the smaller delivery vehicles is only the beginning. 12 electric delivery vans are currently being tested. If their use is conclusive, further expansion of the fleet will be examined.

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. Swiss Post intends to implement all these measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

03

Action area Buildings and renewable energy

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- 12 ● Creation of ecofunds

Action area Mobility

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- 14 ○ Central information and booking platform
- 15 ○ Encouragement of home offices
- 16 ○ Promoting work hubs
- 17 ○ Promotion of video and web conferencing
- 18 ○ Incentives for using public transport
- 19 ○ Providing or co-financing PT season tickets
- 20 ○ Criteria for choosing mode of transport
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- 25 ○ Eco-Drive training courses for frequent car users
- 26 ○ Promoting the use of car sharing agencies
- 27 ○ Joint use of a company carpool
- 28 ○ Provision of charging stations for electric vehicles

Action area Data centers and Green IT

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- 32 ● Pushing passive cooling solutions in data centers
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- 34 ● Bundling of data centers / Outsourcing of IT services
- 35 ● Monitoring and evaluation of new technologies
- 36 ● Promotion of waste heat recovery
- 37 ● Promotion of economy mode at computer workstations
- 38 ● Promotion of energy-efficient printing solutions
- 39 ● Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action



CO₂-free heating systems

The head office of PostFinance has been certified to the standards of the MINERGIE® and eco-bau associations. The 13-storey office block, which provides 15,000 sq. m. of space for 850 employees, was built in 2013 next to the SC Bern ice stadium, the PostFinance Arena. 18 geothermal probes that extend 330 meters below ground use geothermal heat for central heating and hot water. Three heat pumps are used for this purpose, two of which can also be used as cooling machines. Thermo-active elements in the ceiling regulate the temperature in the rooms, heat exchangers use residual heat and extract excess moisture.

Photo: Head office of PostFinance in Bern

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, Swiss Post has selected six specific measures. Swiss Post has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts Swiss Post is making to increase its energy efficiency.

No. Measure
(target — target year — status)

- 01 Replacement of all petrol-engine scooters used to deliver letters with electric scooters. The approx. 7,000 vehicles are operated with entirely "naturemade star"-certified power.
13.0 GWh/y — 2020 — in implementation phase
- 02 Energy-efficient logistics management at PostLogistics
2.1 GWh/y — 2014 — implemented.
- 03 Replacement of conventional Postbuses with diesel hybrid buses (saving per Postbus; status June 2014: 19 buses, fleet of diesel hybrid buses is being constantly expanded)
56.0 MWh/y — 2020 — in implementation phase
- 04 Use of modern EcoLife transmissions and updates of the transmission software in Postbuses
6.0 GWh/y — 2020 — in implementation phase
- 05 Targeted replacement of installations for ensuring an uninterrupted power supply (UPS) in the data centers of PostFinance Ltd with latest-generation installations
1.0 GWh/y — 2014 — implemented
- 06 Procurement of entirely "naturemade star"-certified biogas for all business vehicles and gas-powered vehicles used for delivery
3.7 GWh/y — 2020 — in implementation phase

02



2.1 GWh/y

Energy-efficient logistics management at PostLogistics

PostLogistics intends to position itself as the most energy-efficient logistics enterprise in Switzerland. PostLogistics has been certified to the international standard ISO 14001:2004 since 2008. This standard defines globally recognized requirements for an environmental management system. As part of these requirements, PostLogistics is continually optimizing the processes at its logistics bases, in road transport and parcel delivery and is increasing its vehicles' load factor. By doing so, the fuel and power requirement was reduced by 2.1 GWh in recent years.

04



6.0 GWh/y

Use of modern EcoLife transmissions and updates of the transmission software in Postbuses

Newly-acquired Postbuses, which are equipped with "EcoLife" transmissions, are up to 8% more energy-efficient than Postbuses with conventional transmissions. A fuel saving of up to 3% can be made on Postbuses with conventional transmission with an update of the transmission software.

05



1.0 GWh/y

More efficient UPS systems in PostFinance data centers

Targeted replacement of installations for ensuring an uninterrupted power supply (UPS) has reduced the annual power requirement in PostFinance data centers by 1 GWh. The efficiency of the installations was increased by 15%. UPS systems are used to maintain the power supply to the server rooms in the event of an outage in the grid.

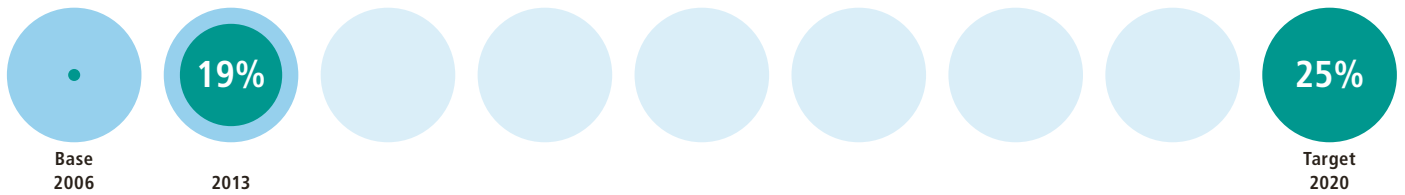
green = reduction target attained
blue = target

Swiss Post

Energy target 2020

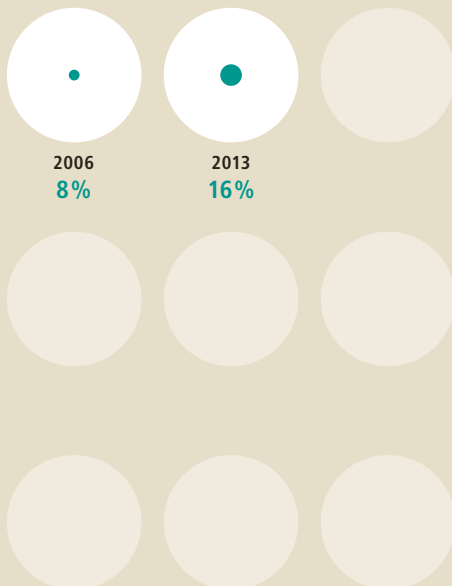
The energy efficiency of Swiss Post was 19% higher in the year under review 2013 than in the base year 2006.

Increase in energy efficiency



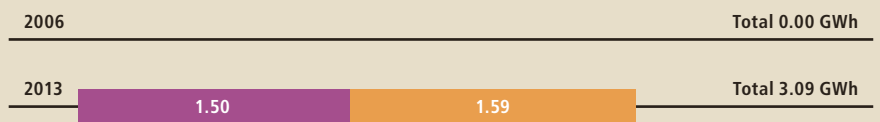
Renewable energy as a proportion of total consumption

Swiss Post increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 8% in the base year 2006 to 16% in the year under review 2013.



