Energy mix

2015 Swisscom climate report in accordance with ISO 14064

Direct and indirect climate impact of Swisscom's activities

(Scope 1, 2 and 3 emissions and savings)

swisscom

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1. Introduction

This greenhouse gas report describes Swisscom's carbon footprint according to the ISO 14064 standard and the Greenhouse Gas Protocol (GHG). The report sets out the direct and indirect climate impact of Swisscom's activities under scope 1, 2 and 3 for the years 2013 to 2015. It also summarises the climate impact of the savings made (directed actions).
Based on this definition, Swisscom has set a goal to achieve a ratio of 2 to 1 in Switzerland by 2020 – that means to obtain twice the reductions in emissions generated by customers and by Swisscom themselves, including the delivery chain.
Overall emissions: It has been determined that Swisscom directly (scope 1) and indirectly (scope 2 and scope 3) emitted 468,170 tons of carbon dioxide equivalent (CO_2 eq.) in the year 2015 (449,604 tons CO_2 eq. without Fastweb, compensated by energy).
Reductions: Within the same time period, Swisscom achieved reductions of 372,060 tons carbon dioxide equivalent (CO_2 eq.) – thanks to Directed Actions – in their operations and those of customers (of which 362,789 tons CO_2 eq. were related to customers, new «scope 4»).
Ratio: The ratio of reductions at customer sites (362,789 tons CO_2 eq.) to their own emissions (449,604 tons CO_2 eq.) is 0.81 in 2015.

The emissions are broken down into 4.4% scope 1 emissions, 2.1% scope 2 emissions (before compensation) and 93.5% scope 3 emissions.
Swisscom's greenhouse gas inventory was independently verified by the Société Générale de Surveillance (SGS). The verification focused on scope 1 and 2 emissions.
The reporting period is the 2015 financial year, from 1 January 2015 to 31 December 2015. Figures from previous years are provided for information purposes.
Swisscom is also participating in the Carbon Disclosure Project (CDP), where it publishes additional information about its CO_2 emissions.

1.1. Reference systems

Swisscom's greenhouse gas inventory and its verification are based on the following standards:

International Standardisation Organisation (ISO)

- **ISO 14064-1:** Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals (ISO 14064-1:2006)
- **ISO 14064-3:** Specification with guidance for the validation and verification of greenhouse gas assertions (ISO 14064-3:2006)

World Resource Institute (WRI)/World Business Council for Sustainable Development (WBCSD)

- **Greenhouse Gas Protocol:** GHG Protocol Corporate Accounting and Reporting Standard

The following standard provides guidance for indirect emissions under scope 3:

- **Greenhouse Gas Protocol:** GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard

The following standard provides guidance for calculating greenhouse gas emissions savings through the use of green ICT services:

- **Greenhouse Gas Protocol:** GHG Protocol Product Life Cycle Accounting and Reporting Standard ICT Sector Guidance

1.2. System boundaries

In line with Swisscom's 2015 Annual Report and Sustainability Report, the system boundaries for the greenhouse gas inventory are the fully consolidated companies in Switzerland (consolidation from shareholding of 50% or higher) (see Sustainability Report 2015, page 70, "Scope of the report" and Note 40, List of Group companies, page 212).
Swisscom monitors the operating processes of its investments and therefore defines the operational boundaries in line with the operational control approach.
These operational boundaries include direct greenhouse gas emissions (scope 1), indirect greenhouse gas emissions generated by energy imports (electricity and district heating) (scope 2) and other indirect emissions from upstream and downstream activities (scope 3 and directed actions). Directed actions are internal efficiency measures and savings achieved through the use of services («scope 4»). The latter are savings in greenhouse gas emissions achieved through the use of services such as video conferencing in place of business trips or efficient data centres that replace dedicated servers at customer premises.
The emissions of foreign subsidiaries such as Fastweb are recorded under scope 3 category 15 (Investments).
The reporting organisations up to the end of 2015 were the following:

- Swisscom (Switzerland) Ltd and subsidiaries in Switzerland
- Swisscom Group Related Businesses and subsidiaries in Switzerland
- Foreign subsidiaries (Fastweb)

1.3. Definition of scopes

Greenhouse gas emissions are broken down by scope. The definitions are given in the GHG Protocol for scope 3 emissions.

