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Objectives and results

# 2013 Environment Report of the Federal Administration

Review period: 2011–2012

Resources and Environment Management  
of the Federal Administration RUMBA

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This is a summary of the Environment Report. The full report, together with additional information on the ecological balance of the various Federal Departments and key data of all RUMBA units, can be downloaded from [www.rumba.admin.ch](http://www.rumba.admin.ch) (in German, French and Italian).

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# Federal Administration as role model – coordination of federal environmental protection efforts

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An organisation like the Federal Administration that has such a broad diversity of tasks also requires a diversified structure. And in the performance of its tasks, it has to comply with various requirements. Since 1999, the organisational units of the Federal Administration have been required to protect the environment to the greatest possible extent when performing their tasks. For this purpose, various specialised organisations have been created: RUMBA (Resources and Environment Management of the Federal Administration); RUMS DDPS for the Federal Department of Defence, Civil Protection and Sport (DDPS); and autonomous environment management systems for semi-public companies (Swiss Post, Swiss Federal Railways, Swisscom and Skyguide). All these systems have undergone constant development and are yielding notable results. However, a broad variety of observations regarding the environment indicate that our efforts need to be intensified. The declared objectives relating to climate protection and “Energy Strategy 2050” represent a major challenge, and we will only be able to achieve these through concerted action and by harnessing all the forces of the private sector, the public sector and each and every inhabitant of our country. The Federal Administration wants to function as a role model here and demonstrate that the ambitious objectives are by all means achievable. For this purpose a coordination group (“Federal Administration as Role Model in the Energy Sector”) has been formed, which is responsible for coordinating the existing activities within the federal government, as well as communicating the results of the various actions in a targeted manner. The fact that achievements need to be communicated is clearly demonstrated by this report. Within the Federal Administration, environmental pollution per employee (full-time equivalent) has fallen by 17.6 percent versus 2006 (cf. page 4). Based on a broad variety of examples, this report describes the entire range of measures that are being implemented within the Federal Administration in order to reduce the consumption of resources and protect the environment. Alongside the many technical innovations, however, the personal commitment on the part of Federal Administration employees is a decisive factor. I wish to express my sincerest thanks to all those who have been making such a valuable contribution.

*Ueli Maurer, President of the Swiss Confederation*

# Ecological balance of RUMBA

## Main environmental objective of the Federal Administration

The principal objective of RUMBA is to constantly reduce the pollution of the environment attributable to operational activities and the use of products within the Federal Administration.

The aim is that, by 2016, the level of pollution per employee (full-time equivalent, FTE) within each Federal Department should be at least 10 percent below the level recorded in 2006. The level of pollution per FTE, excluding CO<sub>2</sub> compensation, is to be constantly reduced.

## Presentation of key data

The key environmental data presented in this report refer to all organisational units of the Federal Administration that currently implement RUMBA (RUMBA units). The separate key data for the Federal Institutes of Technology are shown on pages 18 to 21 of the full report. All key data are shown per FTE.

The table below shows the consumption of resources in 2012, the change since 2010 and the environmental impacts by source (polluter).

## Consumption of resources

In the majority of cases, the key consumption data were lower versus 2010. For example, air travel fell by 26 percent, paper consumption by 17 percent, heat consumption by 16 percent, water consumption by 13 percent, electricity consumption by 8 percent and road transport by 8 percent. The only increases that were recorded concerned waste (+ 4 percent) and rail travel (+ 2 percent), though it should be noted here that an increase in rail travel is desirable as long as this replaces air and road transport.

## Environmental impacts and CO<sub>2</sub> emissions

Pollution of the environment fell versus 2010 by around 13 percent. This positive result was largely attributable to reductions in the areas of air travel, electricity consumption and heat consumption (in that order). Electricity is now the source of around 58 percent of environmental pollution, which means its share increased slightly again. Travel is responsible for 24 percent (17 percent of which is attributable to air travel). Heating accounts for 10 percent.

CO<sub>2</sub> emissions fell by 19 percent and have now reached 2,599 kg CO<sub>2</sub>-equivalents per FTE). This reduction is primarily attributable to less air travel and a decrease in heat consumption.

## Achievement of objectives

The goal of constantly reducing environmental pollution was achieved in the two-year period under review (2011 and 2012). In comparison with the figure recorded in 2006, the level of pollution (excluding CO<sub>2</sub> compensation) fell by 17.6 percent.

The target for 2016 is for the overall level of pollution per FTE to be reduced by at least 10 percent versus 2006 (taking CO<sub>2</sub> compensation into account). If this reduction is depicted in a straight line, a target path can be defined (cf. dark blue line in graph below). The level of pollution for all RUMBA units (including CO<sub>2</sub> compensation) has fallen by 21.5 percent since 2006, which is well below the target path.

This positive balance can be drawn for each individual Federal Department as well as for the Federal Chancellery. Right across the board, the environmental impacts per FTE are below the levels recorded in 2006, and in some cases are well below the target path.

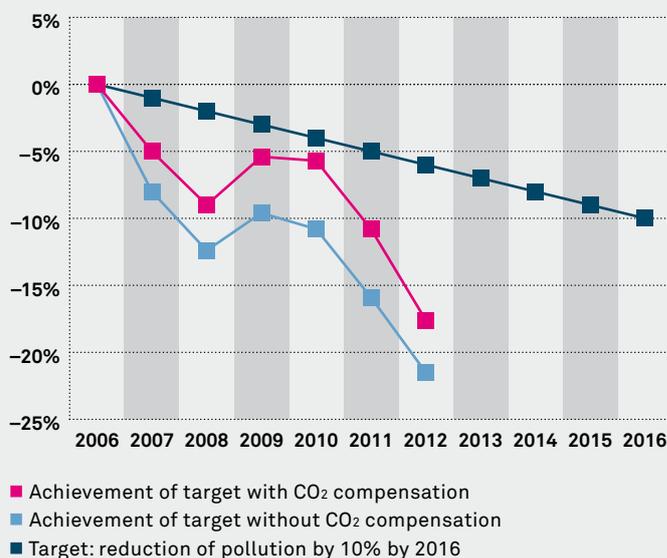
### Total consumption of resources and environmental pollution in 2012

MJ: Primary energy consumption in megajoules  
EPP: Environmental pollution points (2006 method, FOEN)