Production of energy from renewable sources

Swiss Post increased its production of renewable energy from 0 GWh in the base year 2006 to 3.09 GWh in the year under review 2013. Power and hydrogen were produced from renewable sources.



Fuels (heating) ■ Renewable and waste heat
Fuels (transport) ■ Renewable
Power ■ Renewable

ETH Domain

Action plan

The ETH Domain has been characterized since 2006 by a very rapid expansion of teaching and research, fast-growing student and teacher numbers and by novel large-scale research facilities. The extent to which technology is used in the buildings is constantly increasing as a result of the latest laboratory technology and other innovations. Energy efficiency has been improved by 14.8% since 2006. Per capita energy consumption is steadily decreasing as a result of modernization of building technology, increased recovery of waste heat and great endeavours to ensure that large-scale research facilities are as energy-efficient as possible, although total energy consumption has risen by 10.6%.



"Piz Daint" mainframe computer at the CSCS in Lugano

Success story

Data center applies new criteria in energy efficiency

The new building of the National High-Performance Data Center CSCS in Lugano stands for innovation, flexibility and ecological sustainability. The five-storey office block was built to the MINERGIE-ECO standard. The data center building behind the office block has been carefully thought out in technical and logistical terms, down to the last detail. The key design criterion was modular and flexible construction that should be sustainable and energy-efficient. The key variable for the energy efficiency of a data center is the PUE value (Power Usage Effectiveness). With a PUE of less than 1.25, the CSCS is one of the most energy-efficient data centers in the world. The computers and offices are cooled with water from Lake Lugano, among other sources. The CSCS is also a world leader in the efficiency of its computer architectures. Together with the computer manufacturer Cray, the mainframe – a Cray XC30 – was equipped with graphics processors from NVIDIA. Measurements have shown that this supercomputer, which was released for research in March 2014, is up to seven times more energy-efficient than conventional systems.

ETH Domain

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. The ETH Domain intends to implement all the measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

01

Action area Buildings and renewable energy

- 01 ● Energy-efficient new and converted buildings
- 02 ● Analyses of potential of waste heat and renewable energies
- 03 ● CO₂-free heating systems
- 04 ● Full cost accounting of energy efficiency
- 05 ● Energy-efficient lighting
- 06 ● Energy-efficient cooling machines
- 07 ● Energy-efficient Sanitary Sector
- 08 ● Energy-efficient electromotors
- 09 ● Building technology with operating optimization regime
- 10 ● Procurement of green power and hydroelectricity
- 11 ● Mobility concepts for buildings
- 12 ● Creation of ecofunds

Action area Mobility

- 13 ● Integration of mobility management
- 14 ● Central information and booking platform
- 15 ● Encouragement of home offices
- 16 ● Promoting work hubs
- 17 ● Promotion of video and web conferencing
- 18 ● Incentives for using public transport
- 19 ● Providing or co-financing PT season tickets
- 20 ● Criteria for choosing mode of transport
- 21 ● Active parking space management
- 22 ● Provision of bicycle parking spaces
- 23 ● Provision of bicycles and e-bikes
- 24 ● Criteria for procuring energy-efficient vehicles
- 25 ● Eco-Drive training courses for frequent car users
- 26 ● Promoting the use of car sharing agencies
- 27 ● Joint use of a company carpool
- 28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

- 29 ● Full cost accounting of energy efficiency
- 30 ● Specifications for new servers and new data center hardware
- 31 ● Highly-energy-efficient data centers
- 32 ● Pushing passive cooling solutions in data centers
- 33 ● Encouraging server virtualization in data centers
- 34 ● Bundling of data centers / Outsourcing of IT services
- 35 ● Monitoring and evaluation of new technologies
- 36 ● Promotion of waste heat recovery
- 37 ● Promotion of economy mode at computer workstations
- 38 ● Promotion of energy-efficient printing solutions
- 39 ● Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action



Energy-efficient new and converted buildings

By completing the dynamic geothermal storage system (also called Anergy grid), ETH Zurich has since 2010 been following a clearly-defined site strategy for the energy optimization of its buildings on the Hönggerberg campus. ETH Zurich is convinced that a site affords a far greater potential for efficiency through networking than the sum of individual energy-optimized buildings. Buildings with different energy-flow characteristics and which are connected via the Anergy grid are regarded as energy consumers or energy producers. With the geothermal storage system, excess heat is stored by means of water-filled geothermal probes 150 to 200 meters below ground so as to be used in winter for heating. As a result of the heating, heat is removed from the storage devices in cold months, and the temperature of the water circulating in them falls. In summer, the process is reversed by using the cooler water to cool the buildings.

Photo: Campus of ETH Zurich on the Hönggerberg

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, the ETH Domain has selected six specific measures. The ETH Domain has defined a target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts the ETH Domain is making to increase its energy efficiency.

No. Measure
(target — target year — status)

- 01** Research in the field of Energy
New Research projects — 2020 — in implementation phase
- Exemplary measures
- Implementation of the Swiss Competence Centers for Energy Research (SCCER): research on energy topics such as “Power supply”, “Storage”, “Grids and their components, energy systems”, “Efficient concepts, processes and components in mobility” and “Biomass”.
 - NEST, a practical laboratory for intelligence in the building
 - Smart Living Lab, a research and practical laboratory for integrating systems to generate energy from renewable energies in buildings.
- 02** Teaching in the field of energy
New study courses — 2020 — in implementation phase
- Exemplary offers from the new study courses and further training courses
- Implementation of a master course in “Energy Science and Technology” at ETH Zurich.
 - Master course in energy management and sustainability at EPFL
- 03** ETH Zurich: Construction of the Energy grid on the Hönggerberg campus
14 GWh/y of geothermal heat — 2020 — in implementation phase
- 04** PSI: Improved waste heat recovery on the research site
75% waste heat — 2018 — in implementation phase
- 05** EPFL: Autonomous heat supply
EPFL is 88% heated by heat pumps, rest by natural gas; 100% cooled by lake water; production and consumption are considered as a system so as to take mutual advantage of synergies and utilize energies. Goals: heat supply with 88% renewable energy by 2019, extension of renewable energies (to 100% in the year 2035), reduction of fossil-fuel heat energy to zero by 2035, minimization of CO₂ emissions, utilization of possible synergies with other projects on the campus.
88% Renewables — 2019 — in implementation phase
- 06** WSL: Conversion of all WSL's own sites to CO₂-neutral heating. Target: reduction of CO₂ emissions by 97% from 2006 to 2020, reduction of the heat requirement by 25% by 2018.
CO₂ reduction — 2020 — in implementation phase

green = reduction target attained
blue = target

01



New research projects

Research in the field of energy

NEST is an Empa and Eawag research platform to accelerate the innovation process in the building sector at the Empa site in Dübendorf. It is a modular building with a backbone and interchangeable living and working areas (“units”) of various technology and research partners. This allows for significantly faster research and development work on building and insulation materials, furnishings and energy management than was previously possible in conventional buildings. The units are supplied from the backbone with energy, water and an Internet connection. Data on utilization are recorded and evaluated centrally.

