Exemplary in energy
An initiative of the Confederation

Annual report 2018

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

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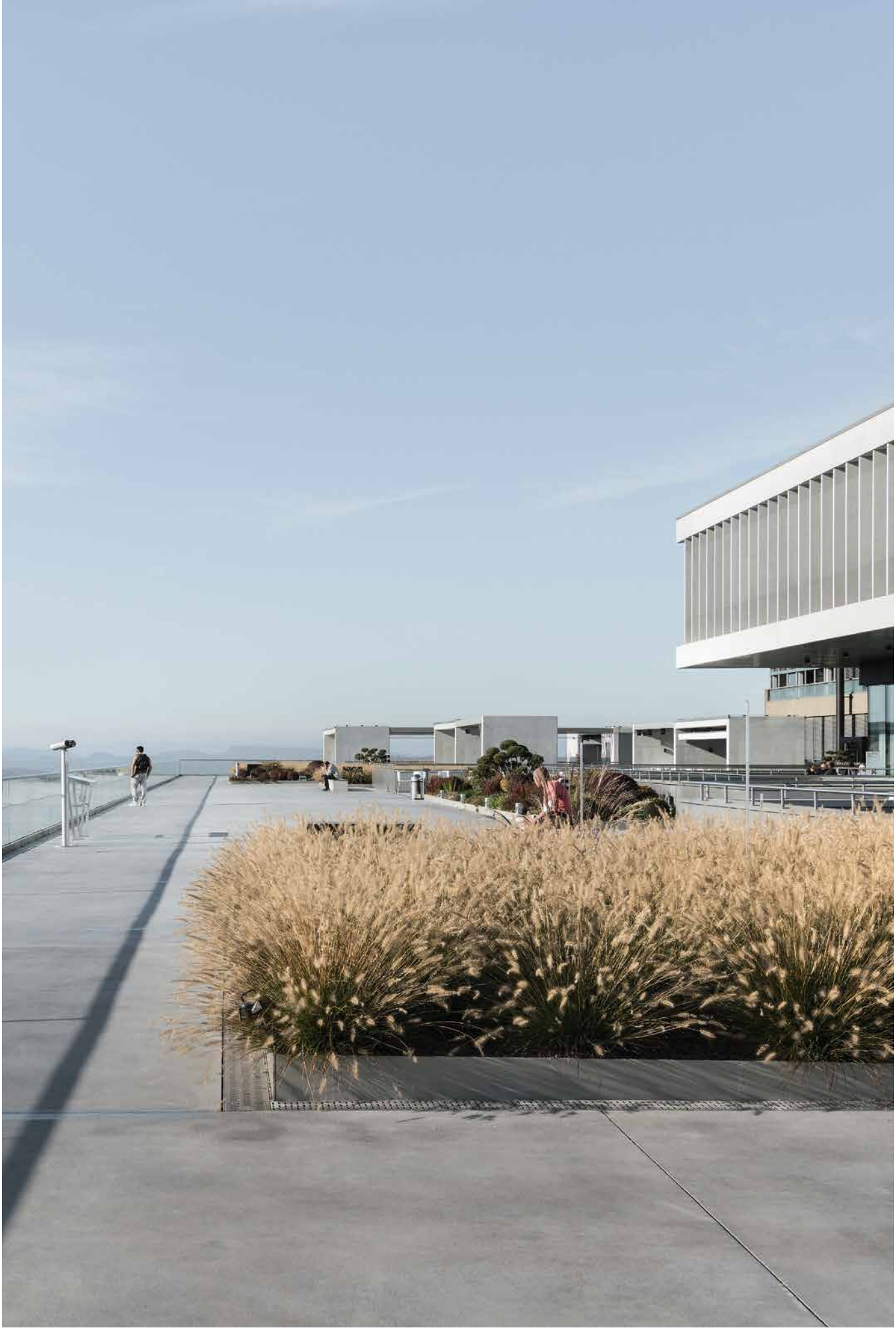

View from the terrace of the Bellikon Rehabilitation Clinic

Forwards

Sustainability and energy efficiency are important concerns for Suva, which is contributing its share to attaining Switzerland's climate targets by reducing its operational CO_2 emissions by 30 % compared to 2014 by 2025. This is being achieved primarily by cutting its consumption of energy and resources. Suva is on track with the measures it has implemented, in particular procurement of power from renewable energy sources, LED lighting and optimisations in IT. Employees too are making their contribution: specific projects are sensitising them to energy-saving behaviour. One of Suva's ground-breaking projects for energy-efficient and sustainable construction is the complete renovation of the Bellikon Rehabilitation Clinic. Patients and employees benefit from state-of-the-art technologies and treatment infrastructure thanks to the renovation and the new building that were successfully completed in 2018. This means the clinic is optimally equipped to shoulder its responsibilities as a competence centre for accident and sports rehabilitation as well as vocational re-integration in the future. Great importance was attached to the concept of sustainability right from the planning stage. Both the modernised and new parts of the building comply with the Minergie-P standard, the building's technical facilities are resource-saving and its structures ensure flexibility for future development stages. Suva has been a member of the Exemplary in energy initiative since 2018. Thanks to this partnership, we are pleased to be able to take our responsibility for implementing the Confederation's Energy Strategy. Cooperation with partner enterprises affords opportunities for comparison and innovative approaches to making savings on energy consumption. We are convinced that the initiative is a relevant driver for improved energy efficiency.

Felix Weber
Chairman of the Management Board, Suva

Giving a clear signal

The Federal Council intends to increase energy efficiency in the federal administration and parastatal enterprises by 25% between 2006 and 2020. The participating actors are planning and coordinating some of their measures within the framework of the Exemplary in energy initiative.

Ready for tomorrow's energy policy
With the first package of measures for the Energy Strategy 2050, six years ago the Federal Council committed the Federal Government to setting a good example in the energy sector and to optimising its energy consumption. The Federal Government is responsible for 2% of total energy consumption in Switzerland.

As a result, the federal administration and parastatal enterprises joined forces in the Exemplary in energy initiative. A coordination group defines the binding action plan and steers the joint activities. Its office is managed by the Swiss Federal Office of Energy. Starting from the base year 2006, the actors aim to increase energy efficiency by 25% by 2020. Since 2016 the initiative has also been open to other public-sector enterprises.

Comprehensive measures
The action plan of the Exemplary in energy initiative comprises 39 joint measures in three action areas plus a series of specific measures determined by each actor individually.

Buildings and renewable energy
Measures for energy-efficient new and converted buildings, electric power and heat from renewable energy, green power and further measures.

Mobility
Measures to encourage use of public transport, promotion of mobile-flexible forms of work, charging stations for electric vehicles and further measures.

Data centres and Green IT
Highly energy-efficient data centres, waste heat recovery, re-use of appliances and other measures.

Specific measures
Alternatively-powered Postbuses, optimised railway point heating systems, continuous descent approach at Geneva Airport, fresh-air cooling in telephone exchanges, low-rolling-resistance tyres, photovoltaic installations and further measures.

Major actors
Some very different public actors have committed to the Exemplary in energy initiative:

– The Confederation is represented by the Civil Federal Administration and the Federal Department of Defence, Civil Protection and Sport DDPS.

– Of the parastatal enterprises, Swiss Post, the Swiss Federal Railways, Skyguide, Suva and Swisscom have signed up. The Confederation sets these organisations strategic objectives, which in some cases also concern energy targets or require at least a sustainable corporate strategy.

– The two Federal Institutes of Technology and four research institutes are grouped together in the ETH Domain. Their purpose is specified in the ETH Act and is translated into practice by following the Federal Council's strategic objectives for the ETH Domain.

– With Genève Aéroport and the Services Industriels de Genève (SIG), two cantonal enterprises are now also participating in the initiative. Discussions are under way with further actors.

SWISS POST

ETH DOMAIN

GENÈVE AÉROPORT

SBB CFF FFS

SIG

skyguide

suva

swisscom

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Swiss Confederation

Federal Department of Defence, Civil Protection and Sport DDPS

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Swiss Confederation

Civil Federal Administration

Wolfgang Eger, Chief Information Officer and member of the Extended Executive Management

"Already when procuring laptops, we make sure that the devices save energy when operating and that at the end of their service life they are re-used as second-hand devices or disposed of in an environmentally-compatible manner".

Swiss Post

As a mixed group, Swiss Post operates in the communications, logistics, financial services and passenger transport markets. Last year Swiss Post carried about 1.9 billion letters and some 138 million parcels. PostBus transported nearly 156 million passengers, while PostFinance had more than 4.5 million customer accounts. With about 50,000 employees in Switzerland (34,300 full-time jobs), Swiss Post is one of the largest employers in the country.

Energy strategy implementation
As the largest logistics company in Switzerland, Swiss Post operates an energy-intensive business. In order to further increase energy efficiency, it is renewing its vehicle fleet and building stock, using more alternative-drive systems and optimising delivery rounds. It is also replacing fossil fuels with renewable energy sources.

www.swisspost.ch

Rui Brandao, Director of IT Services, ETH Zurich

"IT is an essential resource factor at an institute of technology like ETH Zurich. We have therefore committed to using our IT resources in an environmentally-aware and energy-efficient manner."

ETH Domain

Academic achievement at the highest level: this is what the ETH Domain provides with over 22,000 staff members, more than 32,000 students and doctoral students and a faculty of about 850 people. The ETH Domain encompasses the Federal Institutes of Technology in Zurich (ETH Zurich) and Lausanne (EPFL), the research institutes Paul Scherrer Institute (PSI), the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), the 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 management and supervisory body.

Energy strategy implementation
The common environmental model of the ETH Domain has been coordinated with the targets of the federal government's Energy Strategy 2050. The ETH Domain's institutions support the common objectives on their own responsibility and with their own environmental management systems.

www.ethdomain.ch

Marco Coelho, Head of IT Support and Operations

"Geneva Airport relies primarily on sustainability when purchasing IT equipment."

Andreas Blum, Manager, Solution Center Cargo, Group divisions and ICT Workplace

"Sustainability also means giving IT equipment a second lease of life: 91% of our old equipment is sold and re-used, while 9% is professionally recycled."

Genève Aéroport

In 2018, 17.7 million passengers used Geneva Airport. Specialising in point-to-point flights (direct links between Geneva and many large European cities), the airport nevertheless serves numerous long-haul destinations.

Energy strategy implementation
In terms of energy strategy, the objectives set by the airport are based on cantonal and federal policies. They consist of three pillars: efficiently consuming and limiting the energy required for operations; producing and distributing energy in the most efficient possible way; giving priority to an energy supply from renewable energy sources. New buildings are required by law to include one or more means of producing renewable energy. In 2018, the cumulative savings amounted to nearly 9.9 GWh for the entire site, which is equivalent to the annual consumption of 4,200 Swiss households.

www.gva.ch

SBB

With about 32,300, employees, the Swiss Federal Railways move people and goods, connect centres and open up different parts of the country. As an efficient, forward-looking and sustainable railway, SBB provides its customers with positive travel experiences and transports their goods reliably and resource-efficiently: a rail journey in Switzerland is about 6 times more energy-efficient and emits 27 times less CO_2 than a journey by car over a comparable distance. With its sustainable and energy efficient mobility offering, SBB thus contributes significantly to the implementation of the Federal Government's Energy Strategy 2050.

Energy strategy implementation
From 2025 onwards, the SBB's trains are to run on power from 100% renewable energy. SBB is planning to save about 20% of the annual power consumption forecast for 2025, or a total of 600 GWh of energy per year, with an extensive package of measures.

www.sbb.ch

Jean-Luc Fonjallaz, Information Systems Director

"The energy efficiency of our data centre has been improved by 25% by commissioning new IT equipment and completely renewing the electric power supply system."

Services Industriels de Genève

SIG is a Swiss utility providing services to the local population. It serves 230,000 customers throughout the canton of Geneva and provides water, gas, electricity and thermal energy. It treats waste water, recovers waste and offers services in the areas of energy and telecommunications.

Energy strategy implementation
As a benchmark of the energy transition in Switzerland, SIG is committed to the development of a sustainable and connected society. For the third time, the company has been evaluated the best electricity provider with regard to the increase in the share of renewable energies and improvement in energy efficiency in the Swiss Federal Office of Energy survey of electricity providers. SIG has made the energy transition one of the cornerstones of its corporate strategy.

www.sig-ge.ch

Nordahl Perrenoud, Project & Planning Expert, Corporate Real Estate Management & Infrastructure

"Skyguide is relying on Green IT to improve the energy efficiency of its technical premises and reduce the number of physical servers through virtualisation."

Skyguide

The Swiss air navigation services company Skyguide provides air navigation services in Switzerland and the neighbouring countries with 1,500 employees in 14 locations. Every year, it guides approximately 1.3 million civil and military aircraft safely and efficiently through Europe's busiest airspace. Skyguide is part of a strong international network and works closely with the Swiss Air Force and other aviation customers and partners.

Energy strategy implementation
Skyguide gives high priority to resource-efficient air traffic management. The company is committed to reducing emissions from air traffic and its own energy consumption through operational improvements. Skyguide invests in efficiency measures on the ground and in improved traffic management in the air while maintaining or even improving safety standards.

www.skyguide.ch

Wolfgang Pfund, Director of Human Resources and Logistics

"Suva is committed to ensuring that infrastructure (e.g. servers, network, storage) is re-used even after it has been employed in the data centre and is ultimately properly recovered."

Suva

Suva is more than just insurance: it combines prevention, insurance and rehabilitation under one roof. Suva offers these services to insured companies and their employees on a holistic and integrated basis: from prevention of accidents and occupational diseases through occupational claims management to rehabilitation and re-integration. The company employs more than 4,000 people and, apart from the head office, operates 18 agencies located in all parts of the country, as well as two rehabilitation clinics in Bellikon and Sion.

Energy strategy implementation
Suva intends to reduce greenhouse gas emissions as a contribution to Switzerland's climate targets. It has formulated a CO_2 reduction target. To this end, it has identified the largest sources of its greenhouse gas emissions and the potential for reducing them. Suva intends to reduce its operating CO_2 emissions by 30 % by 2025.

www.suva.ch

Adrian Jungo, Head of Supply Chain Management & Corporate Real Estate Management

"Every year we give 600 used laptops to our <Internet access for schools> educational programme and an additional 500 to non-profit organisations."

Swisscom

With 6.55 million mobile phone customers, 1.51 million television subscribers and 2.5 million broadband connections for private and business customers, Swisscom is the leading telecommunications company and one of the leading IT companies in Switzerland. In addition, Swisscom builds and maintains mobile phone and land-line infrastructure, broadcasts radio signals, builds and operates data centres and operates in the banking, energy, entertainment, advertising and health sectors. In 2018, Swisscom generated sales of CHF 11.7 billion with 19,800 employees.

Energy strategy implementation
Swisscom is one of the most sustainable companies in Switzerland and meets 100 % of its electricity requirements from domestic renewable energy. Together with its customers, Swisscom intends to save twice as much CO_2 by 2020 as it generates in its operations and supply chain.

www.swisscom.ch

Thomas Süssli, Head of Swiss Armed Forces Command Support Organisation

"The command support organisation is committed to ecologically-valuable, socially-acceptable and traceable recycling of the DDPS's IT equipment."

DDPS

The DDPS is divided into seven administrative units: Defence, General Secretariat, Civil Protection, Sport, armasuisse, the Federal Intelligence Service and swisstopo. 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 2018, the DDPS had 35,741 full-time-equivalent employees, while the Armed Forces performed 5,395,719 days of service.

Energy strategy implementation
The DDPS adopted an energy policy for the department for the first time in 2004. It was renewed in 2013. The aim is to establish modern and resource-efficient environmental and energy management in the DDPS and to achieve the DDPS's specific targets based on the SwissEnergy programme by 2020.

www.ddps.admin.ch

Giovanni Conti, Director, Federal Office of Information Technology, Systems and Telecommunication FOITT

"By reselling laptops and smart devices, the FOITT contributes to more sustainable use of resources for the Civil Federal Administration."

Civil Federal Administration

The Civil Federal Administration, with its 23,000 full-time employees, assists the Federal Council and parliament in its work. It maintains relations between states, creates good general conditions for society and the economy, provides national infrastructure, ensures the security of the state and citizens and, as an independent judiciary, guarantees the enforcement and implementation of Swiss law.

Energy strategy implementation
The Civil Federal Administration gets 100 % of its power from renewable sources. It creates incentives for its employees to use public transport by contributing to season tickets they have purchased. It has also been able to re-use 87 % of the equipment in the last four years: the Federal Office of Information Technology, Systems and Telecommunication FOITT either made the devices available free of charge to charitable institutions or offered them to employees for purchase.

www.admin.ch

Your contribution to the Energy Strategy 2050

The Exemplary in energy initiative was the subject of an external interim assessment in 2017. The consultancy Econcept confirmed in its assessment that the initiative is contributing to the implementation of the Energy Strategy 2050, is having a positive impact and is well-positioned in organisational terms. The Federal Council therefore decided in June 2018 to continue the initiative from 2020 to 2030.

The initiative is aimed primarily at enterprises and organisations throughout Switzerland that are closely linked to the Federal Government and the cantons. Based on the existing initiative, target values are set for energy efficiency, while joint and individual measures are determined. Targets have now also been added for the use of renewable energies and in-house production of green power. The new initiative reports according to the international Standard Global Reporting Initiative (GRI) Energy. The base year has been set as 2020.

The timing is optimal: become an actor in Exemplary in energy now so that you can take part in the second phase right from the outset. With your commitment, you will underscore your innovative, exemplary role in implementing the Energy Strategy 2050. At the same time, you will benefit from tried-and-tested instruments for implementing your measures and from exchanges with other actors.

For further information, please contact:

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Meaningfully re-using used hardware

The actors in the Exemplary in energy initiative encourage the re-use of old IT equipment by selling it to employees, non-profit organisations or on the open market. In this way they make an important contribution to conserving IT resources and avoiding unnecessary waste.

Joint measure number 39 of the Exemplary in energy initiative provides for the actors to promote the re-use of old, but still functioning devices by handing them over to specialised companies, aid agencies or by passing them on to employees. Devices that have to be disposed of are only handled by certified recycling companies. In order to ensure energy efficiency, the actors can define additional criteria such as, for example, that only devices which are less than eight years old should be re-used. The specific aim of this measure is to establish guidelines for the recycling of equipment that is no longer used. This measure has already been implemented by all the actors.