	Consumption of resources		Environmental pollution	
	per full-time equivalent	Change versus 2010	1,000 EPP per FTE	Proportion in % (rounded)
Heat	11,806 MJ	-16%	325	10
Electricity	45,422 MJ	-8%	1,844	58
Water	14,195 litres	-13%	62	2
Waste	62 kg	+4%	70	2
Paper	59 kg	-17%	112	4
Air travel	2,814 km	-26%	548	17
Rail travel	1,232 km	+2%	35	1
Road transport	648 km	-8%	178	6
<b>Total</b>			<b>3175</b>	

### Achievement of target, 2012

Change in pollution per FTE versus 2006



# Environment management within the Federal Administration

In the Federal Administration, environment management is carried out with the aid of three systems:

1. RUMBA: The main objective of the Resources and Environment Management of the Federal Administration (RUMBA) system is to reduce the level of environmental pollution within the organisational units of the Federal Administration. Here the focus is on buildings (consumption of electricity, heat, water and disposal of waste), as well as on paper consumption and business travel. Some units are also focusing on reducing pollution in the products segment.
2. With RUMS DDPS (Spatial Planning and Environment Management System of the Federal Department of Defence, Civil Protection and Sport DDPS), the aim is to ensure that environmental aspects are systematically incorporated into the decision-making processes at all levels within the DDPS. Here the focus is on political controlling processes (e.g. spatial planning, nature conservation, protection of the environment, real estate management), and on enforcement duties relating to military planning approval procedures, protection of the environment, nature and landscapes, and area planning.
3. Environment management systems in semi-public enterprises: Semi-public enterprises (Swiss Post, Swiss Federal Railways SBB, Swisscom and Skyguide) pursue strategic objectives that are defined by the Federal Council every four years. All semi-public enterprises are required to make every possible effort to pursue a sustainable corporate strategy that is based on ethical principles. All these entities already have an environment management system at their disposal which encompasses all (or all relevant) areas of activity.

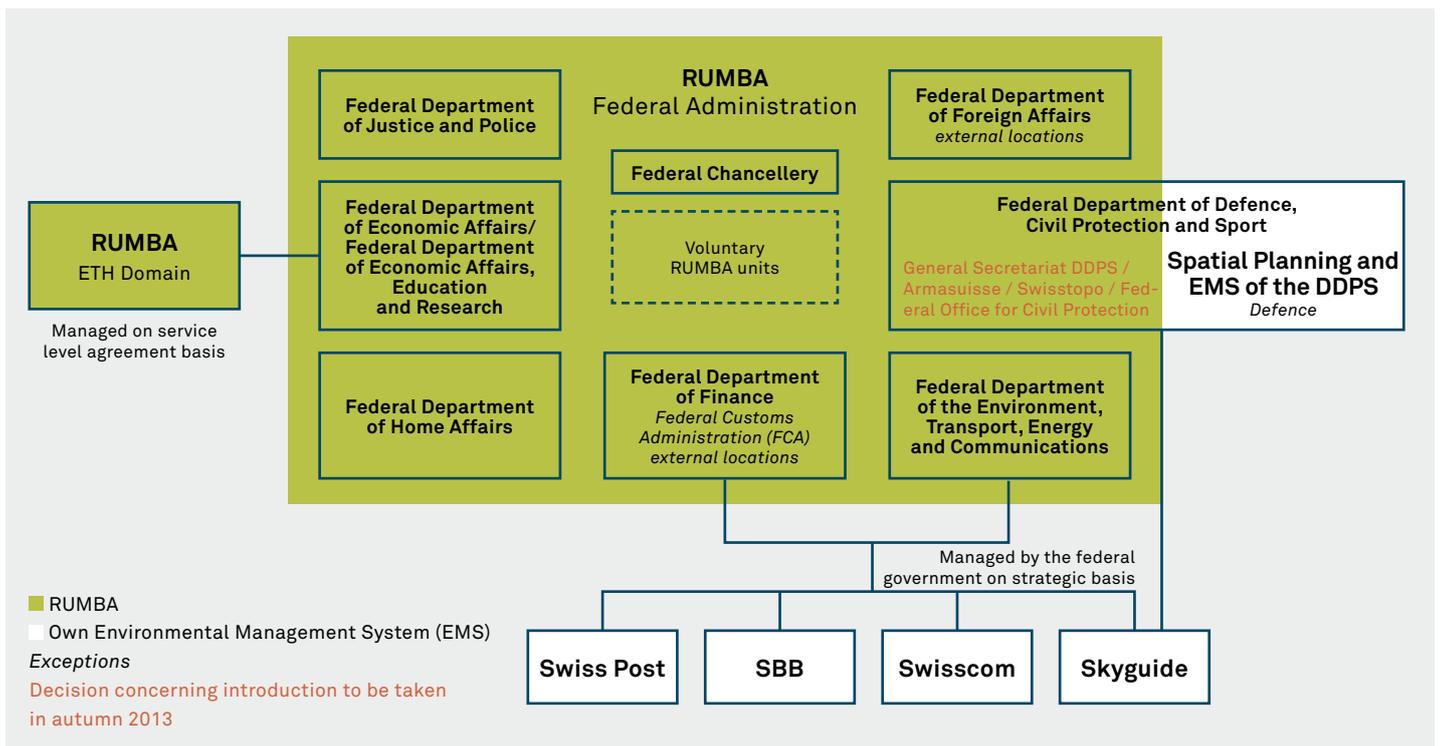
**Federal government as role model: coordination of environmental activities**

The coordination of activities in the energy sector was already introduced at the federal level ten years ago. In this context, the “Large-scale Consumers in the Federal Administration” coordination group was established within the framework of the Swiss-Energy programme. In addition to the Federal Office for Buildings and Logistics, the Federal Department of Defence, Civil Protection and Sport and all units of the Federal Institutes of Technology, its members include Swiss Post, Swisscom, Swiss Federal Railways and (since 2012) Skyguide.

A new coordination group has recently been formed within the scope of “Energy Strategy 2050” which is responsible for steering and coordinating the function of the Federal Administration as a role model in the energy sector. The “Federal Administration as Role Model in the Energy Sector” coordination group defines the action plan for “Energy Strategy 2050” on a consensual basis, and coordinates the communication of the results. It incorporates existing structures of RUMBA, RUMS DDPS and the environment management systems of semi-public enterprises, but concentrates its activities on the energy sector.

The “Federal Administration as Role Model in the Energy Sector” coordination group is currently focusing on the following areas:

- Buildings and renewable energy
- Mobility
- Computer centres / green information and communication technology (ICT)
- Reporting



# Environmental activities in semi-public enterprises

Switzerland's semi-public enterprises have been committed to reducing the environmental impacts of their business activities for many years. The links in the box below (at bottom right) lead to the reports on the diverse activities of these entities in the areas of sustainability and environmental protection.