02



New study courses

Master course in energy management and sustainability at EPFL

A second group of engineers completed their master in energy management and sustainability in autumn 2014. These experts are thus excellently trained to manage complex energy systems. The third master course began in September 2014.

04



75% waste heat

PSI: Improved waste heat recovery on the research site

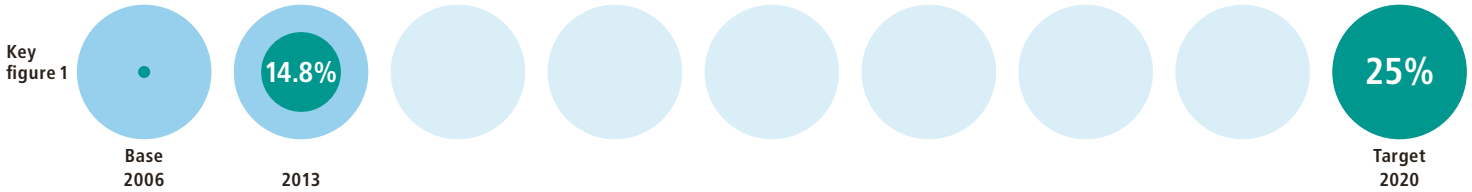
The recovery of waste heat generated by the PSI large-scale research facilities constitutes a significant contribution to increasing energy efficiency. Extensive measures enabled the recovered waste heat to be more than doubled from 14% to 30% in 2013.

ETH Domain

Energy target 2020

The ETH Domain distinguishes between two kinds of energy efficiency: key figure 1 is based on full-time equivalents (FTE), the energy reference surface area, the number of instrument days and the patient treatments at the PSI. Key figure 2 is calculated as for key figure 1, but in addition takes into account the increase in efficiency on the mainframe computer.

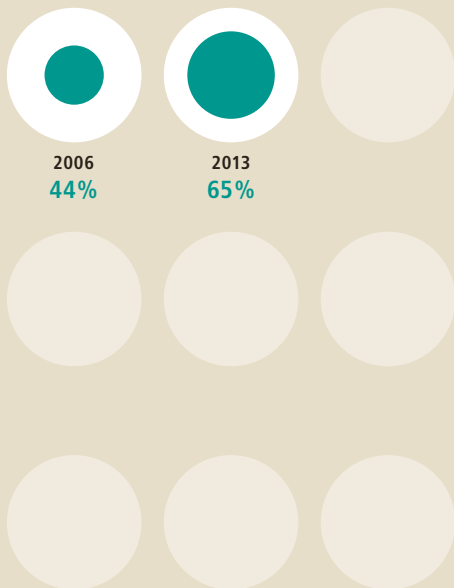
Increase in energy efficiency



Key figure 2 As stated above, the ETH Domain has a second key figure, which takes into account the mainframe computer. This efficiency was 26.3% higher than in the base year 2006.

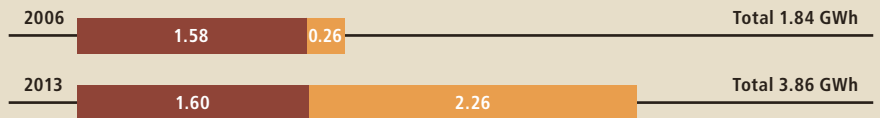
Renewable energy as a proportion of total consumption

The ETH Domain increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 44% in the base year 2006 to 65% in the year under review 2013.



Production of energy from renewable sources

The ETH Domain increased its production of renewable energy from 1.84 GWh in the base year 2006 to 3.86 GWh in the year under review 2013. Heat and power were produced from renewable sources.



Fuels (heating) ■ Renewable and waste heat
 Fuels (transport) ■ Renewable
 Power ■ Renewable

Swiss Federal Railways (SBB)

Action plan

With its sustainable and energy-efficient mobility offering, SBB contributes significantly to the implementation of the Confederation's Energy Strategy 2050. Despite a 13.7% increase in efficiency, energy consumption rose by at least 3% from 2006 to 2013 owing to a strong increase in passenger traffic output of about 30%, among other reasons. SBB is planning to save about 20% of the annual consumption forecast for 2025, or a total of 600 gigawatt hours (GWh), with an extensive package of measures. From 2025 onwards, the SBB's trains are to run on power from 100% renewable energies. In this way SBB is making a contribution to Switzerland's sustainable development.



ADL monitor in the cab of a train

Success story

Adaptive control of trains (ADL)

In 2025 SBB intends to operate only with power from renewable energies. To achieve this, it intends to save approx. 20% of the annual consumption forecast for 2025 or a total of 600 GWh based on 2010. This is only possible if its 31,000 employees act energy-efficiently.

Train drivers, for example, can greatly reduce energy consumption by adopting an energy-saving driving style. Adaptive control (ADL) plays an important role here. This sophisticated technology transmits recommended speeds directly to train drivers in the cab. ADL thus establishes a direct link between train drivers and the operating centers for network-wide traffic control.

This facilitates a forward-looking driving style and reduces unnecessary halts at red signals and excessive braking. Thanks to this "Green Wave", braking and approach sequences are reduced and timetable stability and energy consumption are markedly improved. Adaptive train driving saves 71.7 GWh a year.

Swiss Federal Railways (SBB)

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. SBB intends to implement all these measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

10

Action area Buildings and renewable energy

- 01 ● Energy-efficient new and converted buildings
- 02 ● Analyses of potential of waste heat and renewable energies
- 03 ● CO₂-free heating systems
- 04 ● Full cost accounting of energy efficiency
- 05 ● Energy-efficient lighting
- 06 ● Energy-efficient cooling machines
- 07 ○ Energy-efficient Sanitary Sector
- 08 ● Energy-efficient electromotors
- 09 ● Building technology with operating optimization regime
- 10 ● Procurement of green power and hydroelectricity
- 11 ● Mobility concepts for buildings
- 12 ● Creation of ecofunds