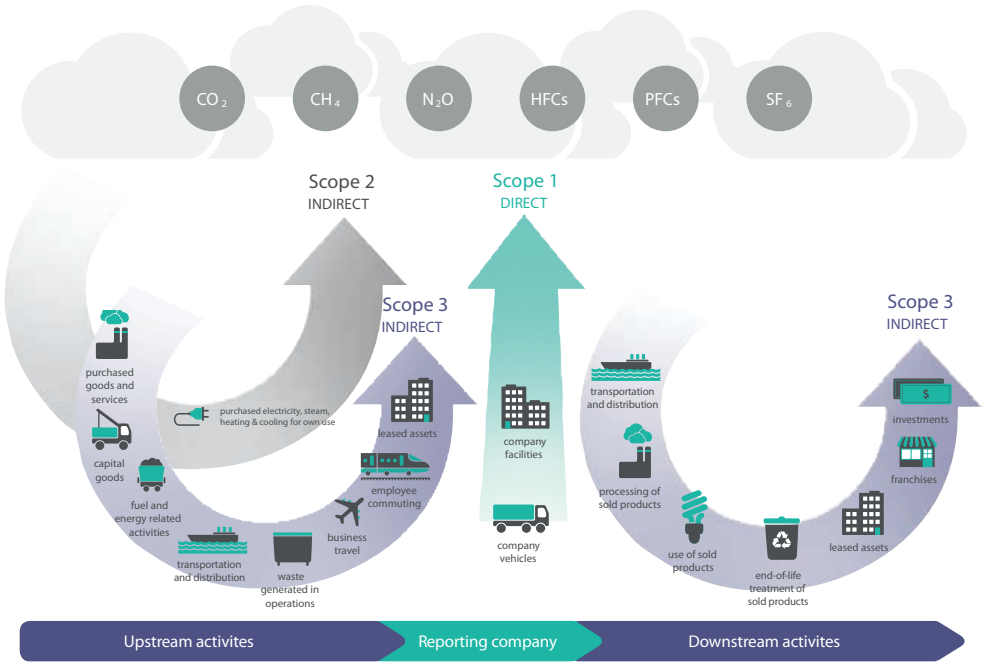


Fig. 1: Greenhouse gas emissions are broken down by scope. Source: GHG Protocol, Corporate Value Chain (scope 3) Accounting and Reporting Standard

Scope 1 and 2 emissions are generated by Swisscom's activities at various locations (multi sites). Relevant scope 3 greenhouse gas emissions are those of the supply chain (categories 1, 2 and 4)[1], of the provision of energy (category 3), waste generated in operations (category 5), business travel (category 6), employee commuting (category 7), new as of 2015: emissions from «leased assets» (retail spaces in this case, category 8) distribution centres to Swisscom Shops or to customers (category 9), consumption of sold products (electricity consumption, category 11), disposal of terminals (category 12) and investments (main Swisscom Group company abroad: Fastweb, category 15), as in previous years.
The other scope 3 categories are not relevant (processing of sold products, category 10, downstream leased assets, category 13 and franchises, category 14).

1.4. Link to Swisscom 2015 Annual Report

Swisscom's energy management, energy consumption and CO_2 emissions are also presented in the 2015 Annual Report under "Climate change and energy efficiency". The figures and information in this report relate to the 2015 reporting year.

1.5. Data quality

In terms of quality, the data collection methods can be broken down into the following categories:

- **Data quality 1:** Emission levels, materials and energy flows are measured directly and the emissions calculated from them. Scope 1 emissions from refrigerants fall into this category.
- **Data quality 2:** Another materials or energy flow is measured or recognised, and the emission levels derived from this based on assumptions. Scope 1 emissions from heating and vehicle fuel consumption, scope 2 emissions from electricity and district heating and scope 3 emissions from purchased goods and services (cat. 1), capital goods (cat. 2), provision of energy (cat. 3), upstream and downstream transportation and distribution in Switzerland (cat. 4 & 9), waste generated in operations (cat. 5), disposal of terminals (cat. 12) and investments (cat. 15) fall into this category.
- **Data quality 3:** Data are estimated, with approximate values or empirical information used. Emissions from business travel (cat. 6), employee commuting (cat. 7), leased assets (cat. 8) and consumption of sold products (cat. 11), along with savings achieved through the use of ICT services for directed actions, fall into this category.