All four semi-public enterprises intend to intensify their efforts in the future against the backdrop of the Federal Council's "Energy Strategy 2050". Here their main focus will be on increasing energy efficiency and reducing CO<sub>2</sub> emissions.

## Swiss Post

As an energy-intensive enterprise providing passenger transport, logistics and financial services, Swiss Post is primarily focusing its ecological sustainability activities on climate protection. Its goal is to reduce its annual CO<sub>2</sub> emissions by 15,000 tonnes by the end of 2013. It aims to achieve this by enhancing the energy efficiency of its vehicles and buildings and by increasing the share of renewables in its energy mix. Since 2008 it has been exclusively purchasing electricity produced from hydropower and wind energy – and since 2012, solely from sources within Switzerland. In addition to its commitment towards climate protection, Swiss Post also intends to constantly reduce the level of pollution resulting from its business operations.

Some of its divisions are pursuing their environmental objectives with the aid of an environment management system that has been certified in accordance with ISO Standard 14001.

## Swiss Federal Railways (SBB)

The railway network forms the backbone of sustainable mobility in Switzerland. Every day, close to a million passengers and around 175,000 tonnes of cargo are transported energy-efficiently, eco-

logically and safely by rail. Thanks to the fact that around 80 percent of its electricity mix is produced from hydropower and its entire railway network is electrified, the SBB is one of the most environmentally friendly rail transport operators in Europe.

In order to steer and monitor its environmental performance throughout the entire organisation, by 2015 the SBB plans to introduce a group-wide environment management system certified in accordance with ISO Standard 14001. As an initial step in this direction, in 2010 it introduced an environment management system at group level that was certified in accordance with the above standard. This system forms an umbrella for the systems that are already in place in certain divisions, e.g. Operating in Passenger Transport, Infrastructure and SBB Cargo. After establishing an environment management system for SBB Real Estate in 2013 and for the entire passenger transport segment in 2015, the SBB will have achieved its goal of implementing a certified group-wide system.

## Swisscom

Telecommunications provider Swisscom has been operating an ISO 14001 certified environment management system since 1998. Swisscom is one of the ten largest electricity consumers in the country, and it now meets its entire electricity demand from domestic renewable sources. Since 1998 it has reduced the CO<sub>2</sub> emissions from its own vehicles and buildings by almost 50 percent, and it now also requires its suppliers to comply with ecological and social standards.

In addition to meeting its internal ecological objectives, Swisscom is also strongly focusing on launching and improving products and services that enable clients to reduce CO<sub>2</sub> emissions and save energy (green ICT).

## Skyguide

Securing efficient and sustainable air traffic management is one of the key duties in the official mandate entrusted to Skyguide. For example, route networks and flight procedures are constantly being reviewed in order to determine whether flight paths can be shortened and noise emissions can be reduced. The environmental impacts of air transport represent an international challenge that calls for global solutions, and Skyguide is actively involved in this process.

In an effort to reduce its own environmental performance, in the next few years Skyguide intends to expand the environment management system that has already been introduced in some of its divisions. It is already pursuing a procurement policy in which the environmental performance of suppliers is a criterion for the award of mandates.

Links to environment and sustainability reports of semi-public enterprises in Switzerland:

> [Swiss Post](#) > [Swiss Federal Railways \(SBB\)](#) > [Swisscom](#) > [Skyguide](#)



Employees of Swiss Federal Railways take care of areas of greenery alongside railway lines – an essential task for protecting species diversity and maintaining railway safety.

# Resources and Environment Management of the Federal Administration

## RUMBA – the systematic management of resources and the environment within the Federal Administration

RUMBA is strategically controlled by the Conference of General Secretariats (CGS) and managed/coordinated by a coordination group and a workgroup. Based on the criteria specified by the RUMBA Coordination Group, each Department designates the units responsible for implementing RUMBA (= RUMBA units). Each Department coordinates the environmental activities of its RUMBA units, monitors the achievement of targets, and specifies additional measures if targets cannot be met.

In 2012 the workforce of the Federal Administration numbered around 51,950 employees (FTEs), of which 24,400 worked in the general Federal Administration (excluding the Federal Department of Defence, Civil Protection and Sport DDPS, with around 12,000, and 16,600 in the Federal Institutes of Technology).

Within the Federal Administration (excluding the DDPS) and autonomously operated organisational units, 65 percent of FTEs are integrated into the RUMBA programme. Foreign representations and offices of the Federal Department of Foreign Affairs FDFA (3,800 FTEs) and the Federal Customs Administration (3,960 FTEs) are not involved in the RUMBA programme. Excluding these external locations, 93 percent of all Federal Administration employees (FTEs) are integrated into the RUMBA programme.

Within autonomously operated organisational units, RUMBA is implemented on the basis of service level agreements. RUMBA has already been introduced in the two Federal Institutes of Technology, which in addition to the 16,600 FTEs number 22,000 students plus other personnel worldwide.

In addition to the internal environment management system of the DDPS (RUMS DDPS), which focuses on ecological measures in the area of defence, within this Department, RUMBA is also implemented in the Federal Office of Sport (3.3 percent of the DDPS

workforce). A decision regarding the introduction of RUMBA in additional units of the DDPS is expected to be announced in autumn 2013.

The overall results of the RUMBA activities are cited in the Management Summary (page 4). The results for individual segments are on pages 8 to 13. Detailed results are reported in the appendix (NB: page numbers refer to the full report).

## New strategic focus

In its resolution dated 16 September 2011, the Federal Council announced its intention to increase the effectiveness of RUMBA. The management of each general secretariat is to be better integrated into the RUMBA Coordination Group, and the heads of directorates are to be given specific annual targets.

In 2013, a new strategic focus was defined that encompasses the following objectives:

- Placing the organisation of RUMBA on a firmer footing with clearly defined guidelines
- Coordination of RUMBA, with the Federal Administration performing the function of role model in the energy sector
- Specification of environmental targets beyond 2016, and shortening of target periods from 10 to 4 years
- More streamlined management with clearly defined and binding targets for OUs within the Departments
- Implementation of new communication concept and greater sensitisation of employees via the Federal Office of Personnel
- Development of a pilot mobility management system in a selected federal office, with a view to its subsequent introduction in all units of the Federal Administration
- Introduction of RUMBA in the DDPS
- Strengthening of the RUMBA Workgroup



# Heat

## Heat consumption by RUMBA units

Energy consumption for heat production per employee (FTE) fell by 16 percent versus 2010 and is 30 percent below the 2006 level (cf. graph on left). The key data were adjusted for climate factors based on heating-degree days.