Action area Mobility

- 13 ● Integration of mobility management
- 14 ● Central information and booking platform
- 15 ○ Encouragement of home offices
- 16 ● Promoting work hubs
- 17 ○ Promotion of video and web conferencing
- 18 ● Incentives for using public transport
- 19 ● Providing or co-financing PT season tickets
- 20 ● Criteria for choosing mode of transport
- 21 ● Active parking space management
- 22 ○ Provision of bicycle parking spaces
- 23 ○ Provision of bicycles and e-bikes
- 24 ● Criteria for procuring energy-efficient vehicles
- 25 ○ Eco-Drive training courses for frequent car users
- 26 ○ Promoting the use of car sharing agencies
- 27 ● Joint use of a company carpool
- 28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

- 29 ● Full cost accounting of energy efficiency
- 30 ● Specifications for new servers and new data center hardware
- 31 ● Highly-energy-efficient data centers
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- 37 ● Promotion of economy mode at computer workstations
- 38 ● Promotion of energy-efficient printing solutions
- 39 ● Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action



Procurement of green power and hydroelectricity

In addition to the power from their six hydroelectric power stations, SBB has been sourcing energy from the run-of-river power station Kembs (F) since the beginning of 2013. This meant it was able to increase the average proportion of its hydroelectric power by 10% to 90%. This proportion can fluctuate from year to year, depending on the weather and water inflows. According to its energy strategy, SBB intends to switch to 100% of its rail power coming from renewable sources. This is an ambitious target, because the Railways' requirement will increase in the near future as a result of extensions such as the cross-city line in Zurich or the Gotthard base tunnel.

Photo: Ritom reservoir above Piotta, Ticino

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, SBB has selected **16 specific measures**. SBB has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts SBB is making to increase its energy efficiency.

No. Measure
(target — target year — status)

Optimization of rolling stock and driving behaviour

- 01 Adaptive control (ADL): a green wave for rail traffic
71.7 GWh/y — 2016 — in test phase
- 02 Equipping the Re460 locomotive series with energy-efficient power converters
28.7 GWh/y — 2022 — in implementation phase
- 03 Energy-optimized shutdown of passenger trains (intelligent hibernation mode)
27.3 GWh/y — 2017 — in implementation phase
- 04 Refit of double-decker commuter train: optimization of heating, ventilation, air-conditioning
16.0 GWh/y — 2017 — in implementation phase
- 05 Double-decker railcar unit: optimization of drive software and control, heating, ventilation, air-conditioning
10.4 GWh/y — 2014 — in implementation phase
- 06 Demand-dependent outside air control with CO₂ sensors on passenger coaches (EW IV, IC2000, ICN, IC Bt)
20.0 GWh/y — 2022 — in study phase
- 07 Refit of the Euro City passenger coaches
6.7 GWh/y — 2014 — implemented
- 08 Energy optimizations of the passenger train fleet type NPZ-Domino
5.6 GWh/y — 2013 — implemented

Optimizations of rail power supply

- 09 Optimization of nozzle control for Pelton turbines in hydroelectric power stations
3.5 GWh/y — 2015 — in implementation phase
- 10 Voltage increase and levelling in 132 kV rail power supply grid
2.0 GWh/y — 2015 — in study phase
- 11 Load flow optimization through energy management and traction power control system EMS/FSL
16.0 GWh/y — 2015 — in planning phase
- 12 Replacement of rotary converters with static inverters having a higher efficiency
12.6 GWh/y — 2024 — in implementation phase
- 13 Increasing the efficiency of the Göschenen hydroelectric power station with new impellers
4.1 GWh/y — 2020 — in planning phase

Optimizations of infrastructure and buildings

- 14 Optimizing the control of rail points heaters by using climate data
7.7 GWh/y — 2025 — in implementation phase
- 15 LED lights in and around the station; platform and track area lighting
8.6 GWh/y — 2025 — in planning/pilot phase
- 16 Optimizing the control of air conditioning, cooling and heating in the building area
3.5 GWh/y — 2019 — in planning/pilot phase

green = reduction target attained
blue = target

02



28.7 GWh/y

Equipping the Re460 locomotive series with energy-efficient power converters

The 119 locomotives of the Re460 type have formed the backbone of long-distance rail transport for over 20 years. Modernization of the locomotives means that as from 2016 the SBB's customers will be travelling in an even more energy-efficient and therefore environmentally-friendly way. Specifically, the power converter is being replaced; as a result, the power electronic components will be more efficient. In addition, the compressed air generation and the cooling control components are being renewed, and thus energy-optimized.

03



27.3 GWh/y

Energy-optimized shutdown of passenger trains

SBB has installed a hibernation mode in the passenger coaches Eurocity, EW4 and IC2000: If the coach is parked, it is heated in winter only to the anti-freeze temperature. Before the coach is next used, it is "woken up" in good time so that the passengers find a nicely-heated coach. In summer, the air conditioning is turned on only shortly before the passengers board.

11



16.0 GWh/y

Load flow optimization through energy management and traction power control system

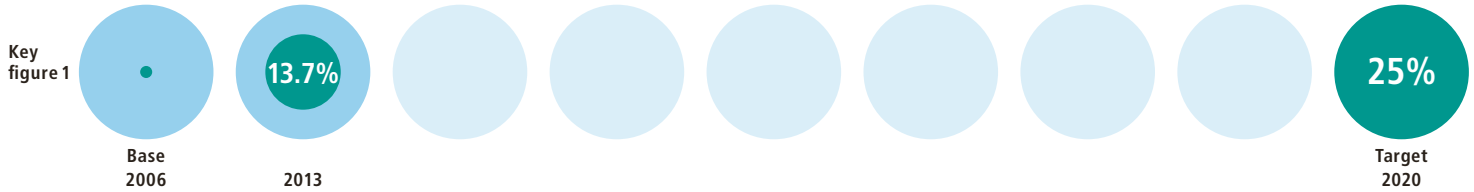
Every minute the SBB's energy management system optimizes the distribution of the currently-required rail power load to the twelve adjustable power stations and rectifier substations and passes on the target values directly to the power stations. In this way unnecessary load flows can be avoided and transmission losses reduced.

Swiss Federal Railways (SBB)

Energy target 2020

SBB distinguishes between two kinds of energy efficiency. Key figure 1 is based on operating output in passenger and net metric ton kilometers and on final energy consumption (power and diesel) for traction. Key figure 2 is based on consumption of primary energy, since SBB controls the whole production chain of traction power and intends to operate entirely with renewable power by 2025.