Cooperation with hardware brokers

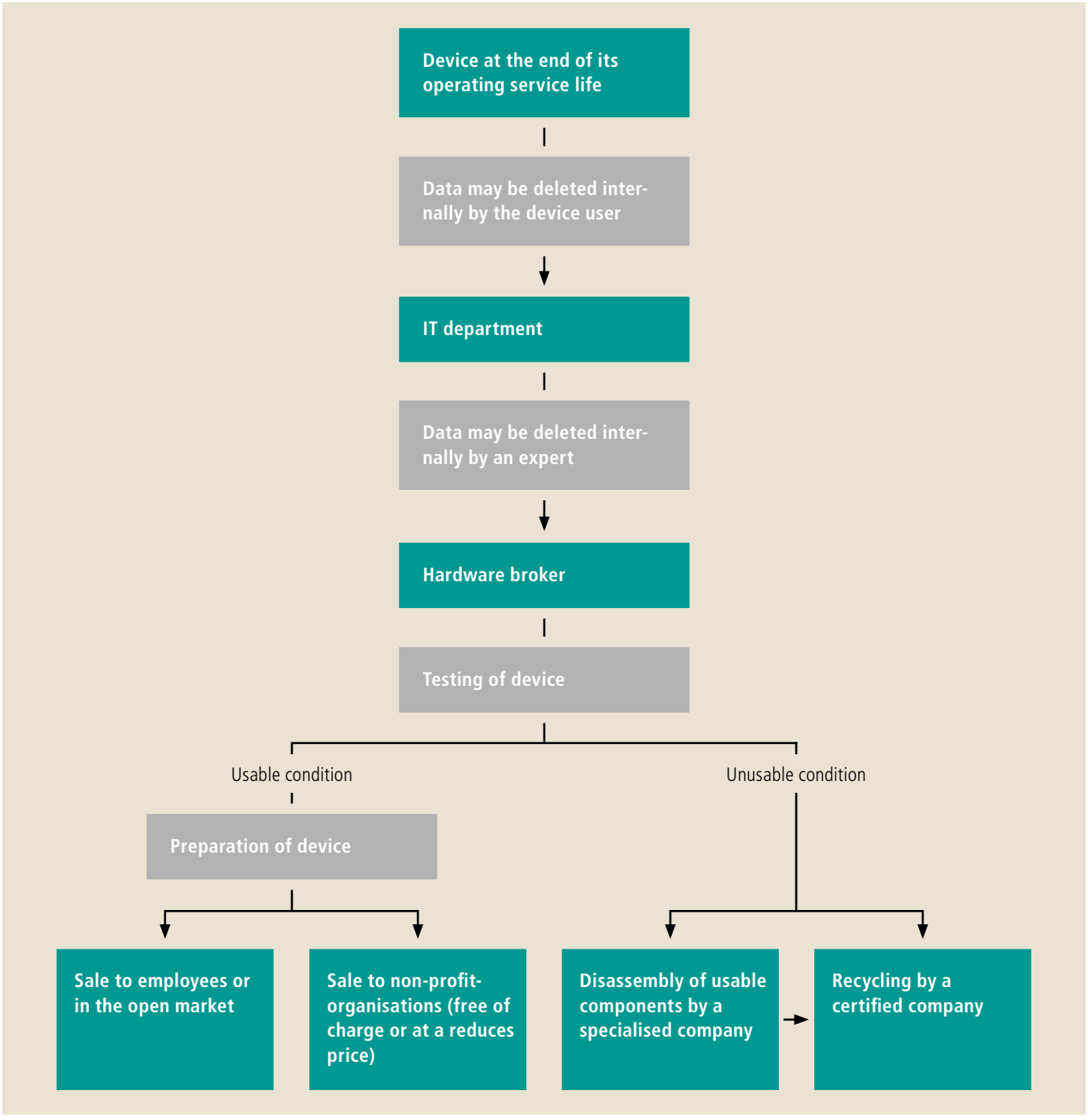
As the current monitoring of this measure shows, all actors of the Exemplary in energy initiative cooperate with hardware brokers. They collect the old equipment, check it and make sure it is re-used or recycled (see interview on p. 17). An example of this process is illustrated in the chart on the opposite page. The service life of PCs and laptops used by the actors is approximately 4 to 6 years. At the end of this period, they hand over their old devices to a hardware broker. If the devices are no longer being used before this period has elapsed, some actors require that they first be re-used in-house, while others deliver such devices directly to the hardware broker. Some actors already have all data deleted by the employees themselves or by internal experts prior to hand-over. Others hand over the devices in their present condition directly to their hardware broker and get them to delete the data.

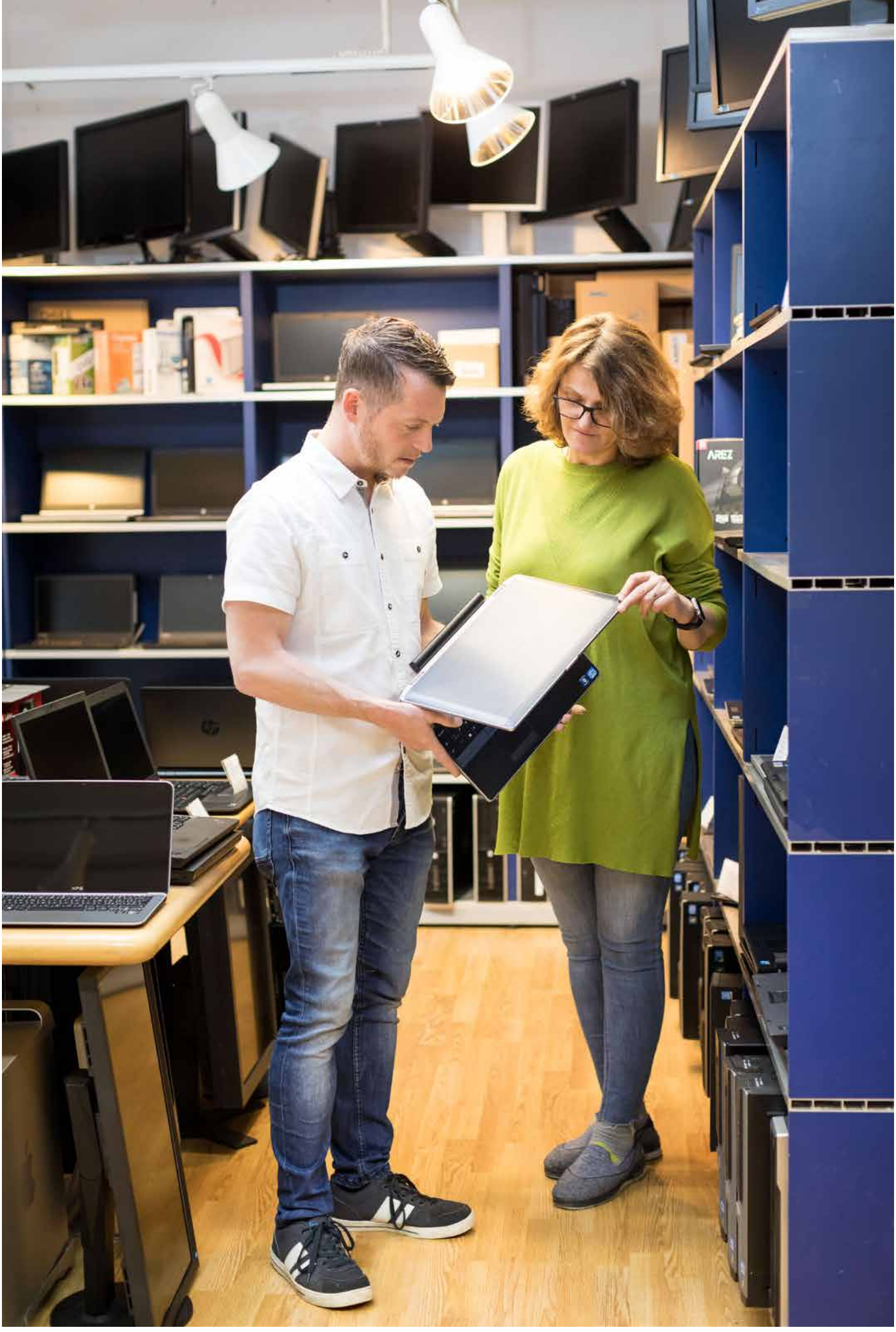
Extending service life with virtualised software

The actors describe cooperation with their hardware brokers as productive. One actor expects growing IT virtualisation to have a resource-conserving effect in future when PCs and notebooks no longer have to be very powerful and their useful life can be extended as a result.

Re-use of old PCs and laptops

The process flow chart shows in simplified form how the actors of the Exemplary in energy initiative handle PCs and laptops that are no longer used in the company or organisation due to their age.





Silvan Hörnlimann (Jes Computers) and a colleague assess a notebook offered for resale.

A secure solution for old computers

Silvan Hörnlimann, who works at the IT broker Jes Computers, explains how Skyguide can pass on its old PCs and notebooks to third parties without having to worry about security, what the value of these devices is and what happens to special hardware like used radar screens

When does Skyguide contact you with its used PCs and notebooks?
The company gets in touch with us when the service life of the devices ends. With PCs and notebooks, this is generally the case after five to six years. The technical service life of these devices has remained surprisingly stable in recent years.

What do you do with the used devices?
Security is always our top priority. After all, sensitive data is stored on most end-user devices and can never be allowed to fall into the wrong hands. We erase the hard disks in accordance with DoD standard 5220.22-M of the US Department of Defense and thus guarantee complete, permanent and reliable data erasure at the highest security level. The equipment audit is triggered already during data erasure. We inspect every single device for visual and technical defects. The devices are then cleaned, refurbished and possibly upgraded with RAM and solid-state disks.

What happens to defective devices?
We give them to Swico after we have removed erased hard disks, memory and power supplies as spare parts. Defective, unerased hard disks are shredded before they are given to Swico.

Where do the devices that still work end up?
We first offer the devices to Skyguide employees at preferential prices in our online shop. Only devices that we cannot sell within a certain period of time are sold through other channels. Approximately 30 % of the devices are sold to employees, another 10 % are sold via our online shops and auction platforms in Switzerland. We export the remaining 60 % to wholesalers in Germany, Eastern Europe and North Africa, who then assume responsibility for local distribution in their region.

Do you pay Skyguide for functional devices?
Yes, we agree on a price for each model, which includes a product revaluation per quarter. After five to six years, it is usually still around 10 % of the new value. Skyguide has also stipulated that we pass on used devices to their employees for less than CHF 200. This affects the price as well as our all-round service, which reduces the workload of Skyguide's IT department.

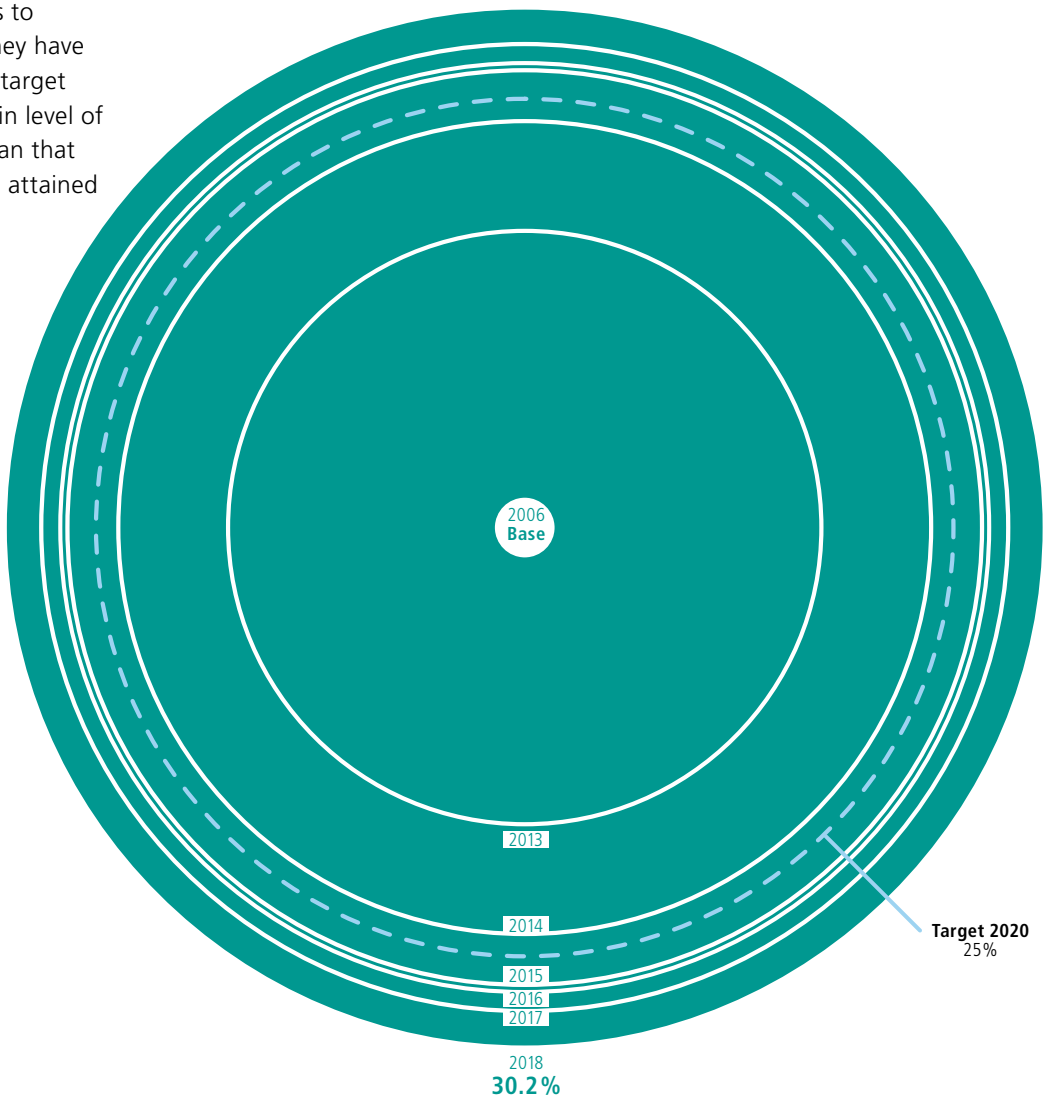
Do you also accept special hardware such as radar screens?
Yes, we can generally also handle special devices such as radar screens or servers from data centres if we find a customer.

Visible progress

In 2018, the ten actors increased their energy efficiency beyond the original target of an average of 25%. It remains a challenging task to maintain and further improve this level in the coming years.

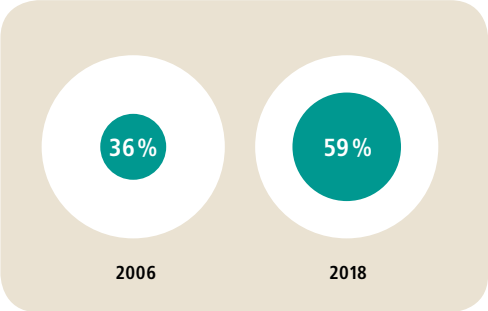
Energy efficiency

In 2018 the actors increased their energy efficiency by 2.6 percentage points to 30.2% versus the previous year. They have thus already exceeded the original target of 25% by 2020. However, a certain level of efficiency in one year does not mean that this efficiency will automatically be attained in the following year as well.



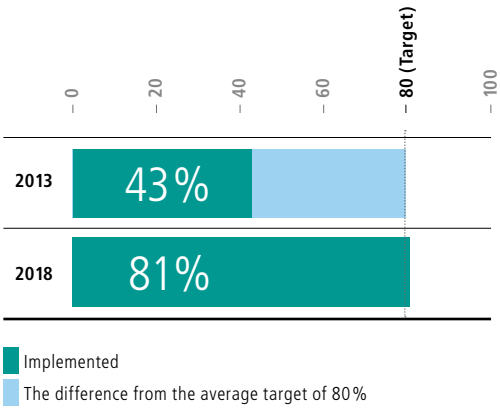
Renewable energy

In 2018, the average share of renewable energy out of total energy consumption remained at the same level as in the previous year at 59%.



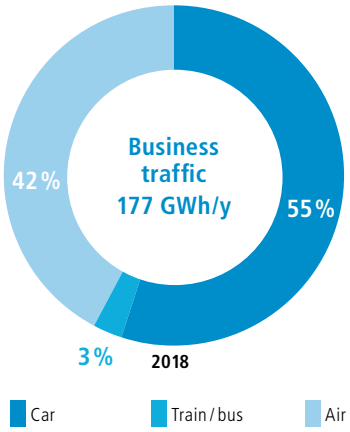
Joint measures

By the end of 2018, the actors had attained an average attainment rate of 81% for the 39 joint measures. They have thus already achieved the target of 80% set for 2020.



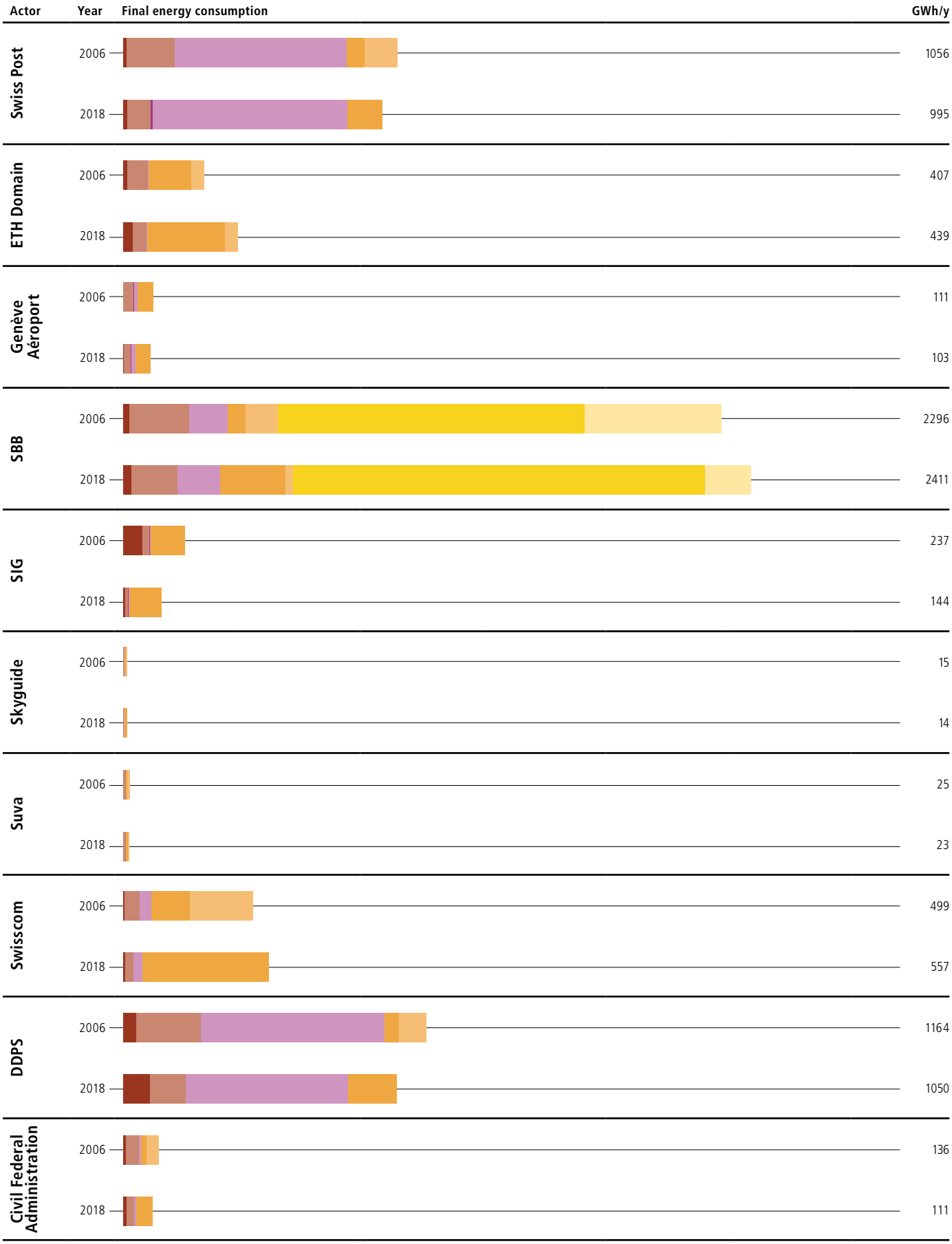
Mobility

For the third time, the annual report provides data on the actors' business and commuter traffic (cf. individual action plans starting on page 24). An average can only be calculated for business traffic. Uniform data are not yet available for commuter traffic.