With respect to energy sources, the largest reduction was recorded for gas consumption. Thanks to renovations and new buildings, the share of heat pumps and wood was increased, but is still fairly low. The heating requirement per square metre of reference space has fallen since 2010 from 275 to 248 MJ (by around 10 percent). At the same time, the reference space per FTE fell by 7 percent to around 48 square metres.

## Measures in buildings

The FBL, the DDPS and the Federal Institutes of Technology are consistently working on improving energy efficiency in buildings. Measures based on the FBL energy strategy include:

- Renovations should comply with the MINERGIE-ECO standard and new buildings should meet the MINERGIE-P-ECO standard. For new renovation projects the aim is to secure the maximum possible use of renewable energy.
- From 2020 onwards, new buildings are to fully supply themselves with heat and with at least a certain proportion of electricity.
- In countries in which the FBL renovates or builds embassies or consulates, buildings in temperate zones are to be constructed

in a similar manner to those in Switzerland. The planning and implementation of solar or other forms of renewable energy is a requirement everywhere. Where cooling is required, the option of solar energy should be examined and implemented where feasible.

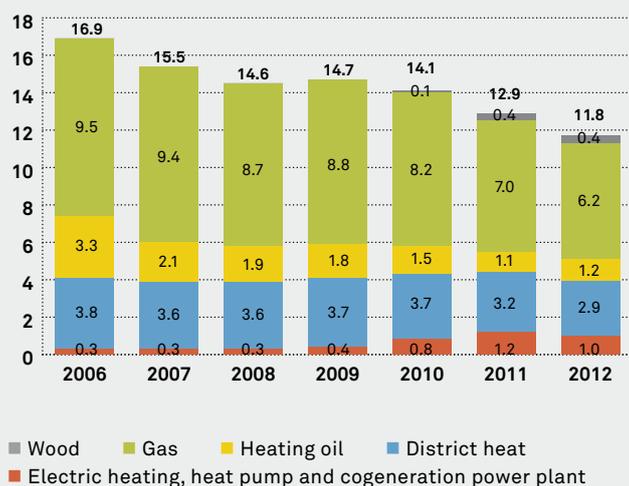
In 2011, the total area of MINERGIE-certified buildings was increased by 16,000 square metres. The 2012 figure is unchanged (cf. graph on right) because no FBL projects were completed in that year. Approximately 102,000 square metres of the certified premises are occupied by RUMBA units (= 13 percent of their total occupied space).

## Saving resources with the aid of occupancy agreements

It is also possible to conserve resources by ensuring their optimal utilisation. For example, the FBL concludes occupancy agreements with user organisations which specify the current and maximum permissible number of offices. The FBL's workplace regulations form the basis for the calculations. The difference between current and maximum permissible occupancy is determined using a defined density potential, which helps user organisations to utilise their office space optimally. Thus even in energy-efficient buildings, users are able to influence their consumption of resources and the level of pollution attributable to the Federal Administration.

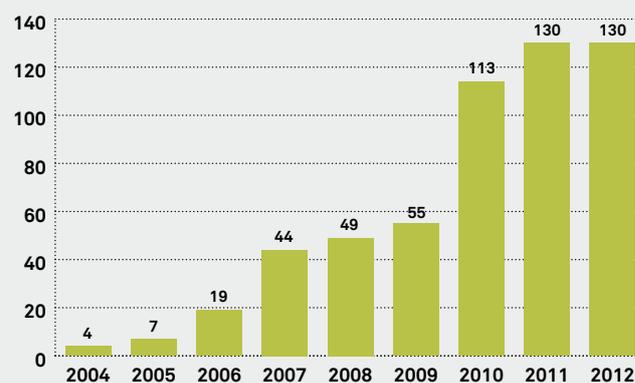
Heat consumption in RUMBA units by energy source (primary energy)

Energy consumption in 1,000 MJ per FTE



Area of FBL qualifying for MINERGIE certificate

in 1,000 m<sup>2</sup> energy reference space



## General objectives, 2012–2016

- Meet the target specified in the 2012 agreement with the Energy Agency for Industry.
- Implementation of MINERGIE directive.
- Reduction of heat consumption and CO<sub>2</sub> emissions per FTE by 15% by 2016 (reference year, 2006).

## Results in 2012

- At 39.5%, the target of a 26.5% reduction of CO<sub>2</sub> intensity between 2000 and 2012 was clearly surpassed.
- MINERGIE directive is being continuously implemented.

## Measures for meeting targets

- Continued implementation of existing measures.
- New target agreement with Energy Agency for Industry.
- Sensitisation of personnel to efficient heating and ventilation.

# Electricity

## Electricity consumption by RUMBA units

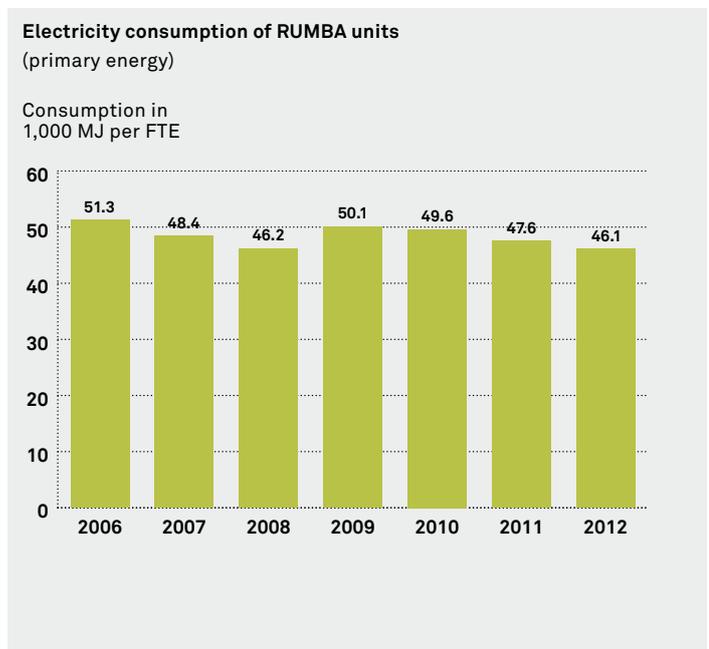
Electricity consumption per full-time equivalent in the RUMBA units was reduced again in the two-year period under review. It fell from 49,557 MJ in 2010 to 45,422 MJ (primary energy) in 2012. This represents a reduction by 8 percent versus 2010, and by 11 percent versus 2006 (see graph below).