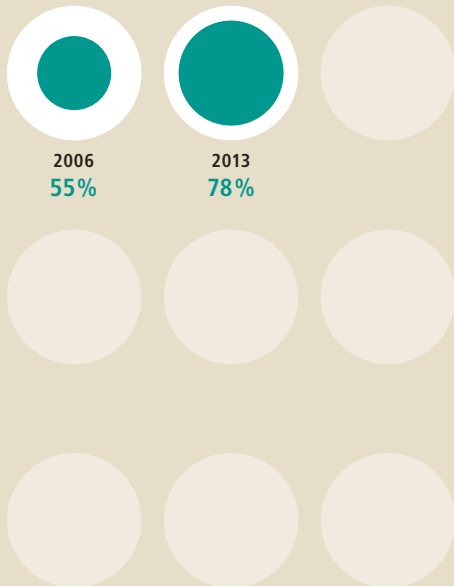
Increase in energy efficiency



Key figure 2 As stated above, SBB has a second key figure, which is based on primary energy consumption. This efficiency was 93.2% higher in 2013 than in the base year 2006.

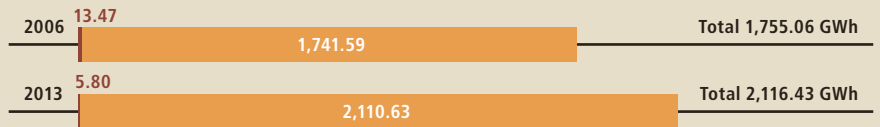
Renewable energy as a proportion of total consumption

SBB increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 55% in the base year 2006 to 78% in the year under review 2013.



Production of energy from renewable sources

SBB increased its production of renewable energy from 1,755.06 GWh in the base year 2006 to 2,116.43 GWh in the year under review 2013. Power and heat were produced from renewable sources.



Fuels (heating) Renewable and waste heat
 Fuels (transport) Renewable
 Power Renewable

Skyguide

Action plan

Sustainability is a cornerstone of air navigation services' basic mandate. The obligation to ensure efficient management of air traffic goes hand in hand with the task of guiding aircraft to their destination as directly as possible, so as to reduce emissions of climate-damaging gases. Skyguide also strives to attain the greatest possible efficiency in the energy consumption of its infrastructure. Thus it has succeeded in improving its energy efficiency by 20 % from 2006 to 2013 despite an increase in consumption of almost 11%.



Ceiling lighting in the Wangen control center

Success story

LED increases energy efficiency indoors and outdoors

Over 550 Skyguide employees and 200 Swiss Air Force staff – 255 of whom are air traffic controllers – work at the Air Navigation Center in Wangen bei Dübendorf, which opened in 2009. The air traffic control premises, which measure 1,320 sq. m., were previously lit by fluorescent lamps, which owing to the work on radar screens were dimmed to 20% of their power. In 2013 Skyguide replaced the 36 luminous tiles of the ceiling lighting with LED lighting elements, which reduce the annual consumption by 132,000 kilowatt hours (kWh). Owing to the longer service life and reduced consumption, the investment of more than CHF 300,000 will be amortized in the medium term.

The car park lighting was also optimized: Previously the car park was permanently brightly lit with compact fluorescent lamps. Skyguide replaced them with 28 modern LED candelabras and created a demand-based lighting concept: From 10 p.m. the car park is only lit when someone enters it, otherwise the lights are dimmed to 30% of their power. This moonlight-like light saves 50% of the energy a year and reduces light pollution of the environment.

Skyguide

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. From this catalogue, Skyguide has selected 37 measures that the organization wants to implement. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

09

Action area Buildings and renewable energy

- 01 ● Energy-efficient new and converted buildings
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- 03 ● CO₂-free heating systems
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- 12 – Creation of ecofunds

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- 39 ● Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action



Building technology with operating optimization regime

Skyguide carried out an energy optimization programme at the air traffic control center in Wangen bei Dübendorf. Although the building was only commissioned in 2009 and was built according to energy-related criteria, Skyguide was able to make additional savings with this programme. Presence detectors were installed throughout the building complex for lighting and air conditioning control, the waste heat from the data center is used for heating by means of a heat pump and an intelligent building management system controls all components centrally. In addition, the monitoring system is being constantly improved and adapted to the actual needs. Since the beginning of 2011, the building's power consumption has been reduced every year by half a percent – without additional investments.

Photo: Air traffic control center in Wangen bei Dübendorf

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, Skyguide has selected four specific measures. Skyguide has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts Skyguide is making to increase its energy efficiency.

No. Measure
(target — target year — status)

En-route air traffic control services

- 01 Shortening an important air route between northern and southern Europe
143 GWh/y — 2016 — planned
- 02 Introduction of expanded approach management for the Zurich region (XMAN)
228 GWh/y — 2024 — planned

Approach control service

- 03 Green Wave for morning approaches of long-haul aircraft of the airline Swiss at Zurich Airport
7 GWh/y — 2012 — implemented
- 04 Continuous descent approach for the airports of Geneva and Zurich
133 GWh/y — 2014 — implemented

01



143 GWh/y

Shortening an important air route between northern and southern Europe

Changing the routing at the north and south of an air route that crosses Europe makes over 500 flights a day shorter, saving a total of over 3 million flight kilometers a year. Skyguide is in charge of the overall European project management.

03



7 GWh/y

Green wave for early-morning approaches of long-haul aircraft of the airline Swiss at Zurich airport

The current concept of "first come, first served" in the first wave of incoming intercontinental flights approaching Zurich airport in the morning led to many aircraft having to be kept in holding patterns. In order to avoid this first wave and arrive as early as possible, many pilots headed for their destination at a higher speed. Both circumstances caused additional fuel consumption and thus additional CO₂ and noise emissions. Flight planning and management were improved and approach phase optimized with a project conducted under the supervision of the European research and development programme SESAR, in which Skyguide, Swiss and Zurich airport cooperated. Punctuality has increased and holding times have been reduced by 75%. The improvement work is continuing today as part of the FAIRSTREAM project.

04



133 GWh/y

Continuous descent approach for Geneva and Zurich airports

The continuous descent approach is an air traffic control technique that allows approaches to be performed more quietly and more economically by lowering engine thrust. To do so, appropriate approach procedures and air space structures have to be developed.