[1] Until 2013, only the inventory change of fleet was taken into account under cat. 2

2. Overview of energy management and overall energy consumption

Swisscom's energy management focuses on boosting the energy efficiency of its operations and using energy with a low climate impact, either by generating its own electricity (solar installations) or by purchasing electricity that is naturemade-certified or has a renewable energy guarantee of origin. A key element of Swisscom's commitment to sustainability is its attempt to reduce the environmental impact of indirect activities by promoting environmentally friendly products, replacing travel with remote services and implementing targeted projects in the supply chain.

2.1. Energy management at Swisscom

In simple terms, Swisscom Energy Management includes the following process steps:

- Ascertainment of energy needs over a specific time period
- Stipulation and approval of energy efficiency goals and measures
- Determination of energy mix, particularly the electricity mix
- Implementation of measures to increase energy efficiency
- Self-production of electricity
- Utilization of heat
- Monitoring and Reporting
- Development and marketing of sustainable ICT products and services

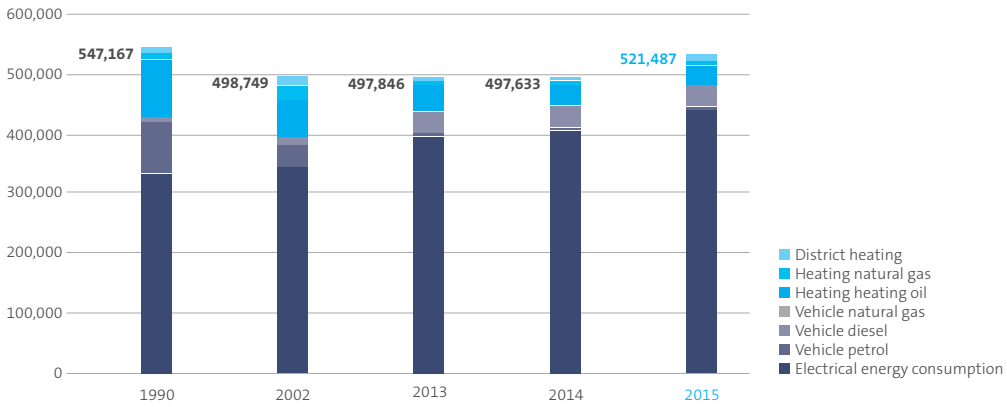
2.2. Operational energy consumption

In 2015, energy consumption (electricity and fuels) rose slightly (521 GWh compared to 498 in 2014). This was a result of growth in the core business and due to a hot summer in 2015. In spite of that, thanks to the implemented efficiency measures and resulting reduction in additional consumption, energy efficiency was increased by 29.6% in 2015 compared to 1/1/2010 (Source: Sustainability Report 2015).
The private usage of vehicles from the Swisscom fleet was taken into consideration and subtracted from the fuel consumption.

Table 1: Energy consumption and mix of Swisscom Ltd in Switzerland according to system boundaries (Source: Swisscom 2015 Sustainability Report)

Energy consumption and mix [MWh]	2013	2014	2015
Electrical energy consumption	398,610	408,453	434,233
Vehicle fuel consumption petrol	6,156	4,542	4,441
Vehicle fuel consumption diesel	35,113	36,069	34,721
Vehicle fuel consumption natural gas	267	812	729
Heating energy consumption heating oil	43,110	34,080	30,376
Heating energy consumption natural gas	7,005	7,324	6,783
Heating energy consumption district heating	7,584	6,352	10,204
Total energy consumption	**497,846**	**497,633**	**521,487**

Chart 1: Development of Swisscom Ltd's energy mix in Switzerland in Megawatthours MWh



2.3. Energy consumption by customers

The electricity consumed by the key terminal devices of Swisscom customers was again recorded in 2015.The focus was on terminal devices that give rise to considerable electricity consumption. These include broadband routers, set-top boxes, cordless phones, handsets and devices for home networking via WLAN or Powerline.