Following an increase in 2009 due to the expansion of the IT infrastructure, electricity consumption has meanwhile constantly fallen again. In absolute terms, electricity consumption in the RUMBA units is around 770 TJ (primary energy), which is equivalent to the total consumption of more than 14,000 households (basis: 5,000 kWh per household).

## Measures to reduce electricity consumption

A broad variety of measures are being implemented with the aim of reducing electricity consumption and the resulting burden on the environment.

- New buildings to comply with the MINERGIE-P-ECO standard. Renovations to be carried out in line with exemplary energy-efficiency models (in most cases, MINERGIE certificate).
- Optimisation of systems to be carried out to an increasing extent in order to render the operation of existing buildings as energy-efficient as possible.



- The information and communications technology (ICT) standard for resources and environment (P025), thanks to which only energy-efficient standard equipment is purchased, is to be constantly adapted to technological and legal developments. Its extension to other appliance categories is in preparation.
- The operational standard (ICT resources and environment standard P026) has been revised and updated. This standard ensures that the energy options in IT devices (PCs, monitors, printers, etc.) are correctly configured and that all equipment is operated in the most energy-efficient manner possible. In September 2012, the Federal Office of Information Technology, Systems and Telecommunication (FOITT) correspondingly adapted the standard settings for energy options in workplace computers and laptops.
- Within the scope of the new RUMBA communication concept, efforts aimed at sensitising personnel are being intensified.
- Green IT: Energy efficiency is now fully integrated into the federal data processing centres strategy. For new computer centres, the objective is to ensure that the consumption of peripheral equipment (uninterruptible power supply devices, cooling systems, etc.) does not exceed 30 percent of the electricity consumption of servers. In existing computer centres, renovation work is being carried out where this is deemed purposeful.

## Purchase of electricity from renewable sources

As the central procurement organisation, the FBL is responsible for the purchase of electricity for a large proportion of the Federal Administration. The changeover of the agreements between the FBL and its electricity providers to the supply of 100 percent green power was concluded on schedule. As of the end of 2012, 100 percent of the supplied electricity originated from renewable sources. Electricity with the “hydropower” certificate of origin accounts for around 92.6 percent of the supply, 80 percent of which comes from Switzerland and the rest from other countries in Europe. In addition, the FBL purchases around 7.2 percent of the electricity supply from certified hydropower (e.g. “naturemade star”) and 0.1 percent from wind energy.

General objectives, 2012–2016	Results in 2012	Measures for meeting targets
<ul style="list-style-type: none"> <li>• Annual reduction of electricity consumption in RUMBA units.</li> <li>• Implementation of both ICT resources and environment standards.</li> <li>• Increased share of electricity from renewable sources (procurement / own production).</li> <li>• Reduction of electricity consumption per FTE by 5% by 2016 (reference year, 2006)</li> </ul>	<ul style="list-style-type: none"> <li>• Electricity consumption per FTE in RUMBA units fell by 8.4% versus 2010 and by 4.5% versus 2011.</li> <li>• Revision of the two ICT resources and environment standards concluded on schedule.</li> <li>• Proportion of electricity from renewable sources increased from around 89.8% in 2010 to 100%.</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation of MINERGIE directive</li> <li>• Operational optimisation</li> <li>• Implementation of ICT standards</li> <li>• Sensitisation of personnel to electricity saving</li> <li>• Green IT in computer centres</li> </ul>

# Use of renewable energy

## Audit mandates of the Federal Council

In view of the enormous property inventory of the Federal Administration, the question arises as to whether and how renewable energy can be utilised to a greater extent.

For this reason, in September 2011 the Federal Council entrusted the Federal Office for Buildings and Logistics (FBL) with the task of conducting two audits.

### 1. Use of renewable energy in new and renovated buildings

The first audit is already in progress: Here, since 1 January 2012 the FBL has been indicating the maximum possible utilisation of renewable energy in all mandates for new buildings and planned renovations. Based on the findings, a decision is taken prior to the initiation of each project as to which structural measures are appropriate, economically viable and financeable. For total renovations and major alteration projects, the goal is to always find an exemplary solution in terms of energy efficiency and use of renewable energy. The additional costs that have arisen to date in comparison with the basic legal requirements are around 15 percent for new buildings (MINERGIE®-P-ECO standard) and around 10 percent for total renovations (MINERGIE®-ECO standard).

### 2. Analysis of potential for new renewable energy

The second audit involves an analysis of the potential for intensified production and/or use of new renewable forms of energy (e.g. solar energy, wind energy, biomass, geothermal energy) in existing Federal Administration buildings. Around 700 of the approximately 2,700 objects in the FBL portfolio were examined that are of relevance in terms of their energy consumption and size.

### Electricity potential

With regard to electricity, photovoltaic systems represent the greatest potentials for building-integrated production. It would be possible to produce around 4 GWh of solar power a year on

suitable roofs of existing buildings in the FBL portfolio. This is equivalent to around 4 percent of the Federal Administration's total electricity requirement. With the currently available technology, the costs for these photovoltaic systems amount to around 20 million Swiss francs. For the FBL, without contributions from the remuneration of feed-in at cost scheme, own production would be currently uneconomical in comparison with acquisition via the market.

Up to 1 GWh of green power a year could be produced from other sources (biogas, wind power, etc.), though here the aspects of economic viability and feasibility of implementation would first have to be examined in greater depth. Against this backdrop, the utilisation of photovoltaics currently has to be limited to certain suitable reference locations. In view of developments that are to be anticipated with regard to technology and costs, the situation needs to be periodically re-examined.

### Heat potential

As part of its audit, the FBL calculated the costs of changing from the use of fossil fuels for heat production to renewable energy sources. It found that there is a need for a changeover from fossil fuels to renewable energy in 277 buildings.

In order to ensure that energy is used more efficiently, the option of introducing a more stringent and more costly MINERGIE heat insulation standard is under consideration. As far as cost is concerned, the decisive factor is how quickly a substitution needs to be made, since the necessary funding would have to be provided at an earlier stage. On the other hand, the reduced consumption of heat resulting from more effective insulation and lower-maintenance systems also gives rise to lower costs. Furthermore, in the event of a premature renovation, the associated costs in the next two decades would also be reduced.

The Federal Council is to specify the next steps after it has weighed up all the advantages and disadvantages.