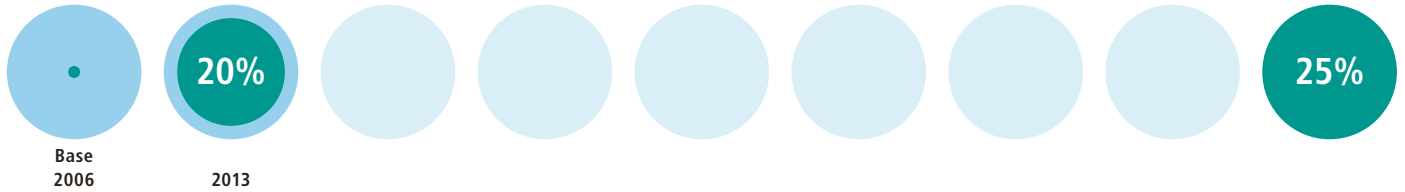
green = reduction target attained
blue = target

Skyguide

Energy target 2020

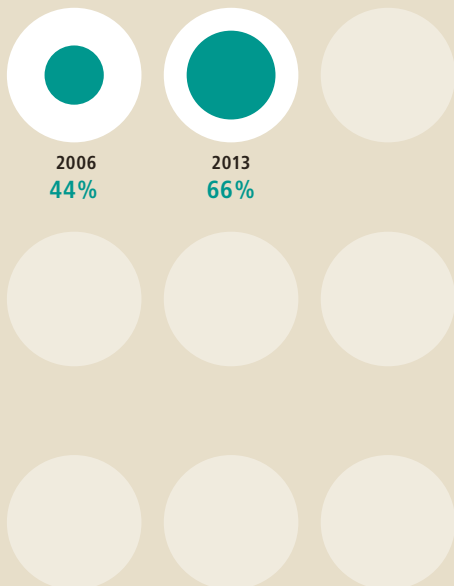
Skyguide's energy efficiency was 20% higher in the year under review 2013 than in the base year 2006.

Increase in energy efficiency



Renewable energy as a proportion of total consumption

Skyguide increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 44% in the base year 2006 to 66% in the year under review 2013.



Production of energy from renewable sources

Skyguide produces no energy from renewable sources.

2006	Total 0 GWh
2013	Total 0 GWh

Fuels (heating) ■ Renewable and waste heat
Fuels (transport) ■ Renewable
Power ■ Renewable

Swisscom

Action plan

Swisscom reduced slightly its total energy consumption (power, fuel (transport) and fuel (heating)) in 2013, from 511 to 503 gigawatt hours (GWh). Thanks to the efficiency measures implemented and to the additional consumption saved as a result, energy efficiency could be increased by 24.5% in 2013 compared to 2006. Power consumption in 2013 was 399 GWh (previous year 409 GWh), and thus declined slightly despite further expansions of the network. Swisscom used 100% renewable power in 2013 – as it had already before.



New data center in Bern Wankdorf

Success story

Rain water cools the air for the IT system

The new Swisscom data center in Bern-Wankdorf sets new standards in the areas of energy efficiency, technology and waste heat recovery. For example, it is integrated into the city of Bern's district heating grid and heats directly apartments in the neighbourhood which are renovated accordingly. Responsible use of energy can also be seen from the example of cooling. Instead of power-guzzling conventional cooling machines, the data center utilizes outside air in a novel free cooling process that works on hot summer days with hybrid heat-exchange coolers: rainwater collected in a tank is fed into the hot air stream and removes heat from it through evaporation. Then the cooled air is used specifically to moderate the temperature of the IT systems. With these measures, Swisscom achieves unprecedented energy efficiency in the new Wankdorf data center. 84% of the energy consumed is actually utilized for the computing output. This corresponds to a PUE value (Power Usage Effectiveness) of 1.2. The new building makes it possible to completely close older, less efficient server rooms by 2017.

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. Swisscom intends to implement all the measures, with one exception over which the company has no leeway for action. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

10

Action area Buildings and renewable energy

- 01 ● Energy-efficient new and converted buildings
- 02 ● Analyses of potential of waste heat and renewable energies
- 03 ● CO₂-free heating systems
- 04 ● Full cost accounting of energy efficiency
- 05 ● Energy-efficient lighting
- 06 ● Energy-efficient cooling machines
- 07 ● Energy-efficient Sanitary Sector
- 08 ● Energy-efficient electromotors
- 09 ● Building technology with operating optimization regime
- 10 ● Procurement of green power and hydroelectricity
- 11 ● Mobility concepts for buildings
- 12 ● Creation of ecofunds

Action area Mobility

- 13 ● Integration of mobility management
- 14 ● Central information and booking platform
- 15 ● Encouragement of home offices
- 16 ● Promoting work hubs
- 17 ● Promotion of video and web conferencing
- 18 ● Incentives for using public transport
- 19 ● Providing or co-financing PT season tickets
- 20 ● Criteria for choosing mode of transport
- 21 ● Active parking space management
- 22 ● Provision of bicycle parking spaces
- 23 ● Provision of bicycles and e-bikes
- 24 ● Criteria for procuring energy-efficient vehicles
- 25 ● Eco-Drive training courses for frequent car users
- 26 ● Promoting the use of car sharing agencies
- 27 ● Joint use of a company carpool
- 28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

- 29 ● Full cost accounting of energy efficiency
- 30 ● Specifications for new servers and new data center hardware
- 31 ● Highly-energy-efficient data centers
- 32 ● Pushing passive cooling solutions in data centers
- 33 ● Encouraging server virtualization in data centers
- 34 – Bundling of data centers / Outsourcing of IT services
- 35 ● Monitoring and evaluation of new technologies
- 36 ● Promotion of waste heat recovery
- 37 ● Promotion of economy mode at computer workstations
- 38 ● Promotion of energy-efficient printing solutions
- 39 ● Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action



Procurement of green power and hydroelectricity

Swisscom used 100% renewable power in 2013 – as it had already before –, which is verified in each case by the WWF. In 2013 Swisscom sourced 7.5 GWh of “naturemade star” green power from solar energy (3.5 GWh) and wind power (4 GWh), five times more than in previous years. The quality label “naturemade star” designates energy from 100% renewable sources that is produced in a particularly environmentally-compatible way. Swisscom is thus one of the largest users of power generated from wind and solar energy in Switzerland. Its remaining power requirement is met with domestic hydroelectric power. It has decided not to use pumped storage power.

Photo: Wind power plant Juvent in the Jura

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, Swisscom has selected four specific measures. Swisscom has defined a reduction target and a target date for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts Swisscom is making to increase its energy efficiency.

No. Measure
(target — target year — status)

- 01 Fresh air cooling in telephone exchanges
45 GWh/y — 2016 — in implementation phase
- 02 Green IT offers for customers
57 GWh/y — 2014 — implemented
- 03 Dynamic consumption control in Switzerland
70,000 households — 2018 — in implementation phase
- 04 Energy-efficient terminal devices for private customers
25 GWh/y — 2019 — in implementation phase

01



45 GWh/y

Fresh air cooling in telephone exchanges

In 2013 Swisscom continued the energy-saving project Mistral, which is used to cool telephone exchanges. Mistral stands for a cooling method that uses exclusively outside air all year round. Mistral replaces conventional cooling systems that are operated energy-intensively with compressors, and dramatically increases energy efficiency. In addition, Mistral renders environmentally harmful refrigerants unnecessary. At the end of 2013 Mistral was cooling 673 telecommunications systems in telephone exchanges. This represents an increase of 11% on the previous year. In 2013 Mistral was implemented in about 80% of telephone exchanges, saving 38 GWh/y.