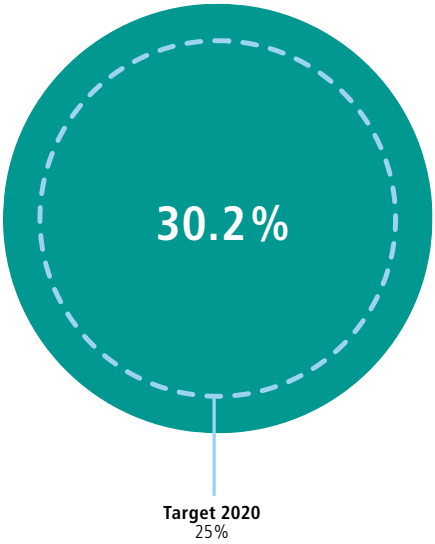


Note: The diagram shows the breakdown of business traffic by mode of transport, based on energy consumption. Passenger traffic is not counted as part of business traffic. The average does not include the DDPS and the Civil Federal Administration.

Final energy consumption and energy efficiency



Increase in energy efficiency attained	Reference variable(s)
26.2%	Depends on the corporate unit: number of consignments, customer business, passenger kilometres, transactions, total useful floor area, full-time equivalents (FTE)
35.4%	Based on full-time equivalents (FTE), total useful floor area, days instruments deployed, patient treatments (PSI)
24.6%	Depends on the number of user units (passengers and cargo), total useful floor area
17.8%	Efficiency indicator 1: 17.8% based on operating output in passenger and net tonne kilometres and traction energy consumption (final energy) Efficiency indicator 2: 65.5% calculation as for 1, but based on primary energy
17.9%	Depends on the corporate unit: cubic metres of drinking water supplied, cubic metres of waste water treated, tonnes of waste processed, full-time equivalents (FTE)
37.4%	Depends on the corporate unit: full-time equivalents (FTE), total useful floor area, number of flights
26.0%	Full-time equivalents (FTE) for headquarters and agencies as well as care days for the two clinics.
49.1%	Efficiency calculation based on energy efficiency measures implemented (Energy Agency of the Swiss Private Sector [EnAW] methodology)
1.2%	Staff level in full-time equivalents (FTE); work days are converted into FTE
66.4%	Full-time equivalents (FTE)



Efficiency target exceeded

With an average increase in energy efficiency of 30.2%, the actors are already above the 25% they are targeting by 2020. Even if absolute energy consumption increases, an actor may have increased efficiency if its organisation is growing.

Calculation methodology

Energy consumption and energy efficiency are calculated by each actor for its own buildings, infrastructure and vehicles in Switzerland. But the precise system limits vary from actor to actor. The actors also define individually the calculation methods and reference variables so that they can base these on their existing environmental reporting. Further information is available at www.exemplary-in-energy.ch.

Fuels (heat)
- Renewable and waste heat
- Conventional

Fuels (transport)
- Renewable
- Conventional

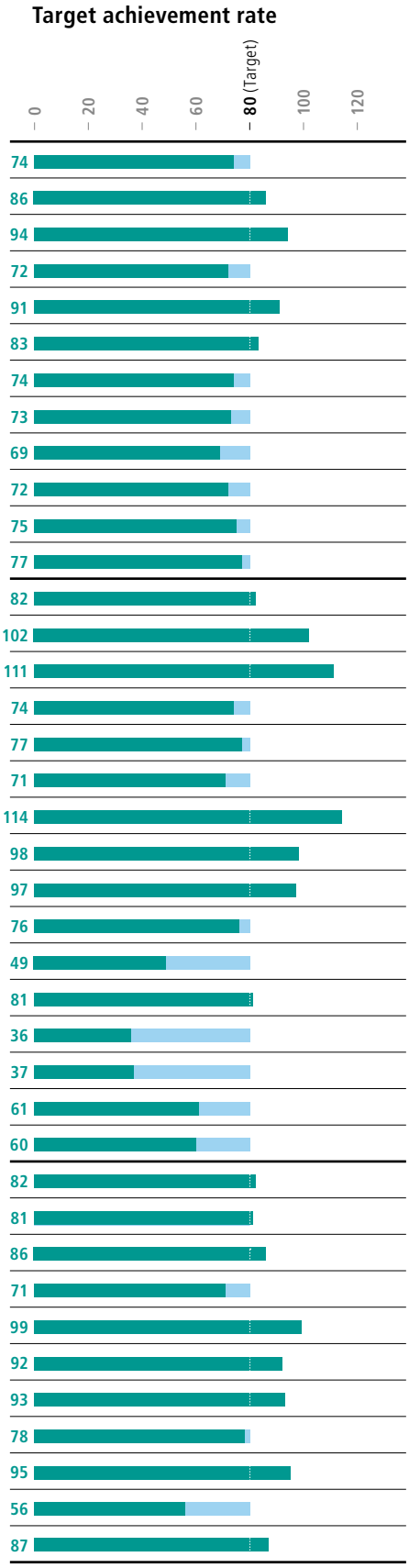
Electricity
- Renewable
- Conventional

Electricity (railways)
- Renewable
- Conventional

Average degree to which joint measures have been implemented

Area of action	No.	Measure	Performance target
Buildings and renewable energy	01	Energy-efficient new and converted buildings	100% from 01.01.2016
	02	Analyses of potential of waste heat and renewable energy	Analyses of potential available
	03	No new fossil-fuel powered 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 sanitation facilities	100% from 01.01.2016
	08	Energy-efficient electromotors	100% from 01.01.2016
	09	Building technology with operating optimisation 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% by 2020
	14	Central information and booking platform	80% of employees
	15	Encouragement of mobile-flexible forms of work	30% of employees with an appropriate job profile
	16	Promoting work hubs	100% of sites by 2020
	17	Promotion of video and web conferencing	30%/70% of employees
	18	Incentives for using public transport	See detailed description on page 64
	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% for short distances by 2020
	21	Active parking space management	100% of parking spaces
	22	Provision of bicycle parking spaces	100% of sites equipped to cope with demand
	23	Provision of bicycles and e-bikes	100% of sites with over 100 employees
	24	Criteria for procuring energy-efficient vehicles	100% of newly-procured cars by 2020
	25	Eco-driving 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 65
	28	Provision of charging stations for electric vehicles	100% of sites with over 500 employees
Data centres and Green IT	29	Full cost accounting of energy efficiency in procurement	100% of appliances in new calls for tender
	30	Specifications for new servers and new data centre hardware	100% of new calls for tender
	31	Highly energy-efficient data centres	See detailed description on page 65
	32	Pushing passive cooling solutions in data centres	See detailed description on page 65
	33	Encouraging server virtualisation in data centres	Over 85% by 2020
	34	Bundling of data centres / 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 centres > 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 66
	39	Promoting re-use of appliances	100% by 2015

Swiss Post	ETH Domain	Genève Aéroport	SBB	SIG	Skyguide	Suva	Swisscom	DDPS	Civil Federal Administration	Target achievement rate
•	•	•	•	•	•	•	•	•	•	74
•	•	•	•	•	•	•	•	•	•	86
•	•	•	•	•	•	•	•	•	•	94
•	•	•	•	•	•	•	•	•	•	72
•	•	•	•	•	•	•	•	•	•	91
•	•	•	•	•	•	•	•	•	•	83
•	•	•	•	•	•	•	•	•	•	74
•	•	•	•	•	•	•	•	•	•	73
•	•	•	•	•	•	•	•	•	•	69
•	•	•	•	•	•	•	•	•	•	72
•	•	•	•	–	–	•	•	•	•	75
•	•	•	•	•	–	•	•	–	–	77
•	•	•	•	•	•	•	•	•	•	82
•	•	•	•	•	•	•	•	•	•	102
•	•	•	•	•	•	•	•	•	•	111
•	•	–	•	•	•	•	•	•	•	74
•	•	•	•	•	•	•	•	–	•	77
•	•	•	•	•	•	•	•	•	•	71
•	•	•	•	•	•	•	•	•	•	114
•	•	•	•	•	•	•	•	–	•	98
•	•	•	•	•	•	•	•	•	•	97
•	•	•	•	•	•	•	•	•	•	76
•	•	•	•	•	•	•	•	•	•	49
•	•	•	•	•	•	•	•	•	•	81
•	•	–	•	•	–	•	•	•	•	36
•	•	•	•	•	•	•	•	•	•	37
•	•	•	•	•	•	•	•	•	•	61
•	•	•	•	•	•	•	•	•	•	60
•	•	•	•	•	•	•	•	•	○	82
•	•	•	•	•	•	•	•	•	○	81
•	•	•	•	•	•	•	•	–	•	86
•	•	•	•	•	•	•	•	•	○	71
•	•	•	•	•	•	•	•	•	•	99
•	•	•	•	•	•	•	–	•	•	92
•	•	•	•	•	•	•	•	•	•	93
•	•	–	•	–	•	•	•	•	•	78
•	•	•	•	•	•	•	•	•	•	95
•	•	•	•	•	•	•	•	–	•	56
•	•	○	•	•	•	•	•	•	•	87



Average target achievement rate
for all joint measures

81%

Great differences in the implementation of mobility measures

By the end of 2018, the actors involved in the Confederation: exemplary in energy initiative had attained an average attainment rate of 81% for all joint measures. In the action area mobility the emphasis has been placed up to now on a range of different forms of implementation. That is why attainment of the target varies most widely in this area.

- • Selected measure
- ○ Selected, no data yet
- – No leeway for action

Implemented

The difference from the average target of 80%

Swiss Post

Swiss Post's final energy consumption in 2018 was 995 GWh. It fell by 6% compared with the base year 2006, despite strong business growth. This meant that Swiss Post increased its energy efficiency by 26.2%. Amongst other things, the company put new electric post vehicles into operation last year. In addition, the illuminated lettering on 15 company buildings was converted to LED technology.

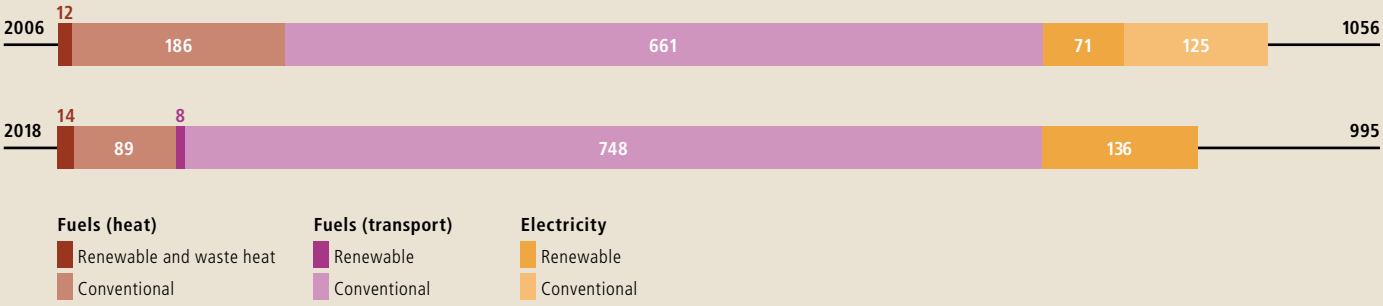
Success story

Electric buses at PostBus

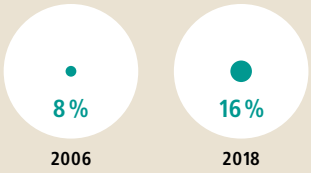
An electric Postbus has been running on route 342 between Sarnen and Alpnach since September of last year. The new electric Postbus is quieter than a conventional diesel bus. This benefits the passengers and not least also the residents who live along its route. The 12-metre-long bus runs on regionally-produced green power from the Obwalden power station – one charge is enough to cover about 80 to 90 kilometres. The schoolchildren who live between Miralago and the Val dal Teo in Poschiavo now also travel to school in an electric bus. The maximum range of this vehicle is 110 kilometres. It will also be operating scheduled services during the holiday season. Furthermore, PostBus is conducting a long-term test on an electric bus on scheduled services in Interlaken for three years. As part of the test, it is also evaluating feedback from the drivers and passengers. And in Saas-Fee, two electric Postbuses are in use as shuttle buses for winter sports enthusiasts; in Sion, the route of the battery-powered, self-driving SmartShuttles has been extended. PostBus is continuously testing alternative-drive technologies in order to increase CO_2 efficiency and be able to do without fossil fuels in the long term.

Final energy consumption by energy source

in GWh/y

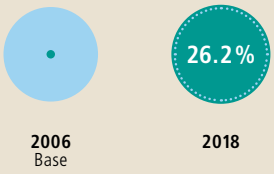


Renewable energy as a proportion of total consumption

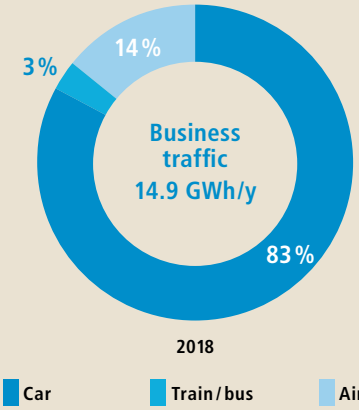


Increase in **energy efficiency**

Target 2020: 25%



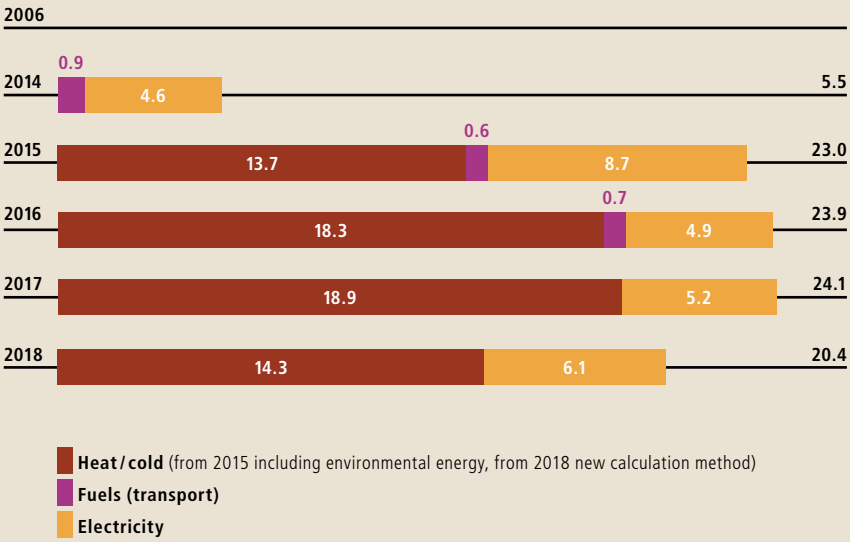
Energy consumption for **mobility**

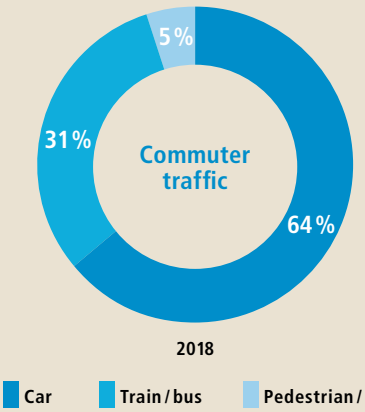


Note: Percentage shares based on energy consumption. The category Car includes the energy consumption of the actor's own vehicle fleet and of rented and private vehicles. Passenger traffic is not counted as business traffic.

Production of renewable energy

in GWh/y





Swiss Post

Joint measures

No. Measure

Buildings and renewable energy

- **01** ● Energy-efficient new and converted buildings
- **02** ● Analyses of potential of waste heat and renewable energy
- **03** ● No new fossil-fuel powered heating systems
- **04** ● Full cost accounting of energy efficiency
- **05** ● Energy-efficient lighting
- **06** ● Energy-efficient cooling machines
- **07** ● Energy-efficient sanitation facilities
- **08** ● Energy-efficient electromotors
- **09** ● Building technology with operating optimisation regime
- **10** ● Procurement of green power and hydroelectricity
- **11** ● Mobility concepts for buildings
- **12** ● Creation of ecofunds

Mobility

- **13** ● Integration of mobility management
- **14** ● Central information and booking platform
- **15** ● Encouragement of mobile-flexible forms of work
- **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-driving 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

Data centres and Green IT

- **29** ● Full cost accounting of energy efficiency
- **30** ● Specifications for new servers and new data centre hardware
- **31** ● Highly energy-efficient data centres
- **32** ● Pushing passive cooling solutions in data centres
- **33** ● Encouraging server virtualisation in data centres
- **34** ● Bundling of data centres / 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 and in implementation phase
○ Adopted, no data yet
– No leeway for action

01

Energy-efficient new and modernised buildings

Swiss Post relies on the sustainable construction standard DGNB System Switzerland for its new and modernised buildings. From the beginning of 2019, it will take equal account of ecology, economy and social issues in its real estate, in line with the holistic principle of sustainability. The built environment is planned, constructed or modernised, operated, maintained and deconstructed in such a way that all negative impacts on the environment are minimised with minimal use of resources, while the economic outlay and benefits are balanced and it can offer its users the greatest possible comfort.