Total energy consumption by end customers amounts to around 269 GWh (2014: 248 GWh) and thus accounts for an additional 51.6% (2014: 49.8%) of Swisscom's energy consumption.

Swisscom is taking steps to reduce the energy consumption of its terminal devices. For example, routers with a standby consumption level some 25% lower than those of older devices were introduced on a wider scale in 2011, while 2012 saw the launch of new set-top boxes with a low-power mode of less than 1 watt. The low-power mode for set-top boxes was activated as standard in 2013 and a prototype developed for a router with an average electricity consumption of 2 watts. In 2014 the new set-top box of the service TV 2.0 was launched on the market. It consumes 40% less electricity than previous models. Additional set-top boxes were sold in 2015

3. Detailed information on scope categories

3.1. Development of scope 1 emissions

In terms of direct emissions we report on emissions from the consumption of fossil fuels and the loss of refrigerants. Other possible sources such as emissions from fire extinguishers are negligible, non-existent (halon) or outside Swisscom's control (SF_6).
Scope 1 emissions in 2015 from heating fuels, vehicle fuels and refrigerants are lower as in the previous year. This is due to building renovations and to the use of new more fuel-efficient vehicles (reduction of average CO_2 emissions for fleet cars).
Emissions from oil consumption for stationary emergency power systems are reported separately. CO_2 from the combustion processes was included up to 2014, but not CH_4 and N_2O emissions (missing materiality). As of 2015, CH_4 and N_2O emissions were included, in spite of extremely low materiality. In this way, comparability over the last three years still exists.
Emissions from the loss of refrigerants in cooling systems are also reported separately. Swisscom reports these emissions separately for management reasons. The systems are critical for network operation and are dealt with in a separate efficiency programme.

Table 2: Details of scope 1 emissions

Scope 1 CO_2 eq. emissions [tonnes] from:	2013	2014	2015
Vehicle fuel consumption petrol	1,609	1,196	1,229
Vehicle fuel consumption diesel	9,277	9,529	9,305
Vehicle fuel consumption natural gas	45	102	126
Heating energy consumption heating oil	11,279	8,867	7,867
Heating oil consumption (emergency power systems)	248	245	255
Heating energy consumption natural gas	1,378	1,441	1,334
Scope 1 CO_2 eq. emissions (from energy consumption) [1]	**23,835**	**21,380**	**20,115**
Scope 1 CO_2 eq. emissions (from refrigerants)	226	271	503
Scope 1 CO_2 eq. emissions	**24,061**	**21,652**	**20,618**

[1] New: from 2015 the CO_2^e from CH_4 and N_2O emissions are calculated

3.2. Development of scope 2 emissions

Since 1 January 2010 Swisscom has obtained 100% of its electricity from a mix of renewable energy sources, mostly domestic hydroelectricity with a proportion of solar and wind power. This has led to a drastic reduction in scope 2 emissions.
Efficiency measures have also helped prevent scope 2 emissions, reducing operational consumption by a total of 20.4 GWh (2014: 22.8 GWh). The most effective measures have been the virtualisation of servers, the Mistral fresh-air cooling method and a technology swap in the whole mobile network.
Finally, Swisscom also generates electricity from photovoltaic installations. Total output of 1,281 kW had been installed by the end of 2015, producing an estimated 950 MWh (700 MWh in 2014).
Swisscom reports here the hypothetical scope 2 emissions prior to compensation («location-based» approach) and the effective emissions after the compensation («market based» approach). The use of certified electricity reduces CO_2 emissions from electricity to the indirect emissions (provision of electricity) shown in section 3.3. Swisscom uses Guarantees of Origin in two quality levels (conventional and best-quality as naturemade star certificates), which meet the quality criteria for verification. A residual-mix calculation do not exists for GoO of hydropower.