02



57 GWh/y

Green IT offers for customers

Green IT represents the aspiration to design the use of information and communication technologies over the entire life cycle in an environmentally-compatible and resource-saving manner. Thanks to ultra-modern equipment, business and private customers can contribute to the reduction of CO₂ emissions. In 2013 energy savings through green IT amounted to approx. 57 GWh.

04



25 GWh/y

Energy-efficient terminal devices for private customers

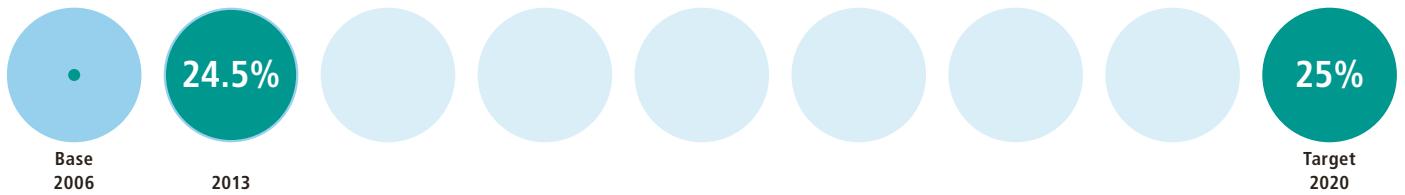
Swisscom is committed to constantly increasing the energy efficiency of its terminal devices, in particular routers and TV boxes. Thanks to the innovative economy mode on TV boxes, customers' power consumption could be reduced by a total of 9 GWh. In addition, awareness campaigns were conducted.

green = reduction target attained
blue = target

Energy target 2020

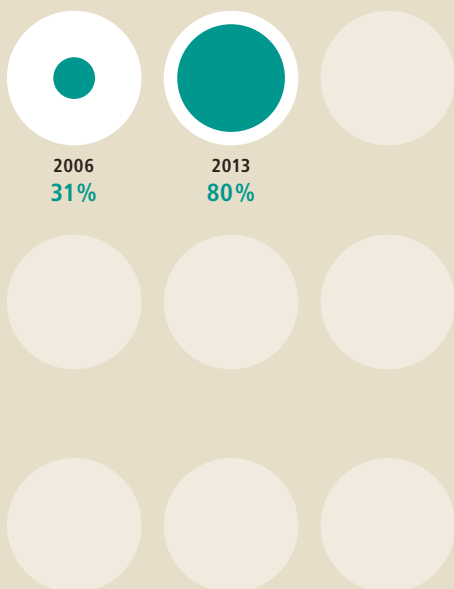
Swisscom's energy efficiency was 24.5% higher in the year under review 2013 than in the base year 2006.

Increase in energy efficiency



Renewable energy as a proportion of total consumption

Swisscom increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 31% in the base year 2006 to 80% in the year under review 2013.



Production of energy from renewable sources

Swisscom increased its production of renewable energy from 0.01 GWh in the base year 2006 to 5.23 GWh in the year under review 2013. Power and heat were produced from renewable sources.



Fuels (heating) ■ Renewable and waste heat
Fuels (transport) ■ Renewable
Power ■ Renewable

DDPS

Action plan

Owing to its special and diverse challenges and structures, DDPS is implementing its own energy concept, based on the EnergieSchweiz programme.

The primary goals are a 20% reduction of CO₂, a 50% increase in the use of renewable energies and a limitation of conventional electricity consumption to the level of 2001. In order to be able to optimally tap the potential of the energy used or self-produced, DDPS is implementing various measures.



Solar thermal collectors installation at Dailly barracks, Vaud

Success story

323 solar thermal collectors heat the soldiers

The entire energy required for building heating and hot water on the Dailly barracks site at approx. 1,400 m above sea level is produced from solar energy. The heat generated by the solar thermal collectors is stored in a seasonal intermediate storage system and, when needed, can be drawn off at a later point in time.

With 323 solar thermal collectors on a total surface area of 743 square meters, Dailly is the largest glazed solar thermal collector installation in Switzerland. It has also been built to today's state-of-the-art standards. Each of the 12 sub-fields of the installation can be serviced individually. If a sub-field needs to be serviced, the other 11 remain in operation and provide full power of up to 600 kW. A stone cavern with a capacity of 900,000 liters serves as a boiler.

By building the facility, DDPS showed early on that it actively supports innovative and forward-looking technologies, is making an important contribution to the promotion of alternative energy solutions and is thus enhancing their marketability.

Selection from the joint measures of all actors

The Confederation: exemplary in energy plan has defined 39 joint measures to increase energy efficiency in the three action areas. DDPS intends to implement 34 of them. The Department sees no leeway for action in respect of five measures. As long as a measure is in the implementation phase, it is marked with a blue dot. Once it has been implemented, the dot changes to green.

No. Measure

03

Action area Buildings and renewable energy

- 01 ● Energy-efficient new and converted buildings
- 02 ● Analyses of potential of waste heat and renewable energies
- 03 ● CO₂-free heating systems
- 04 ● Full cost accounting of energy efficiency
- 05 ● Energy-efficient lighting
- 06 ● Energy-efficient cooling machines
- 07 ● Energy-efficient Sanitary Sector
- 08 ● Energy-efficient electromotors
- 09 ● Building technology with operating optimization regime
- 10 ● Procurement of green power and hydroelectricity
- 11 ● Mobility concepts for buildings
- 12 – Creation of ecofunds

Action area Mobility

- 13 ● Integration of mobility management
- 14 ● Central information and booking platform
- 15 ● Encouragement of home offices
- 16 ● Promoting work hubs
- 17 – Promotion of video and web conferencing
- 18 ● Incentives for using public transport
- 19 ● Providing or co-financing PT season tickets
- 20 – Criteria for choosing mode of transport
- 21 ● Active parking space management
- 22 ● Provision of bicycle parking spaces
- 23 ● Provision of bicycles and e-bikes
- 24 ● Criteria for procuring energy-efficient vehicles
- 25 ● Eco-Drive training courses for frequent car users
- 26 ● Promoting the use of car sharing agencies
- 27 ● Joint use of a company carpool
- 28 ● Provision of charging stations for electric vehicles

Action area Data centers and Green IT

- 29 ● Full cost accounting of energy efficiency
- 30 ● Specifications for new servers and new data center hardware
- 31 – Highly-energy-efficient data centers
- 32 ● Pushing passive cooling solutions in data centers
- 33 ● Encouraging server virtualization in data centers
- 34 ● Bundling of data centers / Outsourcing of IT services
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- 36 ● Promotion of waste heat recovery
- 37 ● Promotion of economy mode at computer workstations
- 38 – Promotion of energy-efficient printing solutions
- 39 ● Promoting re-use of appliances

- adopted and at least 80% achieved
- adopted
- adopted, no data yet
- no leeway for action



CO₂-free heating systems

The ABC Center in Spiez sources a large proportion of its energy from the new biomass center of Oberland Energie AG in Spiez. Old wood and green waste are converted to power, steam, heat and compost. The biomass center, which consists of a fermentation unit, a composting plant and a heating facility using old and waste wood, helps the ABC Center in Spiez to save 400,000 liters of heating oil or 4 GWh/y and also produces high-quality compost. The biomass center in Spiez was awarded the "Golden Watt" distinction by the Federal Office of Energy in 2012.