The MeteoSwiss building in Locarno Monti was renovated in 2012. The existing oil heating system and cooling equipment were replaced with a heat pump system with geothermal sensors. In addition, a photovoltaic system with an output of 20 kWp was installed.

**Federal Administration’s use of photovoltaic systems in Switzerland**

Since most of the electricity consumed by the Federal Administration comes from renewable sources (primarily hydropower), the use of electricity produced from photovoltaic systems is not a high priority. And since the financial resources for promoting the use of photovoltaics are not available, the construction of new photovoltaic systems is restricted to a handful of suitable locations. This approach has to be periodically re-examined against the backdrop of ongoing technological developments and the country’s financial situation. Prior to 2012, only six mostly small-scale systems had been installed on the roofs of buildings in the FBL’s real estate portfolio, with a module surface area of 845 square metres and an output of 109 kWp. These systems have so far already produced around 1.1 GWh of electricity.

In the meantime, there has been a significant increase in the use of photovoltaic systems. At the end of 2012, four new – in some cases considerably larger – systems were put into operation.

Location	Output in kWp	Annual production (MWh)
MeteoSwiss, Locarno-Monti	20	20
Swiss National Museum, Affoltern	206	206
Federal Office of Transport, Ittigen	112	112
Federal Tax Administration, Bern	40	40

These systems are expected to produce a total of around 400 MWh per annum, which is equivalent to approximately 0.4 percent of the electricity consumption of the Federal Administration.

The table above does not include systems that are installed on government buildings, but are operated by third parties. The larg-



Installation of the photovoltaic system on the roof of the collections centre of the Swiss National Museum in Affoltern. The output data may be monitored via the following web site: <http://gemperle.solarlog-web.ch/11861.html>.

est of these is operated by “Romande Energie” on the roofs of the Federal Institute of Technology, Lausanne, which when completed will encompass a surface area of 20,000 square metres and have an output of 2 MWp.

**Use of renewable energy abroad**

Although the MINERGIE standard, which was conceived for application in temperate zones, cannot be applied directly abroad, it is nonetheless the case that efficient energy use and, where feasible, the use of renewable energy, are being incorporated into projects to an ever increasing extent.

For example, new buildings in countries with a hot climate are being designed to insulate against heat, and other measures are being taken to protect against direct sunlight. Traditional sun protection and ventilation methods are being adapted and modernised: the new chancellery building in Algiers (see photo, bottom right) is a good example of this. For two new buildings in Bengaluru and New Delhi it is planned to install solar cooling systems, which use solar energy to power an absorption refrigeration machine for the building’s air-conditioning system.

Photovoltaic systems are also being installed to an increasing extent, for example on the roof of the Swiss embassy in Harare, Zimbabwe (cf. page 15, full report), and others have been installed in Bangkok (Thailand) and Pretoria (South Africa). There are several sound reasons for installing photovoltaic systems in these countries:

- There is abundant sunshine.
- The electricity supply is often unreliable and a photovoltaic system means that the building does not have to rely on the local power supply.
- Thermal power plants are frequently used for the production of electricity. Photovoltaic systems can make a significant contribution towards the reduction of CO<sub>2</sub> emissions.

New chancellery building in Algiers, Algeria. The white concrete facade is earthquake-resistant and protects the building shell against sunlight.



# Business travel

## Business travel within RUMBA units

The total number of business trips fell by 18 percent versus 2010. At 4,690 kilometres, the distance per full-time equivalent was below 5,000 for the first time since 2006. The greatest reduction was achieved in the area of air travel (down by 26 percent versus 2010). Road transport was reduced by 8 percent, while rail travel increased slightly (+2 percent). The number of kilometres travelled by rail in 2010 versus the previous environment report had to be adjusted due to problems associated with the input of general rail passes. Further minor adjustments also had to be made as a result of the more accurate input of data relating to FTEs.

In comparison with 2006, overall business travel fell by 8 percent, while the specific figure for air travel was minus 11 percent. While this result is attributable to intensified efforts within numerous RUMBA units, it should not be interpreted as a guarantee for permanently reduced travel activity. In organisational units with activities abroad (e.g. the Federal Department of Foreign Affairs FDFA), the requirement for air travel can fluctuate considerably according to business activity.

Thanks to the RUMBA programme, a variety of measures have already been introduced with the aim of reducing air travel, including smaller delegations, travel by rail instead of by air, use of video-conferencing, better control of travel activity. Here, some RUMBA units achieved remarkable results. Since business travel is also a cost factor, efforts aimed at reducing travel activity are being intensified in numerous RUMBA units. But today, it is unfortunately often the case that air travel is cheaper than rail travel. Here it is necessary to increasingly sensitise employees as well as management personnel. In addition to the travel costs, the question of potential work time in the train and the environmental costs that are not included in the ticket price should also be addressed.

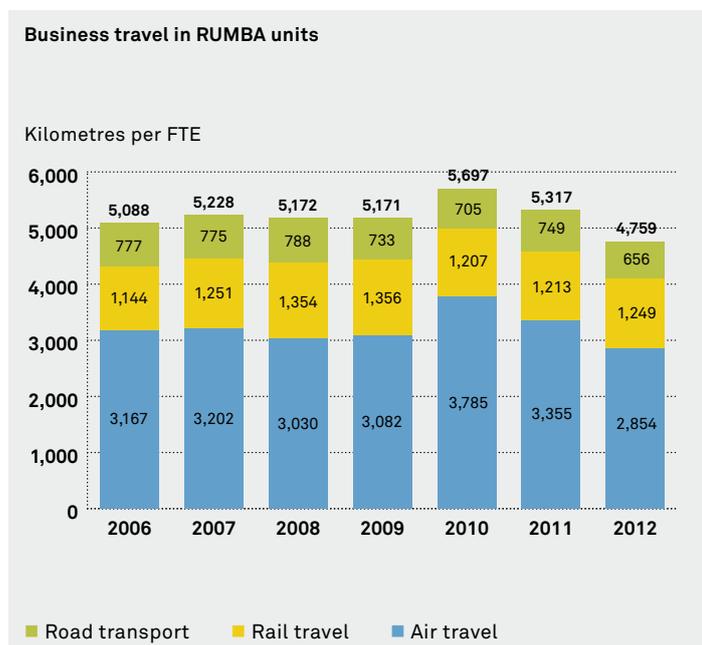
## CO<sub>2</sub> compensation of air travel