Swiss Post

Specific measures

No. Measure
Target (target year)

- **01** ● Replacement of all petrol-engined scooters used to deliver letters with electric scooters. The 6,300 vehicles are operated with entirely naturemade star certified power.
  13.9 GWh/y (2016)
- **02** ● Energy-efficient logistics management at PostLogistics
  2.1 GWh/y (2014)
- **03** ● Replacement of conventional Postbuses with fuel-cell and diesel-hybrid buses (saving per Postbus)
  15.0 MWh/y (2020)
- **04** ● Use of modern EcoLife transmissions and updates of the transmission software in Postbuses
  6.0 GWh/y (2014)
- **05** ● Targeted replacement of installations for ensuring an uninterrupted power supply (UPS) in the data centres of PostFinance with latest generation installations
  1.0 GWh/y (2014)
- **06** ● Procurement of certified biogas
  5.5 GWh/y (2020)
- **07** ● Management of subcontractors in logistics: monitoring of average fuel consumption with the 16 largest transport logistics partners.
  1.1 GWh/y (2015)
- **08** ● Photovoltaic installations on Swiss Post buildings
  5.0 GWh/y (2020)
- **09** ● Procurement of biodiesel
  3.3 GWh/y (2017)
- **10** ● Optimisation of lifting beams in letter centres
  114.0 MWh/y (2015)
- **11** ● Smart metering in transporters
  1.0 GWh/y (2020)
- **12** ● Smart temperature regulation in Swiss Post buildings
  Pilot projects (2020)
- **13** ● Fast charging stations for electric cars at Swiss Post buildings
  Pilot projects (2020)
- **14** ● Electric delivery vehicles in parcel delivery
  110.0 MWh/y (2017)
- **15** ● Electric postbuses
  120.0 MWh/y (2017)
- **16** ● Dimmable site lighting
  210 MWh/y (2018)
- **17** ● Replacement of all Swiss Post illuminated signs
  124 MWh/y (2018)

● Implemented
● In implementation phase

16

210 MWh/y

Dimmable site lighting

Swiss Post has replaced part of the site lighting with dimmable LED spotlights at the Frauenfeld Parcel Centre. Their luminous intensity of 111,000 lumens each corresponds to about 1,500 conventional light bulbs. The spotlights are linked to thermal imaging cameras. The cameras detect movements of people and vehicles up to 1,000 metres away. If nothing is moving, the control system dims down the LED spotlights by up to 80%. The spotlights receive the switch-on commands via a Zigbee radio network – a control system that is an innovation in Switzerland. Swiss Post is expecting an energy saving of over 50% compared with the previous site lighting. A further advantage of dimmable LED spotlights is the reduction of unintentional light emissions in the form of light pollution.

17

124 MWh/y

Replacement of all Swiss Post illuminated signs

There are 33 illuminated signs on 15 of Swiss Post's operational buildings. Operating the illuminated signs with obsolete high-voltage technology consumed a large amount of power. Consistent conversion to LED technology reduced consumption by almost 80%.

09

3,3 GWh/y

Biodiesel

The mineral oil tax is refunded on diesel fuel consumed on licensed public transport routes. Since 2018, this has also applied to the 6 million litres of B7 diesel used by PostBus – i.e. diesel mixed with up to 7% of biodiesel. These 420,000 litres of biodiesel correspond to 3.3 GWh/y.

ETH Domain

Since 2006 the ETH Domain has seen a very rapid expansion in teaching and research, fast-growing student and teacher numbers, and 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. Thanks to the modernisation of building technology, increased recovery of waste heat and great endeavours to ensure that large-scale research facilities are as energy-efficient as possible, energy efficiency has been improved by 35.4% since 2006, although total energy consumption has risen by 7.7%.

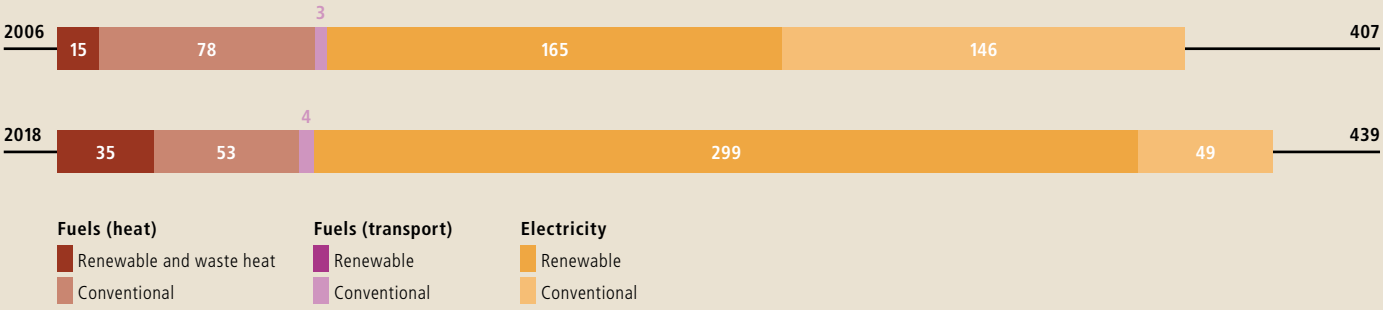
Success story

Efficient helium compressors

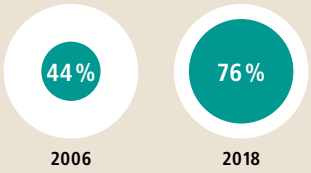
Research requires cryogenic temperatures of around absolute zero; for example, in order to slow down neutrons in the spallation neutron source SINQ at Paul Scherrer Institut (PSI), or to cool down samples in measuring apparatus so that physical effects can be determined at all. For this purpose, helium is vaporised and subsequently re-liquified at high pressure. However, the process has its price: the energy consumption of the compressors is considerable. It has been possible to reduce this by 1.3 GWh per year with modern screw compressors. The project was launched at the end of 2017 with the dismantling of the old piston compressors, the 300-tonne concrete pedestals, the wet cooling towers and pipelines and the peripherals (fittings, measuring equipment, controls, etc.). After a six-month conversion period, the new compressors were commissioned in 2018 and research operations were able to continue. Thanks to the power savings and the ProKilowatt subsidy, the investments will pay for themselves within six years. The new screw compressors have been operating reliably since they were commissioned, disruptive vibrations have been minimised and maintenance costs reduced.

Final energy consumption by energy source

in GWh/y

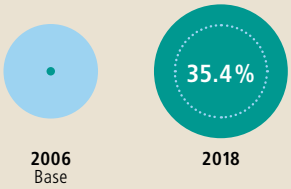


Renewable energy as a proportion of total consumption

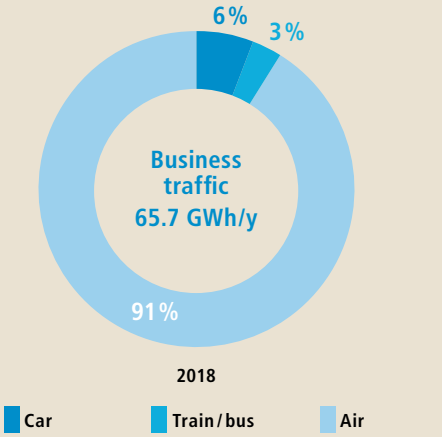


Increase in **energy efficiency**

Target 2020: 25%



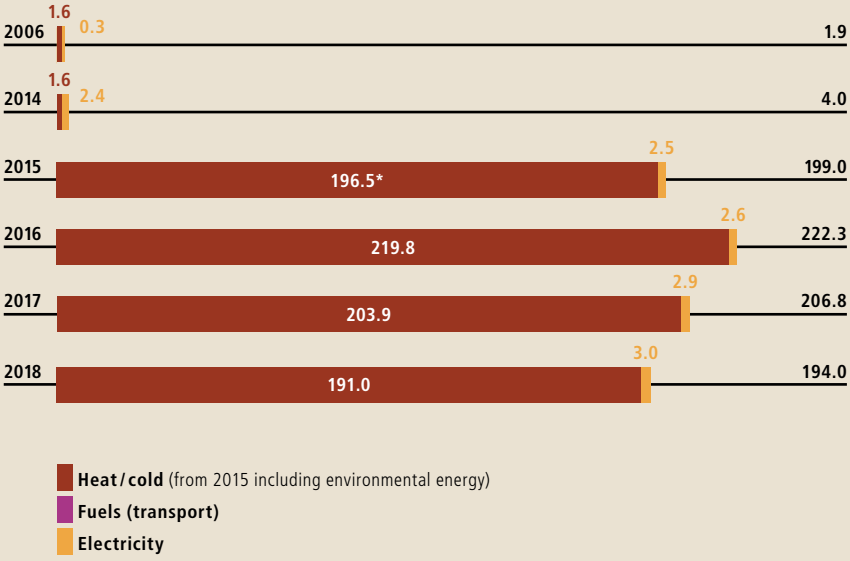
Energy consumption for **mobility**



Note: Percentage shares based on energy consumption. The category Car includes the energy consumption of the actor's own vehicle fleet and of rented and private vehicles. Commuter traffic has not yet been measured.

Production of renewable energy

in GWh/y



*This figure had to be corrected retrospectively.

ETH Domain

Joint measures

No. Measure

Buildings and renewable energy

01 ● Energy-efficient new and converted buildings
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Mobility

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38 ○ Promotion of energy-efficient printing solutions
39 ● Promoting re-use of appliances

● Adopted and at least 80% achieved
○ Adopted and in implementation phase
o Adopted, no data yet
– No leeway for action

23

E-bikes at ETH Zurich

The transition to a climate-friendly mobility system requires a drastic reduction in fossil fuels. The switch to electric vehicles can make a significant contribution. ETH Zurich's mobility platform has promoted the launch of new service offers. The following offers exist in the area of electric bicycles: 27 e-bikes and 4 cargo e-bikes (one of which is part of Carvelo2go's urban rental offering) as well as a station with PubliBike rental bikes on the Hönggerberg campus plus access to the entire urban PubliBike network for all ETH Zurich members on attractive terms.

ETH Domain

Specific measures

No. Measure
Target (target year)

01 ● Research in the field of exemplary energy 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 energy in buildings.

New research projects (2020)

02 ● Teaching in the field of energy
Exemplary offerings from the new study and continuing education programmes
- Introduction of a master's course in Energy Science and Technology at ETH Zurich.
- Master's course in energy management and sustainability at EPFL

New study courses (2020)

03 ● ETH Zurich: Construction of the Anergy Grid on the Hönggerberg campus
14.0 GWh/y of heat (2020)

04 ● PSI: Improved waste heat recovery on the research site
75% waste heat (2018)

05 ● EPFL: EPFL's autonomous heat supply. Target: heating without fossil fuels by 2019, maximisation of the use of renewable energy for heating and cooling (100% heat pump with lake water) by 2019; minimisation of CO_2 emissions, use of potential synergies with other projects on the campus.
100% renewables (2019)

06 ● WSL: Conversion of all WSL's own sites to CO_2-neutral heating. Target: reduction of CO_2 emissions by 97% from 2006 to 2020, reduction of the heat requirement by 25% by 2018.
CO_2 reduction (2020)

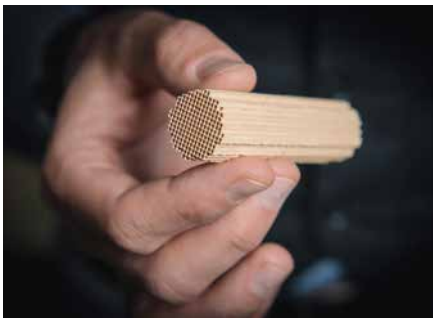
● Implemented
● In implementation phase

05

100% renewable

Renovating the EPFL Energy Centre

At the end of August 2018, EPFL obtained the building permit for the renovation of the Energy Centre with lake-water heat pumps. This major construction site will last until 2021 and will increase the present share of renewable cooling and heat to 100%. The new data centre, which will be built above the heating centre, will be a major contributor to the increase in efficiency. In future, it will be cooled with cold water and will in turn return the waste heat produced by the servers back to the Energy Centre.



01

Oxidising methane

Researchers at Paul Scherrer Institut (PSI) have developed a new catalyst for eliminating methane in exhaust gases from gas engines. Unlike previous catalysts, it is also very active at low temperatures and remains active for a long time. This was achieved by using a porous zeolite as the catalyst carrier material. Its structure was specifically adapted. This makes natural gas and biogas even more attractive as substitutes for petroleum products – for example as fuel for cars.

01

Demonstration facilities for renewable energy

In the summer of 2018, EPFL together with its Energy Centre launched an appeal to all their own research laboratories for ideas on how to build demonstration plants for renewable energy. The best proposals will be implemented as pilot plants by 2021 and be linked up to the new central heating system. For example, projects with organic waste, fuel cells, geothermal energy, CO_2 separation or photovoltaics are conceivable.

Genève Aéroport

Energy is at the heart of today's challenges. Renewable energies account for 57% of total consumption and reduce the carbon footprint. Since 2016, Genève Aéroport's participation in the Exemplary in energy initiative has testified to its commitment at the national level and to the consistency of its actions with the Federal Council's Energy Strategy 2050. By way of example, a new photovoltaic roof installed in partnership with SIG is helping to increase on-site production of eco-electricity.

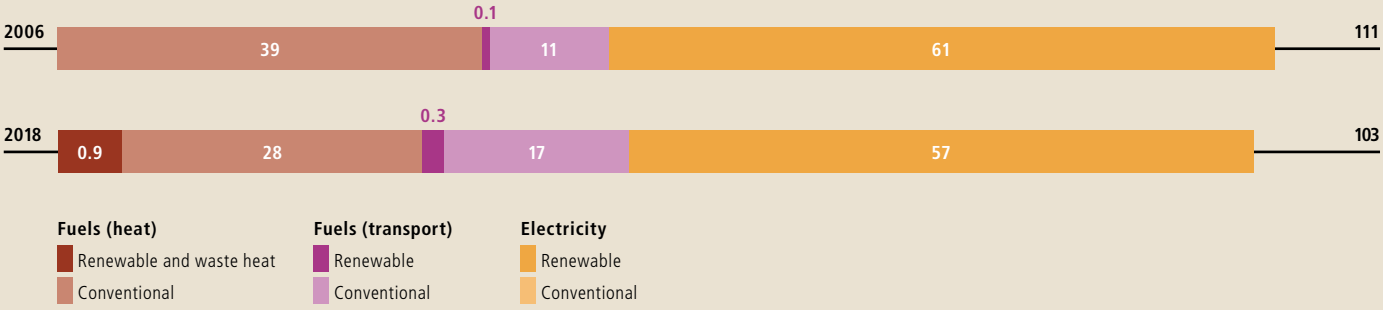
Success story

Check-in hall

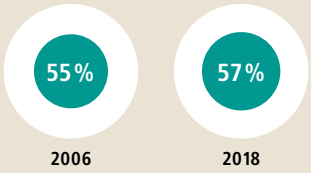
The enlargement of the Check-in hall at Genève Aéroport meets the imperative need for an increase in the reception surface areas made necessary by the large number of users of this infrastructure. The improvement in passenger comfort was made possible by moving forward and re-aligning the main façade. The idea was to give preference to two entrances with large-capacity lobby areas rather than the five small-sized entrances. An area with shops and offices has been re-organised or even enlarged at each end of the building. All these re-organization measures have resulted in an increase in the current surface area of more than 1,500 sq. metres. By moving and aligning this façade, it was possible to improve the form factor and the thermal insulation. Moving this new structure forward enabled a 1,000-square metre photovoltaic power plant producing 200 MWh per year to be installed.

Final energy consumption by energy source

in GWh/y

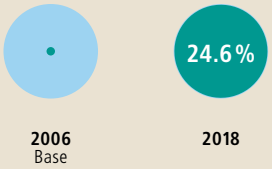


Renewable energy as a proportion of total consumption



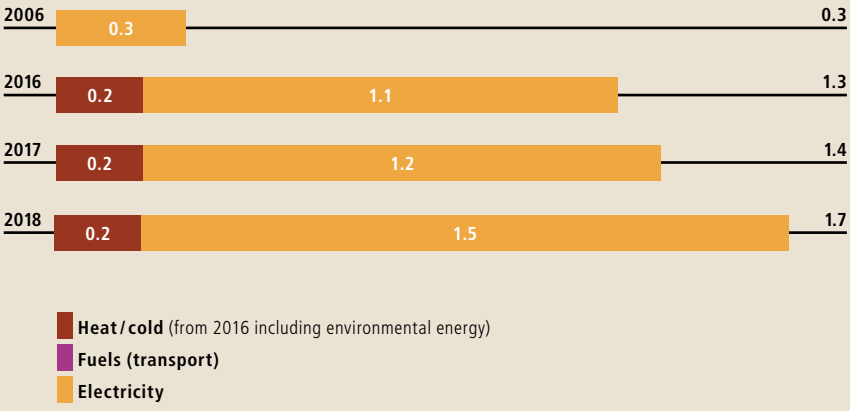
Increase in **energy efficiency**

Target 2020: 25%

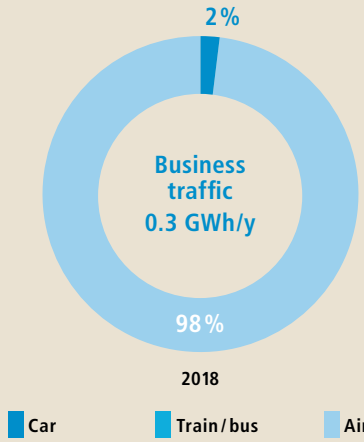


Production of renewable energy

in GWh/y



Energy consumption for **mobility**



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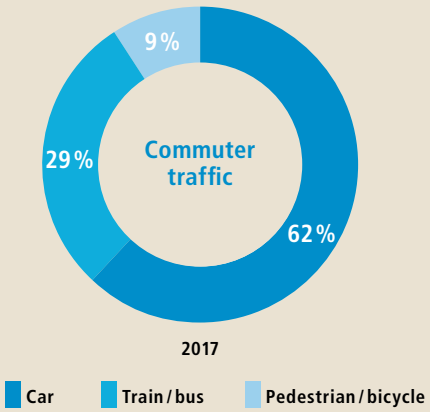

Genève Aéroport

Joint measures

No. Measure

Buildings and renewable energy

01 ● Energy-efficient new and converted buildings
02 ● Analyses of potential of waste heat and renewable energy
03 ● No new fossil-fuel powered heating systems
04 ● Full cost accounting of energy efficiency
05 ● Energy-efficient lighting
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08 ● Energy-efficient electromotors
09 ● Building technology with operating optimisation regime
10 ● Procurement of green power and hydroelectricity
11 ● Mobility concepts for buildings
12 ● Creation of ecofunds

Mobility

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34 ● Bundling of data centres / 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 and in implementation phase
○ Adopted, no data yet
– No leeway for action

13

Airport shuttle bus

Since December 2018, Genève Aéroport has introduced a new, early-morning bus service called Aérobus, which is operated in collaboration with the Geneva Public Transport authority (TPG). Routes A1 to A6 run through the canton of Geneva and from the neighbouring part of France to enable passengers and employees to access the airport quickly in the early morning. The Aérobus shuttles only serve Genève Aéroport before 6.00 a.m.; they are free of charge and available to all airport users. The introduction of this new service was very well received, with a record number of shares on social media. This new means of transport encourages passengers to reduce their environmental footprint when travelling to the airport.