Photo: Biomass center in Spiez

A detailed description of the measures can be found on pages 22 to 26.

Selection from the actor's specific measures

In addition to the joint measures for all actors, DDPS has selected seven specific measures. A target and a target date have been defined for each of these measures. When a measure has been implemented, the depiction of the reduction target changes from blue to green. The measures documented here are only part of all the efforts DDPS is making to increase its energy efficiency.

No. Measure
(target — target year — status)

- 01 Introduction of a DDPS building energy certificate in buildings and on sites (GEAVBS)
60% GEAVBS — 2020 — in implementation phase
- 02 Own production of renewable energy
4 GWh/y — 2020 — in implementation phase
- 03 Systematic introduction of central transport agencies in all military formations
100% structures — 2020 — in implementation phase
- 04 Use of low-viscosity engine oils where operationally and technically possible
100% use — 2020 — in implementation phase
- 05 Low-rolling-resistance tyres, where operationally and technically possible
5.6 GWh/y — 2020 — in implementation phase
- 06 Optimization of the Air Force's equipment in terms of fulfilment of its constitutional mandate and energy consumption. The indicator is the average ratio of actual to target flying hours (minimum)
Indicator < 1.1 — 2020 — in implementation phase
- 07 Troop training and information Indicator: All relevant troop corps have a trained environment representative at their disposal
100% — 2020 — in implementation phase

01

60% GEAVBS

Introduction of a DDPS energy certificate in buildings and on sites (GEAVBS)

DDPS's 50 largest sites consume about 80% of its buildings' total energy requirement. As part of the "Site Energy Planning" programme, these sites are subject to systematic operational optimization. In addition, the DDPS building energy certificate is issued based on the surveyed technical data of the buildings and their technical installations. In this way DDPS can make an assessment of the energy situation of its buildings and from it determine the need for renovation works. Furthermore new buildings containing accommodations and administrative premises are constructed to the MINERGIE-P-ECO® standard.

05



5.6 GWh/y

Low rolling resistance tyres

Rolling resistance is responsible for 20% to 30% of vehicles' fuel consumption. A reduction of tyre rolling resistance can therefore make a considerable contribution to increasing energy efficiency and reducing CO₂ emissions. DDPS thus uses tyres with high fuel efficiency.

07



100%

Troop training and information

DDPS employees and members of the armed forces receive targeted training in energy efficiency as part of the DDPS's environmental planning and training, of the armed forces' environmental training and in specialized courses according to their function. One example of this is the ERFA conference on space and environment DDPS 2014, concerning mobility management, among other subjects. The aim is that all relevant troop corps should have a trained environment representative at their disposal. Appropriate documents are made available.

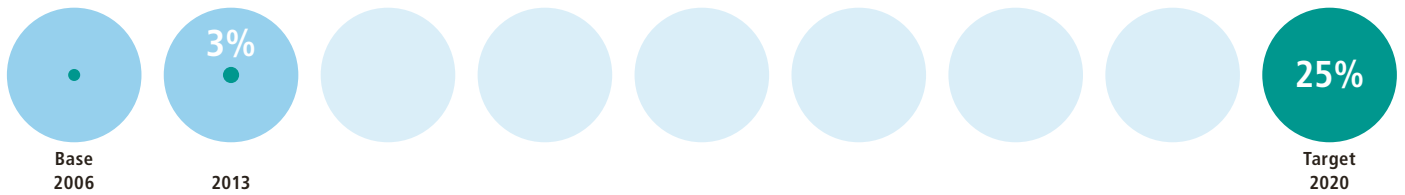
green = reduction target attained
blue = target

DDPS

Energy target 2020

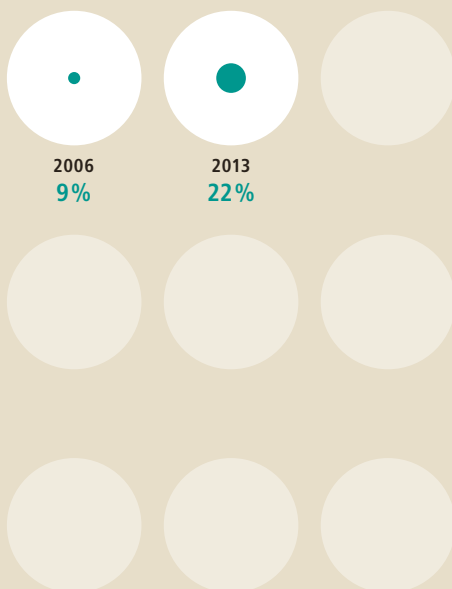
DDPS's energy efficiency was 3% higher in the year under review 2013 than in the base year 2006.

Increase in energy efficiency



Renewable energy as a proportion of total consumption

DDPS increased renewable energy (heat, fuels and power) as a proportion of total energy consumption from 9% in the base year 2006 to 22% in the year under review 2013.



Production of energy from renewable sources

DDPS decreased its production of renewable energy from 27.8 GWh in the base year 2006 to 26.0 GWh in the year under review 2013. Power and heat were produced from renewable sources.




Fuels (heating) ■ Renewable and waste heat
Fuels (transport) ■ Renewable
Power ■ Renewable

Glossary

DDPS	Federal Department of Defence, Civil Protection and Sport
Eawag	Swiss Federal Institute of Aquatic Science and Technology
Empa	Swiss Federal Laboratories for Materials Science and Technology
EPFL	Swiss Federal Institute of Technology, Lausanne
ETH	Swiss Federal Institute of Technology, Zurich
FBL	Federal Office for Buildings and Logistics
FOE	Federal Office of Energy
KBOB	Coordination Conference of Building and Real Estate services of public building owners
PSI	Paul Scherrer Institute
PT	Public Transport
RUMBA	Resources and Environmental Management programme of the Federal Administration
SBB	Swiss Federal Railways
WSL	Swiss Federal Institute for Forest, Snow and Landscape Research

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During the 2013 reporting period, the actors in The Confederation: exemplary in energy plan attained a 17.3% improvement in their energy efficiency compared to the base year 2006; the green surface corresponds to this figure. The aim is to increase efficiency by 25% by 2020.