CO<sub>2</sub> emissions that are responsible for climate change can be offset through the purchase of certificates from climate protection projects. Since air travel cannot be avoided, in 2012, a total of 11 RUMBA units compensated the CO<sub>2</sub> emissions arising from air travel in full or partially: Federal Department of Foreign Affairs (FDFA), Federal Office of Culture (FOC), Swiss Federal Archives (SFA), State Secretariat for Economic Affairs (SECO), General Secretariat of the Federal Department of the Environment, Transport, Energy and Communications (GS-DETEC), Federal Office for the Environment (FOEN), Federal Office of Communications (OFCOM), Federal Office of Transport (FOT), Federal Office of Civil Aviation (FOCA), Swiss Federal Office of Energy (SFOE) and Directorate of Political Affairs (DPD). In addition, five RUMBA units – Federal Office of Spatial Planning (ARE), Federal Office for the Environment (FOEN), Federal roads office (FEDRO) Federal Office of Agriculture (FOA), MeteoSwiss and the Federal Chancellery) compensated all the RUMBA-relevant CO<sub>2</sub> emissions and have been classified as “climate-neutral”.

A total of around 14,000 tonnes of CO<sub>2</sub>-equivalent were compensated in 2012, above all by the FDFA (40 percent). The share of the latter has been significantly reduced, however, thanks to the fact that fewer employees now travel by air. In 2012, approximately three-quarters of CO<sub>2</sub> emissions were compensated in the area of air travel.

## Business car sharing with “Mobility”

The Federal Administration has renewed the agreement dating from 2006 governing the use of more than 2,600 “Mobility” vehicles at 1,300 locations in Switzerland. In 2012, 20 organisational units made use of “Mobility” vehicles: in all, they travelled 9,145 kilometres on 723 business trips.



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By air or rail? Here, the environment and financial considerations are often in conflict with one another.

# Paper, water and waste

## Paper

### Paper consumption by RUMBA units

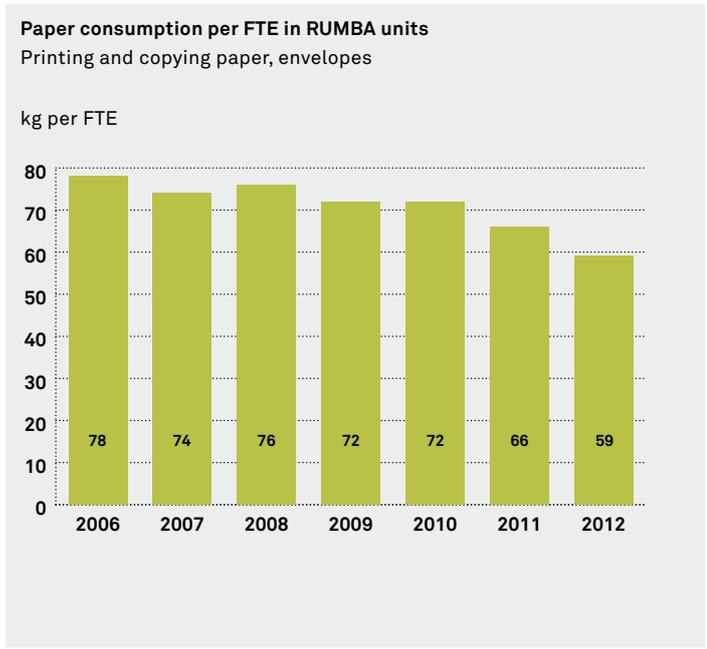
Among the RUMBA units, the consumption of printing and photocopy paper per full-time equivalent fell from 72 kg in 2010 to 59 kg in 2012 (-17 percent) – see graph, bottom left – compared with 78 kg per FTE in 2006. Although we are still a long way away from the paper-free office, the increasing use of electronic business processes and other paper-saving measures appears to be slowly but surely taking effect.

In addition to constant sensitisation measures, new printing concepts are also helping reduce paper consumption. Here, the use of desktop printers is being reduced, and high-performance multi-function appliances (combined copiers, printers and scanners) are being installed at central locations to an increasing extent. In addition, these appliances can be configured so that they only perform a print job when the employee concerned triggers it directly from the device. In this way it is possible to avoid countless erroneous or unnecessary printouts.

### Paper recycling in the RUMBA units

The RUMBA units were able to increase the recycling proportion of paper from 32 percent in 2006 and 40 percent in 2010 to 44 percent in 2012. The proportion of recycling fibres in white paper suitable for archiving was 20 percent as of the middle of 2009, and reached 30 percent in 2012.

In those RUMBA units with the highest reduction in paper consumption, it is often the case that their recycling rate falls again. This is attributable to the fact that it is much easier to reduce the consumption of paper for internal use than for printing documentation intended for external use. Drafts and internal documents are often printed on recycled paper.



### Total paper consumption by the Federal Administration

The Federal Administration's total paper consumption encompasses printing and copying paper, envelopes, printed matter and sanitary paper products. The overall consumption of paper fell by 14 percent versus 2010 and currently amounts to around 3,405 tonnes (see graph, bottom right). Envelopes (-34 percent) and printed matter (-22 percent) accounted for the biggest drops in consumption. The consumption of copying paper fell by 8 percent, while the use of sanitary paper products increased by 7 percent.

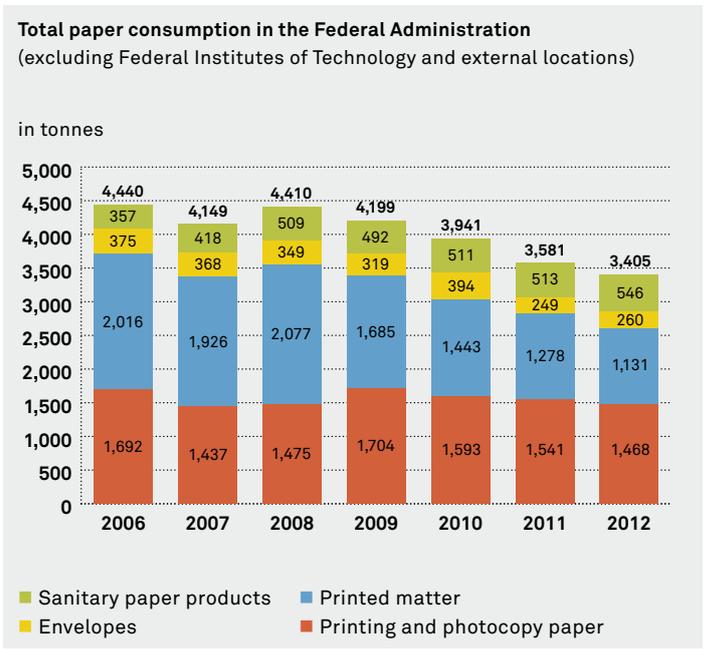
For all paper products, the recycling proportion is currently around 58 percent, or two percentage points higher than the 2010 level. All procured fresh fibre originates from sustainably produced wood (certified by the Forest Stewardship Council, FSC).