Genève Aéroport

Specific measures

No. Measure
Target (target year)

- **01** ● Supplying own energy with photovoltaic installations
  3% (2020)
- **02** ● Producing renewable heat on the airport site
  100% (2025)
- **03** ● ISO 50001
  Certification (2017)
- **04** ● Shuttle service for staff outside public transport hours of operation
  Existing network (2016)
- **05** ● Electric vehicles and machines on the taxiway
  40% environmentally friendly vehicles, all companies (2020)
- **06** ● Electricity for aircraft (auxiliary power units turned off)
  120 GWh/y (2020)
- **07** ● Smart metering of energy flows
  80% (2020)
- **08** ● E-invoicing
  80% (2020)
- **09** ● Airport Carbon Accreditation (ACA), Level 3+ (neutrality)
  Certification (2017)
- **10** ● Energy savings in line with IPMVP protocol / Energy Efficiency Directive (EED)
  100% (2015)

● Implemented
● In implementation phase

10

100 %

Energy savings

Genève Aéroport operates 58 X-ray machines. Regular checks are carried out by the Safety Office and Suva. The last machine-measurement campaign (2018) revealed that exposures to ionising radiation are well below the regulatory limits. As part of the re-organization of the baggage handling system, Genève Aéroport will implement eight standard-3 X-ray inspection machines (standard 3 is used only for checked baggage). The latter will replace the sixteen standard-2 machines whose operating licence will expire in September 2022, in accordance with FOCA regulations. The purchase of standard-3 X-ray machines was subject to energy-consumption criteria during the tender phase. This made it possible to select the most energy-efficient machines and to raise awareness amongst the staff who work with them.

01

3 %

Photovoltaic self-sufficiency

The area of the solar panels on the roof increased by more than 2,800 square metres between 2015 and 2017 to reach a total of 12,000 square metres, thanks to the installation of solar panels on the noise absorber and the new eaves of the Check-in hall. The partnership established at the end of 2017 with SIG will increase the share of self-produced electricity by multiplying the solar panel surface area by five. Genève Aéroport thus envisages power production in the medium term equivalent to the annual consumption of 2,500 Geneva households, or 7.5 GWh/year.

03

ISO 50001

The ISO 50001 certification, which was gained in 2018, testifies to the implementation of an organisational process that manages energy as efficiently as possible. Since 2016, Genève Aéroport's participation in the Exemplary in energy initiative has proved its commitment at the national level and the consistency of its actions with the Federal Council's Energy Strategy 2050.

Swiss Federal Railways

SBB intends to save 20% of the annual consumption projected for 2025, or a total of 600 GWh/y, with an extensive package of measures. In 2018, the company refined the Adaptive Control System (ACS), further reduced losses in the rail power supply, invested in energy-efficient buildings and implemented technical optimisations in the rolling stock, amongst other measures. Despite a strong increase in passenger traffic performance, SBB has increased its energy efficiency by 17.8% to date compared with the base year of 2006.

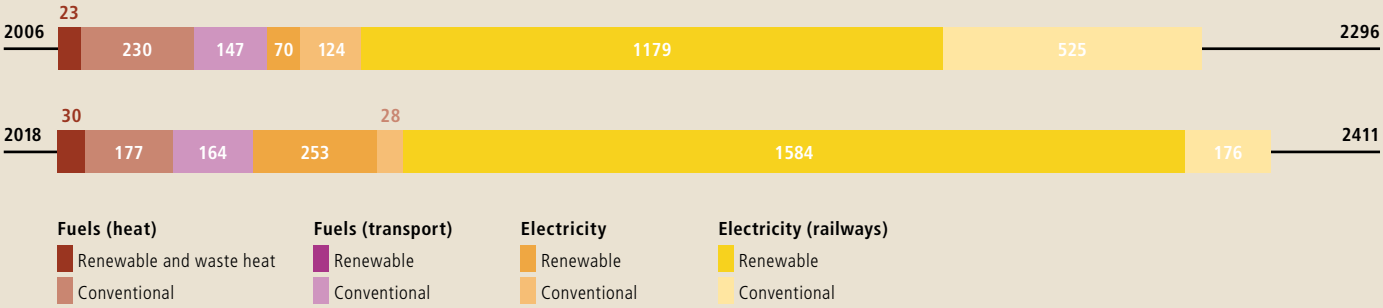
Success story

Smart hibernation mode to schedule

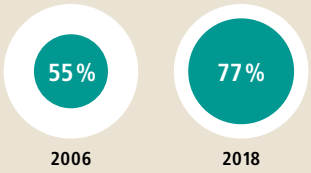
Modern trains today are equipped with what is known as a hibernation mode. A control logic detects the presence or absence of passengers and ensures that the parked train is only heated to around 10 to 12 degrees Celsius. Older trains have also been retrofitted with this function. In a second stage, the hibernation mode is made smarter with IT networking so that it also takes into account the train's schedule. The times of the next operation are sent to the trains via the existing data link. The control system on the train calculates the optimum switch-on time for the heating. In this way the trains are air-conditioned even more energy-efficiently. Networking brings further advantages: the heating can be disconnected for a short time if the rail power supply is overloaded. In addition, smart networking also makes possible further applications such as weather forecast-based control. About 300 trains have been retrofitted to date.

Final energy consumption by energy source

in GWh/y

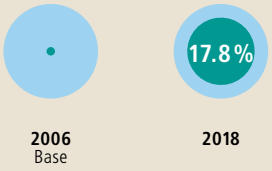


Renewable energy as a proportion of total consumption

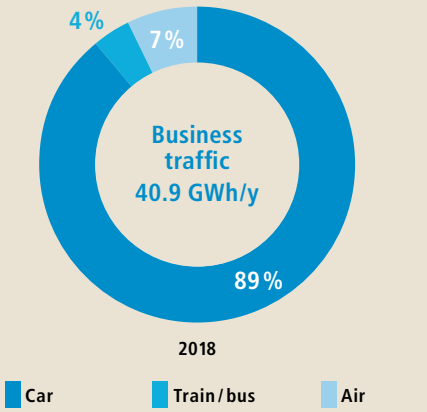


Increase in **energy efficiency**

Target 2020: 25%



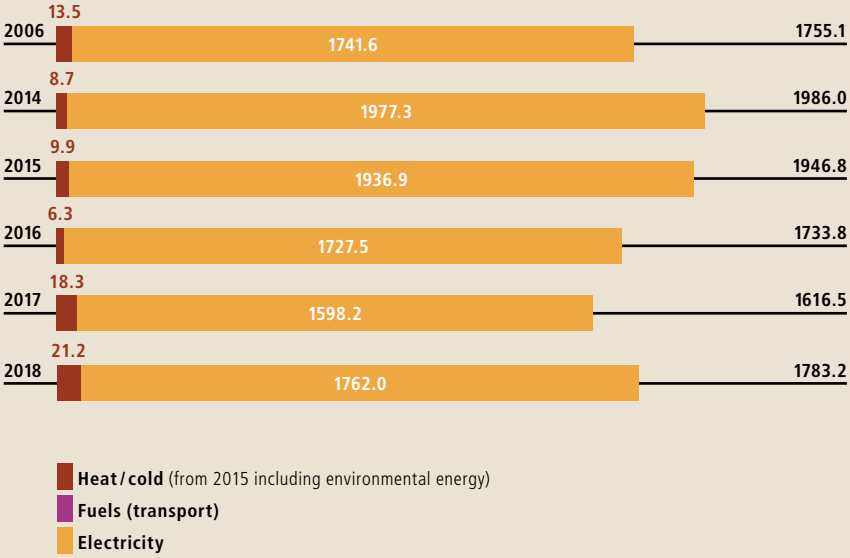
Energy consumption for **mobility**

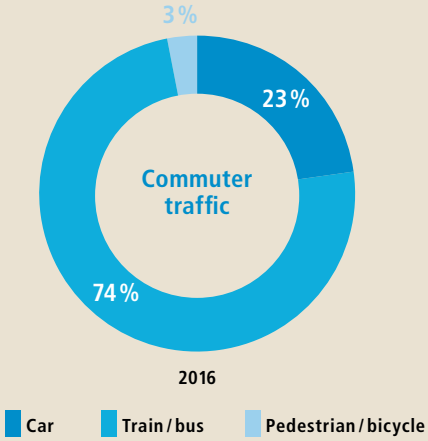


Note: Percentage shares based on energy consumption. Passenger traffic is not counted as business traffic. The category Car now only includes energy consumption for the own vehicle fleet.

Production of renewable energy

in GWh/y





Swiss Federal Railways

Joint measures

No. Measure

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● Adopted and at least 80% achieved
● Adopted and in implementation phase
○ Adopted, no data yet
– No leeway for action

5

Energy-efficient lighting

SBB illuminates its train stations, stops and track areas with over 100,000 light sources. When the lighting systems are replaced at the end of their service life or during conversions, only efficient LED lights with demand-driven controls are installed. This will reduce annual energy consumption by 6.8 GWh by 2025. A pilot project was able to confirm additional potential: since the general conditions change during the long service life of the lighting systems, installations are now also optimised before they reach the end of their service life. Thanks to this operational optimisation, SBB can achieve additional energy savings of over 4 GWh a year. This measure pays for itself in less than three years.

Swiss Federal Railways

Specific measures

No. Measure
Target (target year)

- **02** ● Energy modernisation of the Re460 locomotive, including replacement of the power converters
  27 GWh/y (2022)
- **03** ● Energy-optimised shutdown of passenger trains (intelligent hibernation mode)
  34.0 GWh/y (2017)
- **04** ● Refit of double-deck push-pull train: optimisation of heating, ventilation, air-conditioning
  13.3 GWh/y (2017)
- **06** ● InterCity tilting train (ICN): demand-driven outside air control
  2.6 GWh/y (2021)
- **07** ● Timetable-based train preparation time (HVZ-D, IC 2000, double-deck multiple-unit train, new trains)
  9.5 GWh/y (2023)
- **08** ● FLIRT Regi0lten dry-type transformers
  0.6 GWh/y (2018)
- **10** ● Load flow optimisation through energy management and traction power control system EMS / FSL
  10.0 GWh/y (2017)
- **11** ● Increasing the efficiency of the Göschenen hydroelectric power station with new impellers and transformers
  5.0 GWh/y (2020)
- **12** ● Optimisation of lifts / elevators and escalators
  2.7 GWh/y (2025)
- **13** ● Migration of old telephone equipment to VoIP technology
  2.0 GWh/y (2016)
- **14** ● Optimisation of rail points heaters by renewing them and optimising operation
  12.4 GWh/y (2025)
- **15** ● LED lights in and around the station; platform and track area lighting
  5.5 GWh/y (2025)
- **16** ● Optimisation of passenger guidance and information systems (signage) in station access areas
  1.1 GWh/y (2025)
- **17** ● Energy-optimised temperature in regional transport areas
  3.7 GWh/y (2023)
- **18** ● Optimisation of braking switches
  1 GWh/y (2020)
- **19** ● Renovation of maintenance and parking facility F in Zurich
  0.3 GWh/y (2018)
- **20** ● Switching off the transformer oil pump on Re 420 locomotives
  0,6 GWh/y (2020)

Some specific measures have been omitted for reasons of space. They were presented in earlier annual reports.

● Implemented
● In implementation phase

18

1 GWh/y

Optimisation of braking switches

The braking switch is the locomotive driver's central control element, with which he controls the speed of the train. SBB is incorporating a special new energy-saving feature into these braking switches on various multiple-unit trains: a notched scale marks the optimal efficiency and requires perceptible mechanical resistance to be overridden. This helps the locomotive drivers to optimise their energy consumption, which saves energy on the one hand and reduces wear and tear on the vehicle and/or the infrastructure on the other. In total, these new braking switches save 1 GWh/y, the same amount of power as that required by about 250 average households per year.

19

0.3 GWh/y

Renovation of maintenance and parking facility F

Maintenance and parking facility F in Zurich shows how sustainability, monument conservation and functionality can be harmonised in a renovation project. The 120-year-old building has been sustainably renovated by means of a simplified criteria grid based on the DGNB Gold standard.

20

0.6 GWh/y

Switching off the transformer oil pump on the Re 420 locomotives

Retrofitting 50-year-old rolling stock to save energy is worth it: on the Re 420 locomotives, the transformer oil pump is temporarily switched off in standby mode. This saves 0.6 GWh/y, the same amount of power as that consumed by 180 households per year. The payback period is about five years, thanks to the ProKilowatt subsidy.

Services Industriels de Genève

As SIG has not utilised nuclear power since 1986, 100% of the power supplied by the utility is now of renewable origin. Launched for SIG customers in 2008, the eco21 programme enabled them to reduce their power consumption by 179 GWh/y by the end of 2018. Within SIG, power consumption has decreased by 5.6% (7.4 GWh) since 2006. The development of additional renewable energy sources is continuing, particularly in the areas of solar energy, thermal solutions and geothermal energy.

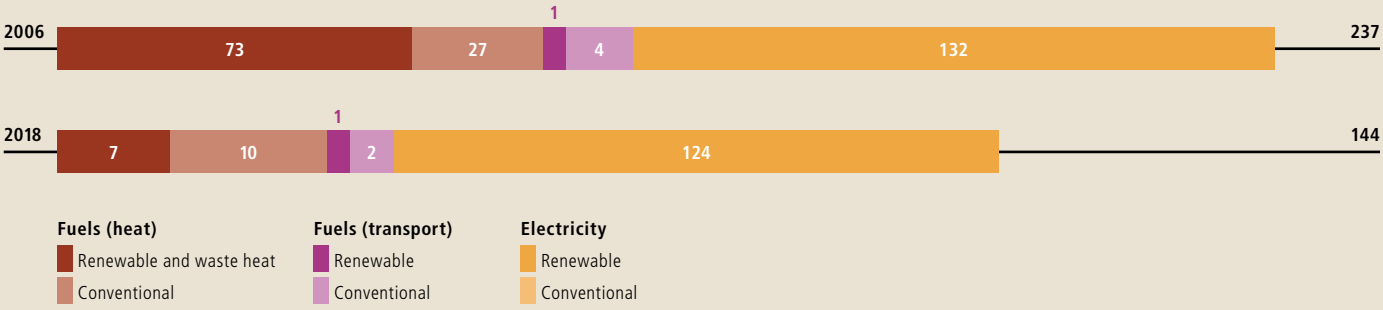
Success story

New waste-to-energy plant

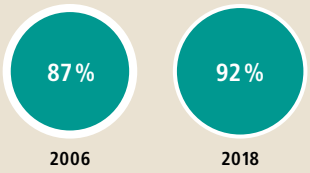
The new waste treatment and recovery plant, Cheneviers IV, which is more modern and environmentally friendly, is to be resized to meet the needs of the canton of Geneva and will produce more energy with less waste. The major challenge of this project is to demolish the existing plant and build the new one on the same site, while keeping operations going during the works. The year 2018 was devoted to demolition of the old installations, which involved in particular the dismantling of the historic, 108-metre-high chimney, and to preparatory work for the construction of the new plant. A swing bridge over the barge channel has been built; in addition to being useful for operations, this bridge will enable pedestrians to access the banks of the Rhône, up to the Verbois dam. Cheneviers IV should be completed by 2023.

Final energy consumption by energy source

in GWh/y

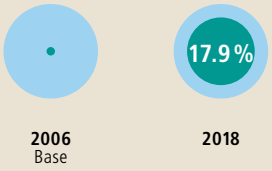


Renewable energy as a proportion of total consumption



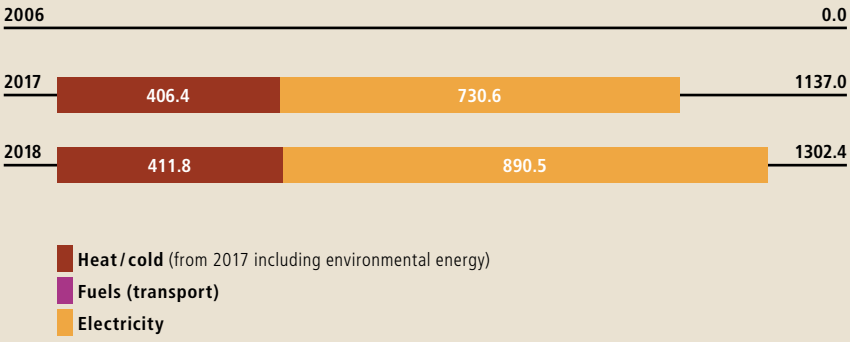
Increase in **energy efficiency**

Target 2020: 25%

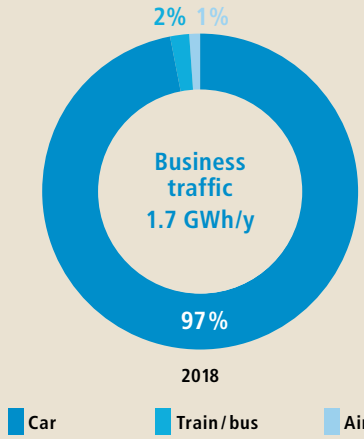


Production of renewable energy

in GWh/y



Energy consumption for **mobility**



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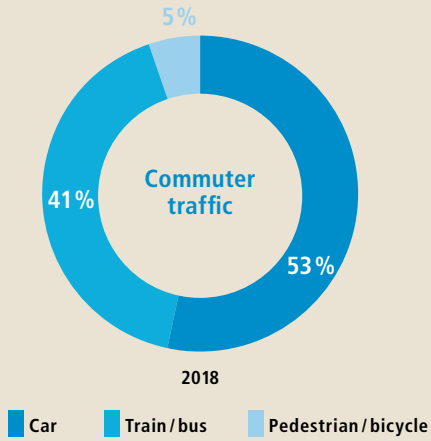

Services Industriels de Genève

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● Adopted and at least 80% achieved
● Adopted and in implementation phase
○ Adopted, no data yet
– No leeway for action

03

GeniLac, an innovative thermal solution

The GeniLac network provides a 100% renewable and 100% local thermal solution by using lake water both to cool and to heat homes and company buildings. The principle is simple: in summer, the water pumped at a depth of 45 metres provides its natural freshness to cool buildings via a network of under-lake pipes connected to the pumping station. In winter, heat pumps can be added to the system to heat buildings. At the end of its journey, the water is returned to its natural environment at a temperature close to that of the ambient environment. Currently, 7 companies in the canton are connected to this urban network.