## Water resources

In the RUMBA units, the average level of water consumption per FTE was 14.2 cubic metres per annum in 2012 – a reduction by 13 percent versus 2010. This figure represents a decrease per FTE by 25 percent versus the 2006 level.

## Waste

The total volume of waste comprises general waste and separately collected waste paper. In the Federal Administration, the separate collection of waste paper was already introduced more than 10 years ago. In addition, numerous other reusable materials are collected separately and passed on for recycling. In the RUMBA units, the volume of waste per FTE rose slightly versus 2010 (+4 percent) and amounted to around 62 kilograms in 2012. This represents a reduction by around 18 percent versus 2006.



# Further information, members of RUMBA organisations

## Further information

For further information, please contact:

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

Press and Information Service

Bundeshaus Nord

3003 Bern

Phone: +41 31 322 55 11

Fax: +41 31 311 95 76

info@gs-uvek.admin.ch

## References:

The environment reports of individual RUMBA units and additional documentation on the RUMBA programme are available on the RUMBA website ([www.rumba.admin.ch](http://www.rumba.admin.ch)).

All previous environment reports of the Federal Administration can also be downloaded as PDFs from the RUMBA website: [www.rumba.admin.ch](http://www.rumba.admin.ch)

## RUMBA Coordination Group

- *Véronique Gigon (Head)*  
Federal Department of the Environment, Transport,  
Energy and Communications (DETEC)  
[veronique.gigon@gs-uvek.admin.ch](mailto:veronique.gigon@gs-uvek.admin.ch)
- *Brigitte Caretti*  
Federal Department of Home Affairs (FDHA)  
[brigitte.caretti@gs-edi.admin.ch](mailto:brigitte.caretti@gs-edi.admin.ch)
- *Bertrand Comby*  
Federal Department of Justice and Police (FDJP)  
[bertrand.comby@gs-ejpd.admin.ch](mailto:bertrand.comby@gs-ejpd.admin.ch)
- *Daniel Frei*  
Federal Department of Foreign Affairs (FDFA)  
[daniel.frei@eda.admin.ch](mailto:daniel.frei@eda.admin.ch)
- *Giuseppina Jarrobino*  
Federal Department of the Environment, Transport,  
Energy and Communications (DETEC)  
[giuseppina.jarrobino@gs-uvek.admin.ch](mailto:giuseppina.jarrobino@gs-uvek.admin.ch)
- *Aurore Nembrini*  
EPFL, VPPL  
[aurore.nembrini@epfl.ch](mailto:aurore.nembrini@epfl.ch)
- *Markus Rüttimann*  
Federal Department of Defence, Civil Protection and Sport (DDPS)  
[markus.ruettimann@gs-vbs.admin.ch](mailto:markus.ruettimann@gs-vbs.admin.ch)
- *Hans Ulrich Vogt*  
Federal Department of Finance (FDF)  
[hans-ulrich.vogt@gs-efd.admin.ch](mailto:hans-ulrich.vogt@gs-efd.admin.ch)
- *Jürg Zaugg*  
Federal Chancellery  
[juerg.zaugg@bk.admin.ch](mailto:juerg.zaugg@bk.admin.ch)
- *Christof Zeller*  
Federal Department of Economic Affairs, Education  
and Research (EAER)  
[christof.zeller@gs-wbf.admin.ch](mailto:christof.zeller@gs-wbf.admin.ch)

## RUMBA Workgroup

- *Reinhard Friedli (Head)*  
Federal Office for Buildings and Logistics (BBL),  
Real Estate Management  
[reinhard.friedli@bbl.admin.ch](mailto:reinhard.friedli@bbl.admin.ch)
- *Hans Ulrich Boksberger*  
Paul Scherrer Institute, Corporate Services  
[hu.boksberger@psi.ch](mailto:hu.boksberger@psi.ch)
- *Pius Breu*  
Federal Office of Personnel (FOP), head of Basic Development  
[pius.breu@epa.admin.ch](mailto:pius.breu@epa.admin.ch)
- *Pascal Gassner*  
Federal Office of Information Technology, Systems and  
Telecommunication (FOITT), Computer Centre Operation  
[pascal.gassner@bit.admin.ch](mailto:pascal.gassner@bit.admin.ch)
- *Markus Gempeler*  
Federal Office for the Environment (FOEN), head of IT  
and Services  
[markus.gempeler@bafu.admin.ch](mailto:markus.gempeler@bafu.admin.ch)
- *Regula Hochuli*  
Federal Office of Personnel (FOP), head of Corporate Services  
and Communication  
[regula.hochuli@epa.admin.ch](mailto:regula.hochuli@epa.admin.ch)
- *Daniel Peter*  
RUMBA Workgroup, Staff Office,  
Peter Sustainability Consulting GmbH  
[daniel.peter@peter-consulting.ch](mailto:daniel.peter@peter-consulting.ch)
- *Andreas Puder*  
Federal Office for Buildings and Logistics (BBL),  
Project Management  
[andreas.puder@bbl.admin.ch](mailto:andreas.puder@bbl.admin.ch)
- *Aline Tagmann*  
Swiss Federal Office of Energy (SFOE), Energy Issues  
[aline.tagmann@bfe.admin.ch](mailto:aline.tagmann@bfe.admin.ch)
- *Eveline Venanzoni*  
Federal Office for the Environment (FOEN), Public Procurement  
[eveline.venanzoni@bafu.admin.ch](mailto:eveline.venanzoni@bafu.admin.ch)

## RUMBA consultants

- *Rémy Chrétien*  
geelhaarconsulting gmbh  
[rc@geelhaarconsulting.ch](mailto:rc@geelhaarconsulting.ch)
- *Jürg Liechti*  
neosys AG  
[info@neosys.ch](mailto:info@neosys.ch)
- *Angela Mastronardi*  
NET Nowak Energie & Technologie AG  
[angela.mastronardi@netenergy.ch](mailto:angela.mastronardi@netenergy.ch)
- *Bernhard Oettli*  
INFRAS AG  
[bernhard.oettli@infras.ch](mailto:bernhard.oettli@infras.ch)

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