Services Industriels de Genève

Specific measures

No. Measure
Target (target year)

- **01** ● Development of geothermal energy **Pilot project** (2017)
- **02** ● Electric mobility **46 t CO_2** (2018)
- **03** ● The Vergers eco-district **600 t CO_2** (2018)
- **04** ● Participatory solar power plant **3 MWp (2018)**
- **05** ● Rehabilitation of the water supply **700 MWh/y (2018)**
- **06** ● Local biogas production **39,500 t CO_2 (2018)**

04

2 MWp

Participatory solar power plant

SIG has launched an innovative new solar power offer. With "My solar square metre" 315 Genevans were able to buy one or more square metres of a photovoltaic power plant on the roof of the sports hall of the Municipality of Petit-Lancy. The 750 sq. metres of the power plant were sold in less than 10 days. It's a practical way of participating in the development of solar energy in the canton. In 2018, 2 MWp of solar power were installed by SIG. The canton of Geneva now has more than 1,500 photovoltaic power plants with a total production capacity of 54 MWp. SIG owns about one quarter of this installed capacity, spread over its 42 power stations. Solar power production is expected to triple in the canton by 2025.

05

700 MWh/y

Eliminating leaks in the water supply

In 2018, SIG supplied 60 million m^3 of water to its customers. This water is pumped and treated before it is fed into the supply network. The leaks identified and repaired in 2018 represent a saving of 680 MWh/y. These leaks are repaired every year in order to further improve SIG's energy efficiency.

06

39,500 t CO_2

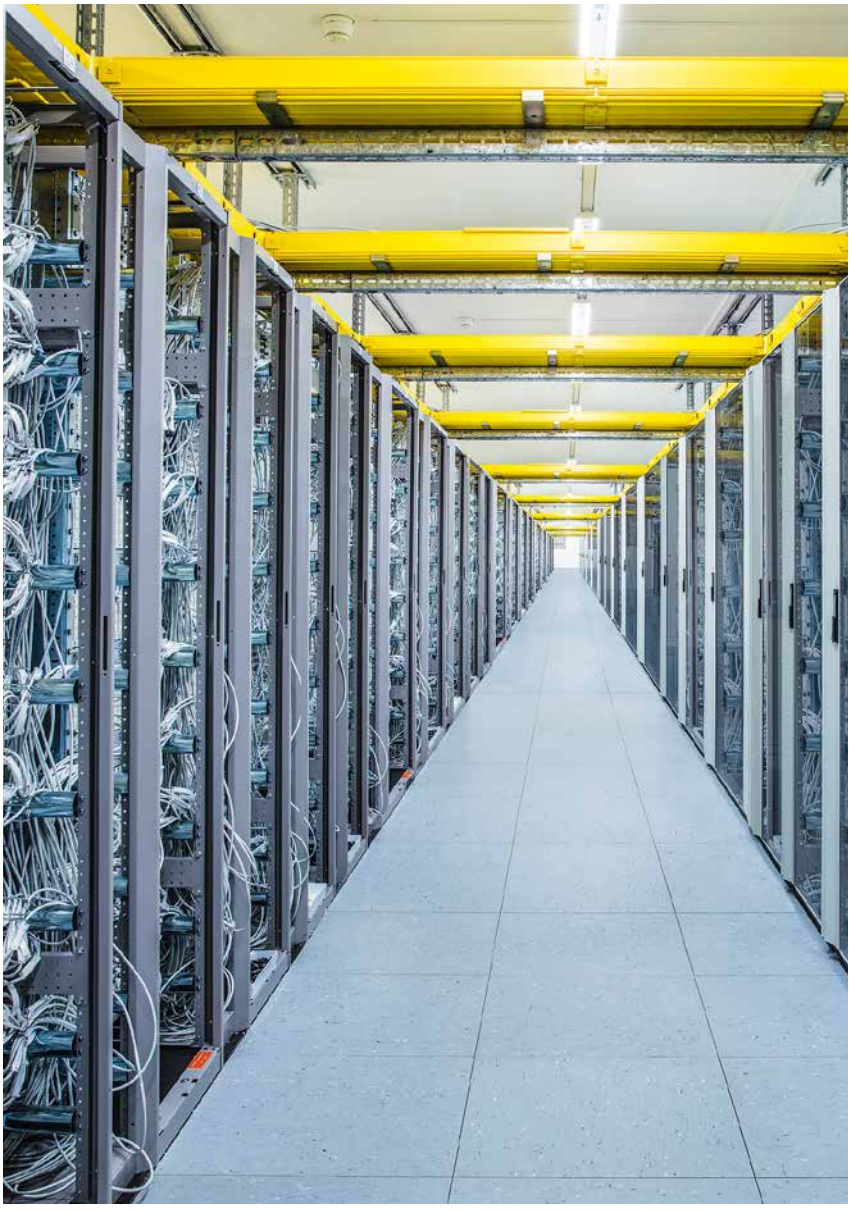
Local biogas production

Genevans can choose a more local and greener gas thanks to SIG's Vitale Vert gas. 39,500 tonnes of CO_2 were saved in the canton in 2018 with the Gaz Vitale Vert product, and 93% of the CO_2 emissions from natural gas in Geneva were offset.

● Implemented
● In implementation phase

Skyguide

In order to reduce kerosene consumption and greenhouse gases emitted by air traffic, Skyguide is committed to guiding aircraft to their destination as directly as possible. It has therefore developed a network of direct routes over Switzerland, reduced aircraft waiting times before take-off and landing and improved a number of technical systems. The company also aims to maximise the energy efficiency of its own infrastructures. Skyguide increased its energy efficiency by 37.4% from 2006 to 2018, while reducing its total consumption by 900 MWh.



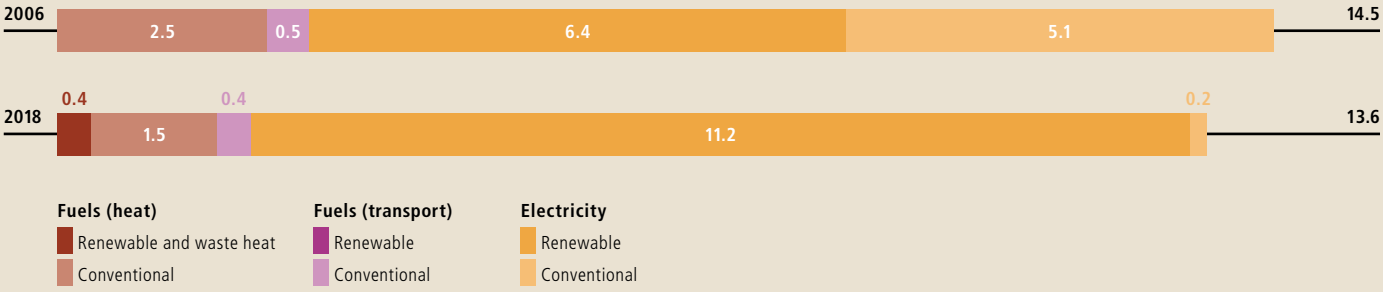
Success story

Energy-optimised IT systems by means of virtualisation

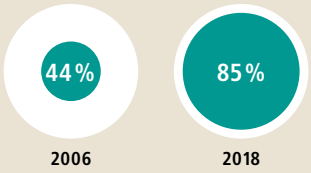
Skyguide develops and operates its technical infrastructure for air navigation services in accordance with Green IT best practices. The company's strategy is based in particular on virtualisation of its systems. The virtualisation rate for office automation servers is already 98%. This rate is constantly increasing for air navigation systems as well.
Virtualisation and joint utilisation of systems are key elements of Skyguide's innovation strategy. The Virtual Centre aims to bring the control centres of Geneva and Dübendorf together virtually. The first function already used in day-to-day operations is air traffic forecasting. The innovativeness of the Virtual Centre earned Skyguide an award from the European Commission. It was presented at the annual World Air Traffic Management Congress in Madrid.

Final energy consumption by energy source

in GWh/y



Renewable energy as a proportion of total consumption



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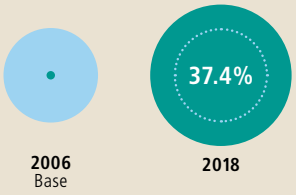
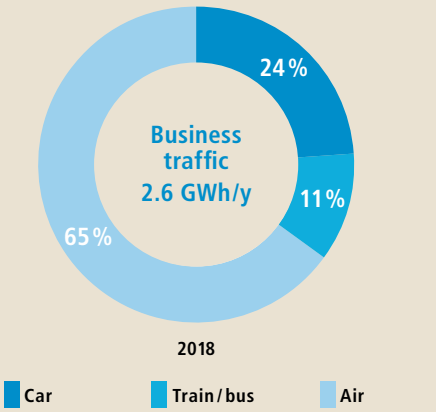


Energy consumption for **mobility**



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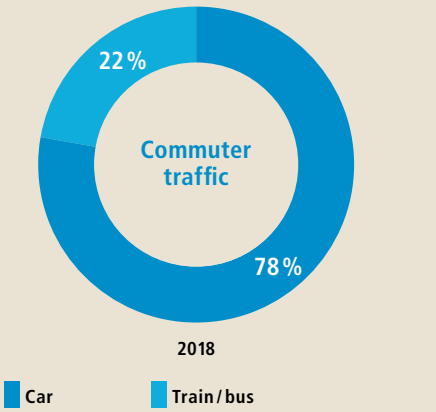
Production of renewable energy

in GWh/y



Note: The proportion of pedestrian / bicycle traffic was not recorded.

Skyguide

Joint measures

No. Measure

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08 ● Energy-efficient electromotors
09 ● Building technology with operating optimisation regime
10 ● Procurement of green power and hydroelectricity
11 – Mobility concepts for buildings
12 – Creation of ecofunds

Mobility

13 ● Integration of mobility management
14 ● Central information and booking platform
15 ● Encouragement of mobile-flexible forms of work
16 ● Promoting work hubs
17 ● Promotion of video and web conferencing
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Data centres and Green IT

29 ● Full cost accounting of energy efficiency
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31 ● Highly energy-efficient data centres
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38 ● Promotion of energy-efficient printing solutions
39 ● Promoting re-use of appliances

● Adopted and at least 80% achieved
● Adopted and in implementation phase
○ Adopted, no data yet
– No leeway for action

17

Less business and air travel

Interdisciplinary cooperation between specialised units is essential for an agile company. Thanks to modern means of communication, Skyguide is able to reduce business travel to a minimum while still ensuring communication between its 14 locations. The employees have 40 video conference rooms equipped with Skype for Business to hold web conferences. Operations permitting, working from home can also reduce travel costs. In the second half of the year, the employees in Switzerland did not travel by air but by train. These measures reduced the number of journeys by air by 1,000 units, which corresponds to a reduction in CO_2 emissions of 80 tonnes.

Skyguide

Specific measures

No. Measure
Target (target year)

- **01** ● Introduction of expanded approach management for the Zurich region (XMAN)
  127.0 GWh/y (2023)
- **02** ● Implementation of direct routes (FRA 2018 / 2021)
  43.0 GWh/y (2021)
- **03** ● Improvement of vertical flight profiles
  7.8 GWh/y (2014)
- **04** ● Green Wave for morning approaches of long-haul aircraft of the airline Swiss at Zurich Airport
  7.0 GWh/y (2012)
- **05** ● Continuous descent approach for the airports of Geneva and Zurich
  133.0 GWh/y (2014)
- **06** ● Shorter taxiing times when departing from Geneva (A-CDM)
  9.0 GWh/y (2014)
- **07** ● Optimisations of heating, ventilation and air-conditioning systems and replacement of cooling machines in the Geneva control centre
  1.7 GWh/y (2023)
- **08** ● Optimisations of heating, ventilation and air-conditioning systems and change of lighting to LED in the Dübendorf air navigation services centre
  0.5 GWh/y (2023)
- **09** ● Optimised arrivals in Zurich (iStream)
  8.0 GWh/y (2016)
- **10** ● Reduction of number of servers by means of a virtualised telephone system
  14 MWh/y (2018)
- **11** ● Reduction of calibration flights through use of drones
  541 MWh/y (2020)

● Implemented
● In implementation phase

10

14 MWh/y

Virtualised telephone system

In 2018, Skyguide's switchboard was successfully converted from ISDN to IP and adapted to the operator's service standards. The company took the opportunity to virtualise at the same time the internal servers, which handle telephone-system applications such as greeting messages and answering machines. The 14 physical servers that were previously distributed between Geneva, Dübendorf, Lugano and Berne were replaced with a single, energy-efficient virtual server in Geneva. This reduced the power consumption of the central telephone system by about 40%, which corresponds to an annual saving of 14 MWh.

11

541 MWh/y

Drones for ILS calibration flights

The instrument landing systems (ILS) at airports must be calibrated regularly. The use of drones with measuring instruments will reduce the current number of calibration flights by 50% from 2020 and by 70% from 2023. As a result, Skyguide will cut CO_2 emissions by 142 tonnes and energy consumption by 541 MWh per year from 2020.

03

7.8 GWh/y

Improvement of vertical flight profiles

Air traffic flows and cruising altitude have an impact on the energy efficiency of aircraft. The longer an aircraft flies at its optimum altitude, the less fuel it consumes and the less CO_2 it releases into the atmosphere. The energy consumption and the CO_2 footprint have been significantly reduced by optimising vertical flight profiles in Swiss airspace.

Suva

Suva joined the Exemplary in energy initiative at the beginning of 2018. Its reporting for the past year includes for the first time the 39 joint measures plus 7 specific ones. The company has increased its energy efficiency by 26% since 2006. Important measures taken by Suva include energy-efficient buildings, ecological printing and continual awareness-raising amongst its employees.

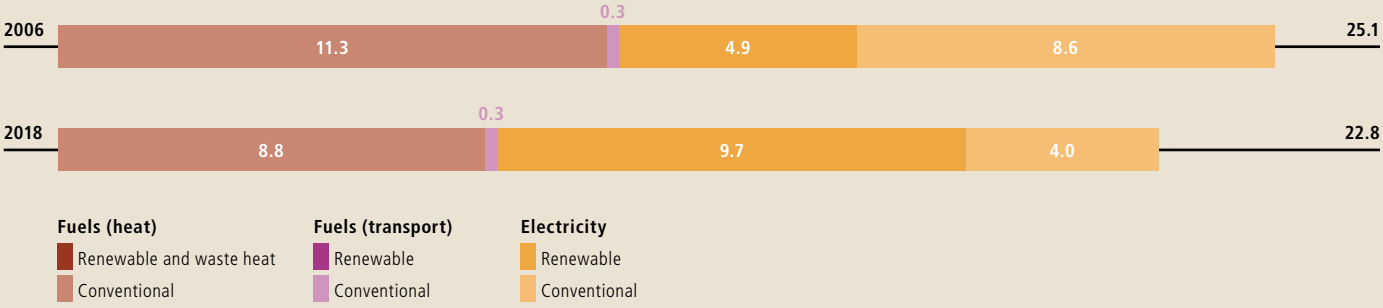
Success story

Sustainable construction and building technology

The conversion and new construction of the Bellikon Rehabilitation Clinic points the way to the future not only medically, but also in terms of energy with the Minergie-P standard. The new building is heated and cooled with a reversible geothermal heat pump system. In the existing buildings, the previous cooling and heat-generation systems have been modernised and optimised in terms of energy. In addition, mechanical ventilation systems with heat recovery ensure air exchange and a comfortable ambient climate. A heat-recovery system is used in the swimming pool for the shower and bathing water and the lighting in the entire clinic is now based on the A++ standard or the target value according to the SIA 380/4 standard. Strict standards such as A+++ also apply to the procurement of equipment. Although the choice of materials was geared to a long service life, the construction method that was adopted already takes into account complete deconstructability today, even if this step will only concern later generations.

Final energy consumption by energy source

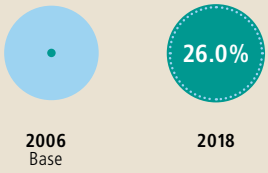
in GWh/y



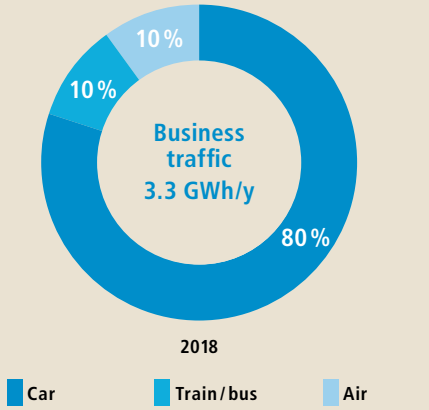
Renewable energy as a proportion of total consumption

Increase in **energy efficiency**

Target 2020: 25%



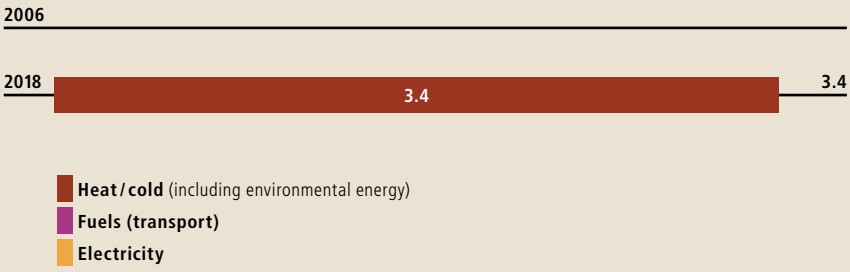
Energy consumption for **mobility**

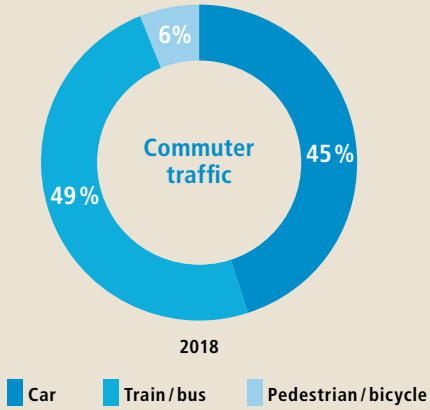


Note: Percentage shares based on energy consumption. The category Car includes the energy consumption of the actor's own vehicle fleet and of rented and private vehicles.

Production of renewable energy

in GWh/y





Suva

Joint measures

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39 ● Promoting re-use of appliances

● Adopted and at least 80% achieved
● Adopted and in implementation phase
○ Adopted, no data yet
– No leeway for action

38

More environmentally friendly printing

Suva reduced its printer infrastructure from 467 to 298 units in the whole of Switzerland between 2016 and 2018. It thus significantly exceeded its reduction target of 30%.
Apart from the reduction in power consumption, this also saves 507 square metres of floor space. An additional reduction is planned in the coming years in order to improve the utilization rate of the remaining printers. The company also introduced a secure printing standard in 2016. Documents that are not requested are automatically deleted after 72 hours. This changeover led to a reduction of 6.2 million sheets of paper in 2018, which is equivalent to a 650-metre-high stack of paper. By abolishing pre-printing paper, the company expects to be able to save an additional 7 million sheets of paper per year from the end of 2019.

Suva

Specific measures

No. Measure
Target (target year)

- **01** ● Operational CO_2 reduction
  -30% compared with 2014 (2025)
- **02** ● Raising employee awareness
  2 measures per year (2020)
- **03** ● Reduction of business travel
  -10% compared with 2014 (2025)
- **04** ● Optimisation of logistics
  -30% of transport operations compared with 2013 (2019)
- **05** ● CO_2 reduction target for direct real-estate investments
  -35% energy consumption per m_2 of useful surface area compared with 2016 (2023)
- **06** ● Energy requirement for direct real-estate investments
  100% renewable energy sources (2050)
- **07** ● Replacement of hydraulic lifts
  Replacement of the 7 hydraulic lifts in the Sion Rehabilitation Clinic (2018)

01

30 %

Operational CO_2 reduction

By 2025 Suva intends to reduce its operating CO_2 emissions by 30% compared with 2014. This target is to be achieved primarily by cutting its consumption of energy and resources. Currently the reduction in CO_2 emissions is about 25%. The company intends to achieve the reduction of the remaining 5% on its scheduled reduction path with efficiency projects.

02

150 MWh/y

Raising employee awareness

Employees make a significant contribution to Suva's sustainability. They are closely involved in important energy measures. For example, the "Goodbye Standby" project aimed at reducing the energy consumption of devices in standby mode at workstations. Suva intends to save 150 MWh per year by changing employees' behaviour and with technical aids such as time switches.

07

Replacement of hydraulic lifts

Hydraulic lifts are responsible for a significant proportion of energy consumption in buildings. At the Sion Rehabilitation Clinic, the drives of seven hydraulic lifts were therefore replaced with more energy-efficient models. Power consumption per lift decreased by more than two thirds.

● Implemented
● In implementation phase

Swisscom

In line with the Energy Strategy 2050, Swisscom aims at increasing its energy efficiency by more than 25% (actually by 35%) compared with 2006 by the end of 2020. Together with its customers, the company intends to save twice as much CO_2 by 2020 as it generates in all its operations and in the supply chain. Last year, for example, Swisscom converted mobile telephony base stations to fresh-air cooling, replaced fossil fuel-fired heating systems and further reduced the energy consumption of set-top boxes.

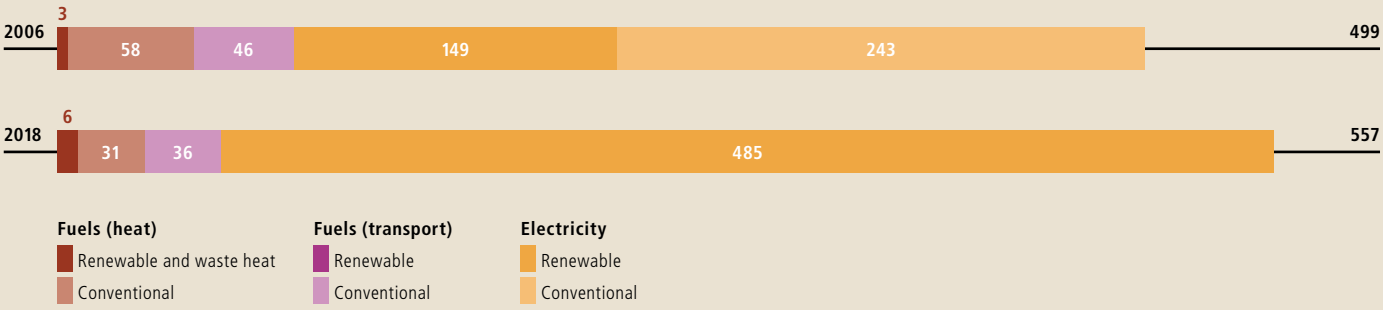
Success story

Air-cooled mobile telephony base stations

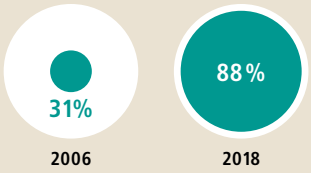
Swisscom is increasingly cooling its transmitting and mobile telephony base stations without compression cooling systems. In partnership with an external company, Swisscom has used a cooling module for its mobile telephony stations that allows fast, cost-effective conversion to cooling with fresh air. Swisscom now operates compression cooling systems with coolants only in data centres or in very compact centres, where the high heat load and the unfavourable spatial situation make cooling with fresh air more difficult. The company has the coolant-tightness of its systems inspected regularly. The quantity of coolant emitted in 2018 was 100 kg (previous year 445 kg).As a result, greenhouse gas emissions from coolants were reduced from 352 tonnes of CO_2 equivalents to 118 tonnes of CO_2 equivalents. Swisscom uses natural, low-GWP coolants with a global warming potential of less than 150 kg of CO_2 equivalents per kg of coolant when converting or extending the cooling systems in its data centres.

Final energy consumption by energy source

in GWh/y

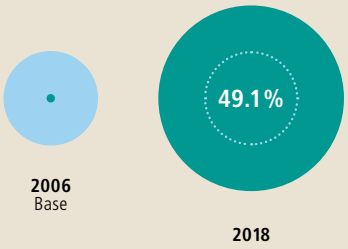


Renewable energy as a proportion of total consumption

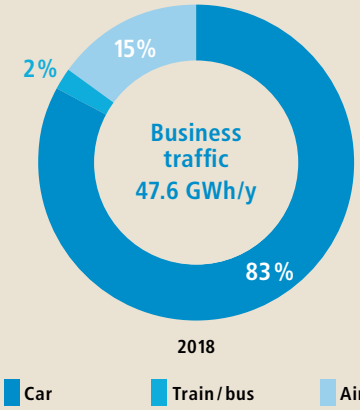


Increase in **energy efficiency**

Target 2020: 25%



Energy consumption for **mobility**



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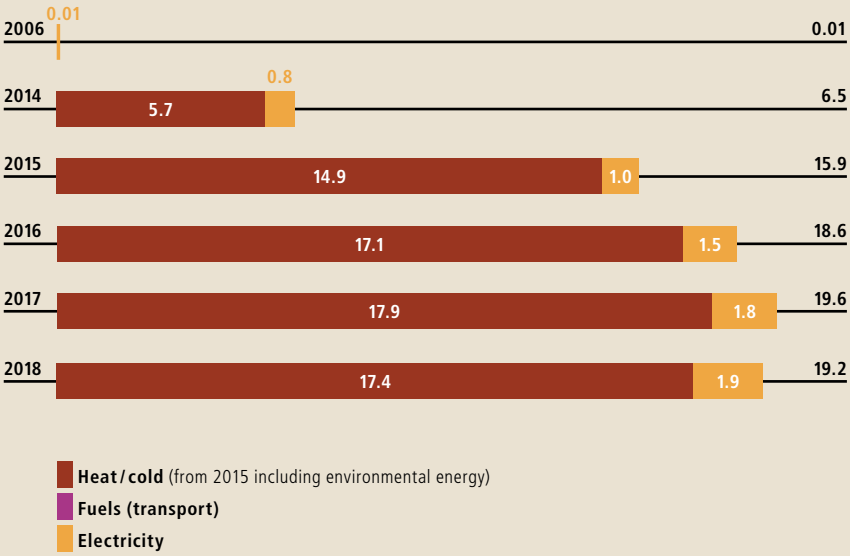
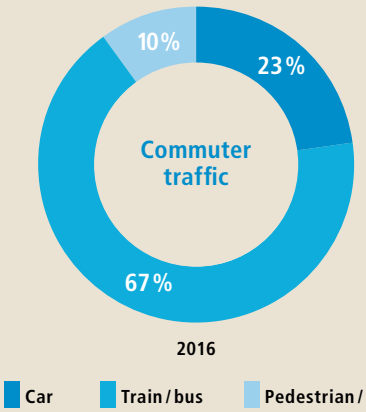
Production of renewable energy

in GWh/y





Swisscom

Joint measures

No. Measure

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● Adopted and at least 80% achieved
● Adopted and in implementation phase
○ Adopted, no data yet
– No leeway for action

03

Replacing fossil-fuel-fired heating systems

Since 2018, Swisscom has been systematically replacing fossil fuel-fired heating systems in renovation projects and now generates most of its heat by means of heat pumps and biomass (wood). In 2018, Swisscom modernised 14 heating systems all over Switzerland, completely replacing them for the first time with systems emitting no CO_2. This is a result of the cost comparison introduced in 2017, which details and makes transparent the energy and CO_2 costs of possible heating variants based on the total cost of ownership (TCO). Swisscom set the CO_2 price - along the lines of a shadow price - at CHF 96 per tonne, which corresponds to the CO_2 levy laid down in the CO_2 Act.

Swisscom

Specific measures

No. Measure
Target (target year)

- **01** ● Fresh air cooling in telephone exchanges
  45.0 GWh/y (2016)
- **02** ● Green IT offerings for customers
  57.0 GWh/y (2014)
- **03** ● Energy-efficient terminal devices for private customers
  25.0 GWh/y (2019)
- **04** ● Dematerialisation thanks to online invoicing
  2.1 GWh/y (2015)
- **05** ● Energy efficiency in the mobile phone network
  16.0 GWh/y (2015)
- **06** ● Recycling of mobile phones
  12% (annual)
- **07** ● Promoting mobile-flexible forms of work on customers' premises
  1 million (2020)

● Implemented
● In implementation phase

03

25 GWh/y

Energy-efficient devices for private customers

Swisscom TV no longer stores recordings on the set-top box but in the Cloud. The Swisscom UHD Box consumes approx. 26 kWh per year. This figure was again significantly improved compared to the previous year (36 kWh), due to optimisation of the operating system. By the end of 2018, Swisscom had won over 1.519 million customers for Swisscom TV. Swisscom TV is thus recording steady growth. Despite customer growth of 50% since 2013, total annual power consumption on customers' premises has decreased from 80 GWh to 61 GWh over the same period, thanks to constant efficiency improvements in the box and the software or operating system.

06

12%

Recycling of mobile phones

In 2018, Swisscom took back about 87,000 used mobile phones. The return rate of used mobile phones rose to 9.9% compared with the previous year (8.0%). Swisscom was able to re-sell approximately 30% of the devices via a third-party company. Defective devices were professionally recycled via a Swico-licensed company.

07

1.1 million

Mobile-flexible forms of work for customers

Swisscom wants to offer one million customers the opportunity to use mobile working arrangements by 2020. To this end, the company offers services for Work Smart and encourages a mobile working style through its involvement in the Work Smart Initiative. This target was already attained in 2018 with 1.1 million people.

DDPS

To date, the DDPS has been able to reduce its total energy consumption by 10 % to 1,050 GWh compared to 2006. CO_2 emissions fell by 21.3 % over the same period and by 4 % since 2017. By using modern technologies and energy-efficient new buildings, the share of renewable energy for fuels rose by 6 percentage points in 2018 compared to the previous year.

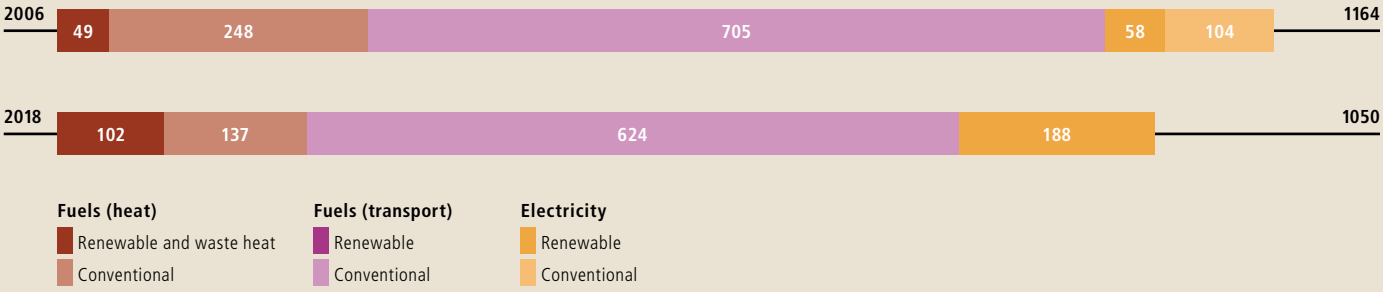
Success story

Integrating power generation facilities into the DDPS balance group

The DDPS has great potential for generating renewable power in the electricity sector. It systematically taps this potential. But with the steady expansion of photovoltaic installations, more power is occasionally produced at most locations than can be used on the spot for the department's own purposes. Due to the currently-applicable legal regulations, the DDPS thus faces the incongruent situation of expanding power generation from renewable sources but without appearing in the market as a power producer. Starting from this configuration, the idea of integrating the power produced into the DDPS sub-balance group was developed and implemented. As a result, the amount of power to be procured in the market is reduced and at the same time the local surplus is utilised at other DDPS locations. Apart from integrating all production data into the balance group, the innovation is that the relevant meteorological data are now also managed in the central energy data management system, which leads to an increase in the cost and energy efficiency of the facilities.

Final energy consumption by energy source

in GWh/y



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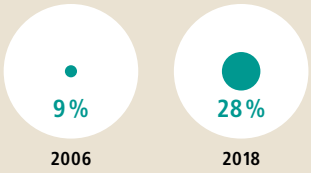
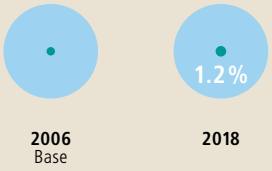


Increase in **energy efficiency**

Target 2020: 25%

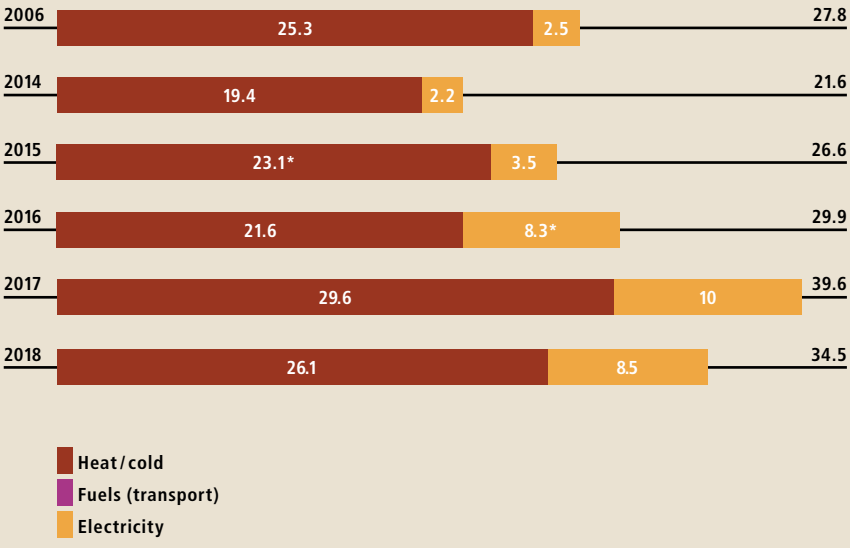


Energy consumption for **mobility**

Note: Commuter and business traffic have not yet been measured.

Production of renewable energy

in GWh/y



*This figure was corrected retroactively.

DDPS

Joint measures

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01

New building for Jassbach barracks

The new barracks on the Jassbach military training site meet the Minergie-P-ECO standard. The shell of the building was made of Swiss timber. Only pollutant-free products of proven origin were used, in order to meet the requirements of Minergie-ECO in the choice of materials and their surface treatment. Recycled concrete was used wherever possible. The heat supply for the new barracks is provided via the military training site's own woodchip-fired district heating network. Only native plants, trees and shrubs were used so as to ensure that the surroundings remained natural. The rainwater from the main and ancillary buildings and the water collected on the training site are channelled into the nearby stream via an underground retention basin.

DDPS

Specific measures

No. Measure
Target (target year)

- **01** ● Introduction of a DDPS building energy certificate in buildings and on sites (GEAVBS)
  60% GEAVBS (2020)
- **02** ● Own production of renewable energy
  4.0 GWh/y (2020)
- **03** ● Systematic introduction of central transport agencies in all military formations
  100% structures (2020)
- **04** ● Use of low-viscosity engine oils where operationally and technically possible
  100% use (2020)
- **05** ● Low-rolling-resistance tyres, where operationally and technically possible
  5.6 GWh/y (2020)
- **06** ● Optimisation 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)
- **07** ● Training and information. Indicator: all relevant corps have a trained environment representative at their disposal
  100% (2020)

● Implemented
● In implementation phase

07

100%

Training of environmental officers

The needs of the DDPS are to be harmonised with environmental protection requirements. The armed forces' mission is, for example, to be fulfilled in such a way that the environmental impact is as low as possible. The officers and non-commissioned officers who are trained in environmental issues come into contact with a wide range of aspects of environmental protection, for example, conservation of nature reserves or protection of surface waters. In addition to training in environmental issues, the focus is on the way each individual works. The DDPS employees are expected to be aware of their responsibility to the environment and to act accordingly.

03

100%

Transport coordination centres

The DDPS operates transport coordination centres in order to make ideal use of its transport capacities. They coordinate the additional need for transport services when peak or special transport needs cannot be met with the allocated vehicles. If there are over- or under-capacities, the Army Transport Coordination Centre manages the balancing of the modes of transport. For example, necessary training journeys are combined with real interventions. This prevents empty journeys and creates ecological as well as economic added value.

04

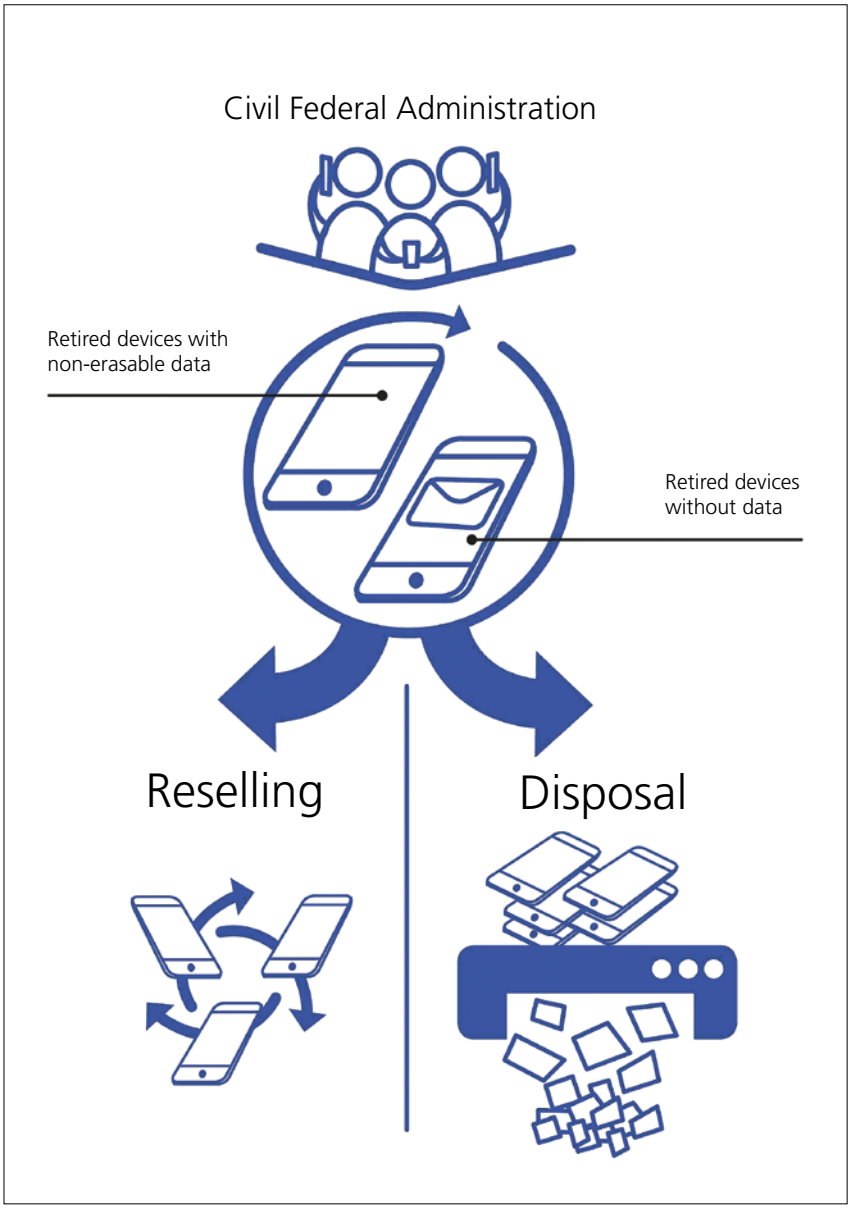
100%

Low-viscosity engine oil

Low-viscosity engine oils cause less friction losses than conventional engine oils. DDPS vehicles that run on this special engine oil therefore consume less fuel. The savings amount to between 2% and 6%, depending on driving behaviour. This leads to an increase in energy efficiency and at the same time to a reduction in CO_2 emissions.

Civil Federal Administration

The Civil Federal Administration continued to implement the Sustainable Development strategy last year. Energy efficiency was further increased and now stands at 66.4% compared with the base year 2006. Total energy consumption has been reduced by 18% over the past eleven years to 111 GWh. Different measures were and still are responsible for the reduction in energy consumption. For example, the Civil Federal Administration is relying on encouraging the re-use of appliances: 87% of the ICT devices have been re-used in the last four years.



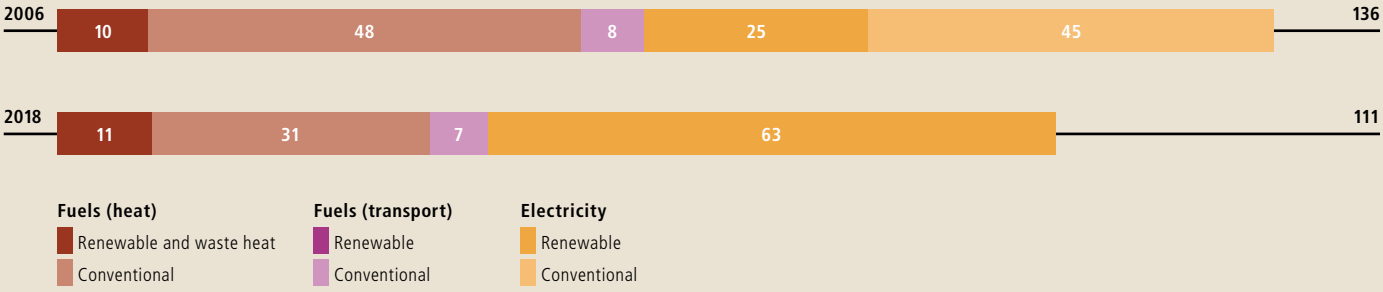
Success story

A second lease of life for no-longer-used smart devices

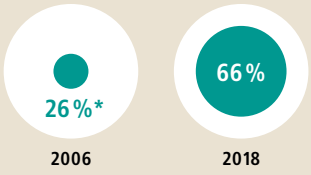
Smartphones that are no longer used often end up lying around in drawers. It is estimated that to date more than 8 million smartphones in Switzerland are unused and collecting dust. In the Federal Administration, up to 4,500 smartphones and tablets become defective or reach the end of their life cycle every year. In most cases, however, these smart devices can be re-used. The Federal Office of Information Technology, Systems and Telecommunication FOITT now provides its customers in the Federal Administration with an appropriate solution for the re-sale of smart devices.
It is a prerequisite that the contracts for the devices must have been duly terminated and the data on them completely deleted. The devices must no longer contain any user or federal data. The FOITT offers a disposal process for smart devices from which the data cannot be deleted.

Final energy consumption by energy source

in GWh/y



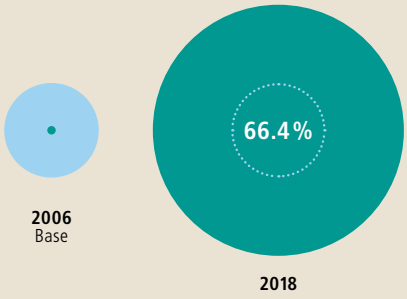
Renewable energy as a proportion of total consumption



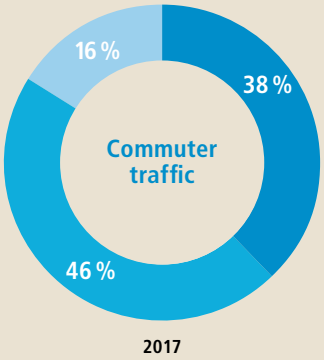
*This figure was corrected retroactively.

Increase in **energy efficiency**

Target 2020: 25%



Energy consumption for **mobility**

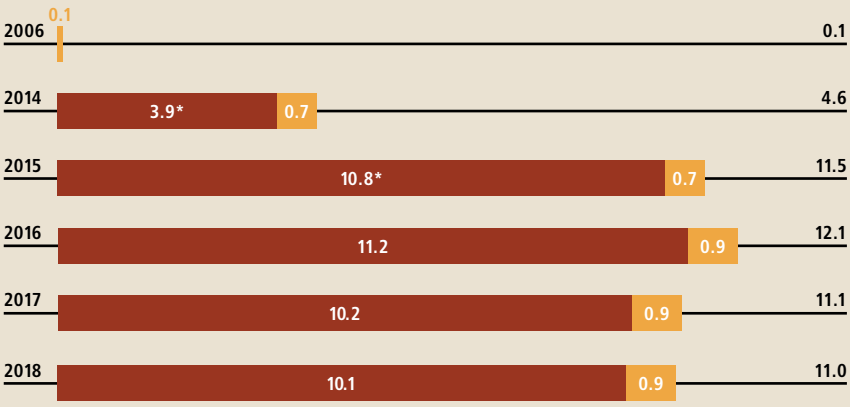


Car | Train / bus | Pedestrian / bicycle

Note: Business traffic has not yet been measured.

Production of renewable energy

in GWh/y



Heat / cold (from 2015 including environmental energy)
Fuels (transport)
Electricity

*This figure was corrected retroactively.

Joint measures

No. Measure

Buildings and renewable energy

01 ● Energy-efficient new and converted buildings
02 ● Analyses of potential of waste heat and renewable energy
03 ● No new fossil-fuel powered heating systems
04 ● Full cost accounting of energy efficiency
05 ● Energy-efficient lighting
06 ● Energy-efficient cooling machines
07 ● Energy-efficient sanitation facilities
08 ● Energy-efficient electromotors
09 ● Building technology with operating optimisation regime
10 ● Procurement of green power and hydroelectricity
11 ● Mobility concepts for buildings
12 – Creation of ecofunds

Mobility

13 ● Integration of mobility management
14 ● Central information and booking platform
15 ● Encouragement of mobile-flexible forms of work
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-driving 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

Data centres and Green IT

29 ○ Full cost accounting of energy efficiency
30 ○ Specifications for new servers and new data centre hardware
31 ● Highly energy-efficient data centres
32 ○ Pushing passive cooling solutions in data centres
33 ● Encouraging server virtualisation in data centres
34 ● Bundling of data centres / 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 and in implementation phase
○ Adopted, no data yet
– No leeway for action

39

Re-use of IT equipment

IT equipment is used until the end of its service life in the Civil Federal Administration. After that, the devices are processed by the Foundation for Vocational Integration GEWA and are either offered for sale to the employees of the Civil Federal Administration at a preferential price through Remarketing AG or made available free of charge to non-profit organisations. The proportion of re-used devices has been about 87% over the past four years. The figure does not include defective devices, individual components from which were re-used in some cases. Furthermore, the devices can be passed on directly to outside parties. For example, the Federal Department of Foreign Affairs FDFA has made laptops available to various partners abroad for re-use.

Specific measures

No. Measure
Target (target year)

- **01** ● Resources and Environmental Management programme of the Federal Administration RUMBA (including business travel)
  2.3 GWh/y (2020)
- **02** ● Reduction of energy consumption from business travel
  0.5 GWh/y (2020)
- **03** ● Energy-efficient enveloping system
  75% saving (2013)
- **04** ● Construction of new photovoltaic installations; replacement of fossil energy with renewable energy
  0.6 GWh/y (2020)
- **06** ● Update of "Ecological assessment data for the construction sector" to promote energy-efficient construction (KBOB)
  Every 2 years (2020)
- **07** ● Making employees aware of energy-efficient and environmentally-compatible behaviour at the workplace
  2 measures per year (2020)
- **08** ● Voluntary target agreement with the Energy Agency of the Swiss Private Sector (EnAW)
  2200 t CO_2/y (2022)
- **09** ● New tunnels fitted, and existing tunnels refitted, with LED lighting.
  Ongoing

● Implemented
● In implementation phase

07

2 measures per year

Raising employees' awareness

Despite numerous increases in energy efficiency in the buildings and equipment sector of the Civil Federal Administration, there is still great potential for reducing electricity consumption at the workplace. In 2018, the Resources and Environmental Management programme of the Civil Federal Administration RUMBA therefore conducted a poster campaign on "Saving electricity at the workplace". The administrative units of the Civil Federal Administration received posters in the three official languages illustrating a total of nine energy-saving measures. Examples include avoiding using lifts or attaching large files to e-mails. Over 20,000 employees were made aware through the campaign.

01

3.14 GWh/y

Rumba

The Civil Federal Administration has been able to reduce its energy consumption by an average of 3.14 GWh/y over the past twelve years with the help of its Resources and Environmental Management programme RUMBA. This means it has already significantly exceeded its target set for 2020 of 2.3 GWh/y.

02

0.5 GWh/y

Optimising business travel

Business travel accounts for about one third of the entire environmental impact of the Civil Federal Administration. Energy consumption in this area fell by 3.2 GWh between 2006 and 2018. This corresponds to an average reduction of 0.26 GWh per year. The Civil Federal Administration achieved this improvement thanks to an increased use of rail transport for business travel in Switzerland and Europe. The number of kilometres travelled by air decreased due to smaller delegations, increased videoconferencing as a substitute for travel and fewer flights in business class.

The 39 joint measures taken by all actors in detail

The Confederation: exemplary in energy initiative plan has defined 39 joint measures in the three action areas buildings and renewable energy, mobility, and data centres and Green IT. Here you can read the detailed descriptions, including the relevant indicators and targets.

Action area buildings and renewable energy

01 Energy-efficient new and converted buildings
The actors' strategies for buildings and sites are guided by best practice. For specific building standards 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 1 January 2016.

02 Analyses of potential of waste heat and renewable energy
The actors each draw up an analysis of potential. It is intended to show the extent to which waste heat could be utilised 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 called "New renewable energy in the federal government and parastatal enterprises".
Indicator: analysis of potential available.
Target: analyses of potential available.

03 No new fossil-fuel powered 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 CO_2 reduction measures.
Indicator: newly-installed heating systems operated without fossil fuels.
Target: 100 % from 1 January 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 1 January 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 1 January 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 1 January 2016.

07 Energy-efficient sanitation facilities
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 1 January 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 1 January 2016.

09 Building technology with operating optimisation regime
The actors subject their building apparatus to continuous operating optimisation (OO). Recognised 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: consumption of apparatus with a continuous OO regime as a percentage of total annual energy consumption.
Target: 60% (by 2020).

10 Procurement of green power and power from renewable energy
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 1 January 2020 exclusively with power from renewable energy sources.
Indicator: 1. green power as a percentage of total consumption, 2. power obtained from renewable energy as a percentage of total consumption.
Target (not including rail traction power): 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 employees 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-motorised traffic, as well as measures to reduce induced traffic and promote energy-efficient mobility.
Indicator: new buildings (> 50 permanent jobs) as a percentage of all new buildings (> 50 permanent jobs) with a mobility concept.
Target: 100% from 1 January 2016.

12 Creation of ecofunds
The actors each create an ecofund of their own. These ecofunds are financed out of the reimbursement of the CO_2 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 a mobility management system has been 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 mobile-flexible forms of work
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: employees who regularly use mobile-flexible work forms as a percentage 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 organisations can work temporarily. In addition, they create the cultural preconditions for working at work hubs.
Indicator: % of suitable office locations with workstations to which in-house or outside employees from other sites have access.
Target: 100% (by 2020). In addition, reviews are conducted of 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: employees who regularly use video / web conferencing as a percentage 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 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-kilometre rate.
Indicator: expenses reimbursement for using PT, rules for use of private cars, kilometre rate.
Target: expenses reimbursement of the PT ticket price based on the half-fare travelcard, even if self-paid PT season tickets are used, clearly-defined criteria for using private vehicles, km rate for private cars, max. CHF 0.64 per km.

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 travelcard 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 and web conferencing and corporate collaboration solutions. They provide a simple decision-making tool and cover all international business travel reimbursed via the expense accounts or the travel agency.
Indicator: proportion of air travel to destinations that can be reached 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, that the spaces should be covered, be near the entrance or have structures to which the bike frame can be padlocked.
Indicator: % of sites (> 100 employees) 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 sites (> 100 employees needing this service) with access to self-rental bikes.
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 / CO_2 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, intervention vehicles such as ambulances and goods transport vehicles.
Target: 100% (by 2020).

25 Eco-driving training courses for frequent car users
Employees who drive more than 20,000 kilometres a year for business are trained every three years in eco-driving course. In the case of employees who use the company fleet, the employer supports privately-attended eco-driving courses with a 30% contribution to costs.
Indicator: % of employees driving more than 20,000 kilometres a year who have attended an eco-driving course in the last three years.
Target: 100% (by 2020).

26 Promoting the use of car sharing agencies
The actors provide information on and access to their own or an outside car sharing agency for arranging lifts and to carpools in commuter and business 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 (prerequisite: a sufficiently large number of employees).
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 hours 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, for example electric cars, 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 centres 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 disproportionally overweighted here, unlike with the purely TCO approach.
Indicator: % of the IT appliances evaluated according to the description of measures in new calls for tender.
Target: 100 % from 1 January 2015.

30 Specifications for new servers and new data centre hardware
The actors systematically call for joint state-of-the-art specifications when procuring new servers and further data centre 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 centre in new calls for tender.
Target: 100 % from 1 January 2015.

31 Highly energy-efficient data centres
The actors implement the most energy-efficient concepts and technologies in the data centres' infrastructure systems (ventilation, cooling, uninterrupted power supply, lighting).
Indicator: average PUE value (power usage effectiveness) over all of the data centres. The PUE value is defined as the ratio of the total electrical energy consumption of the data centre to the energy consumption of the IT equipment.
Target: < 1.3 by 2030. (In new and larger data centres, smaller PUE values are expected, while best efforts are expected in smaller data centres).

32 Pushing passive cooling solutions in data centres
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 a first measure, in existing data centres with conventional cooling, the cold operating temperature is raised to at least 26 °C.
Indicator: 1st part: existing data centre surface area with temperature > 26 °C; 2nd part: data centre 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 virtualisation in data centres
The actors aim for a high server capacity utilisation. To this end, increasing reliance is placed on server virtualisation and on memory technology (SAN) in the storage area.
Indicator: percentage share of virtual servers: number of virtual servers / (number of virtual + physical servers).
Target: > 85 % (by 2020).

34 Bundling of data centres / outsourcing of IT services
The actors check potential for increasing energy efficiency as part of data centre 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 initiative.
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 centres 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 predetermined time.
Indicator: % of workstations with active power management.
Target: 90 % by 2015.

38 Promotion of energy-efficient printing solutions
The actors optimise 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 optimised 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 specialised 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, 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 a detailed description of the measures at www.exemplary-in-energy.ch.

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The 10 actors

SWISS POST

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ETH DOMAIN

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GENÈVE AÉROPORT

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SBB CFF FFS

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Defence, Civil Protection and Sport DDPS

SIG

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Civil Federal Administration

Pioneers in energy efficiency and renewable energy

The actors participating in the Exemplary in energy initiative have adopted ambitious goals for implementing the Energy Strategy 2050. Skyguide reduces consumption of resources in Switzerland by consistently promoting the re-use of IT equipment after the end of its service life.