Table 3: Emission factors considered for electricity (source: myclimate calculated according to ecoinvent)

In g CO_2 eq. / kWh	Validity	Emission factor (total)	Scope 2 electricity emissions (direct)	Scope 3 electricity emissions (indirect)
Electricity				
Supplier electricity mix Switzerland	from 2012	91.47	21.35	70.12
Certified electricity	from 2012	15.6	0	15.6

Up to 2014, Swisscom observed an average emission factor of 125g CO_2/kWh for district heating. As of 2015, a precisely determined emission factor of 75.95g CO_2/kWh is being applied.

Table 4: Details of scope 2 emissions
Scope 2 emissions are converted using the factors in Table 3.

Scope 2 CO_2 eq. emissions [tonnes] from:	2013	2014	2015
Electrical energy consumption (supplier electricity mix Switzerland)	8,510	8,720	9,271
Electrical energy consumption (certified electricity)	–	–	–
Heating energy consumption district heating	948	794	765
Scope 2 CO_2 eq. emissions (with certified electricity)	**948**	**794**	**765**

3.3. Development of scope 3 emissions

A model for calculating supply chain emissions was drawn up with the life cycle specialists from the treeze company. Supply chain emissions make a significantly share of scope 3 emissions.

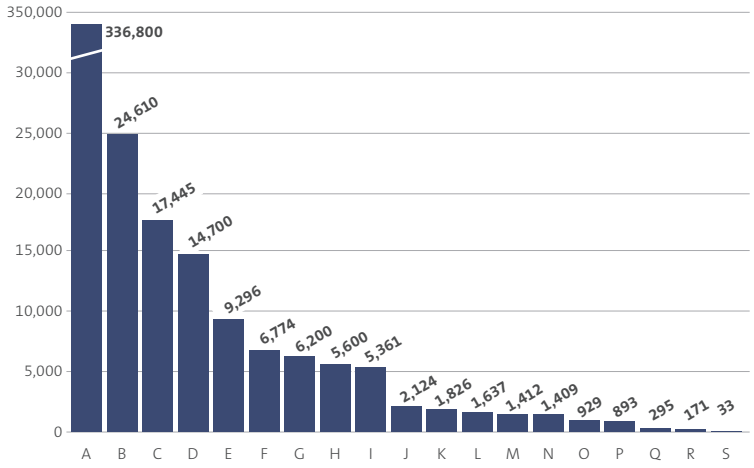
Table 5: Details of scope 3 emissions

Scope 3 CO_2 eq. emissions (tonnes) from:	2013	2014	2015
Cat. 1 Purchased goods and services	274,300	304,200	336,800
Cat. 2 Capital goods	15,115	12,900	6,200
Cat. 3 Provision of electricity	6,218	6,372	6,774
Cat. 3 Provision of vehicle fuels (petrol + diesel)[1]	1,800	1,741	1,637
Cat. 3 Provision of heating oil	2,142	1,694	1,409
Cat. 3 Provision of natural gas	385	403	295
Cat. 4 Upstream transportation and distribution	11,100	11,800	14,700
Cat. 5 Waste generated in operations	618	1,127	2,124
Cat. 6 Rail travel in Switzerland	105	106	171
Cat. 6 International rail travel	30	33	33
Cat. 6 European flights	720	802	893
Cat. 6 Intercontinental flights	1,594	1,647	1,412
Cat. 6 Car journeys to meetings	1,169	983	929
Cat. 7 Employee commuting (public transport)	1,719	1,750	1,826
Cat. 7 Employee commuting (car)	20,325	15,669	17,445
Cat. 9 Downstream transportation & distribution	2,800	5,600	5,600
Cat. 11 Use of sold products	22,976	22,704	24,610
Cat. 12 End of life treatment of sold products	7,419	7,167	5,361
Cat. 15 Investments	52,644	52,645	9,296
Scope 3 CO_2 eq. emissions	**423,180**	**449,343**	**437,516**

[1] Vehicle fuel consumption without private use of Swisscom's fleet

NB: Categories 10, 13 and 14 are not relevant. The sharp decrease in category 15 is due to the use of renewable electricity at Fastweb.

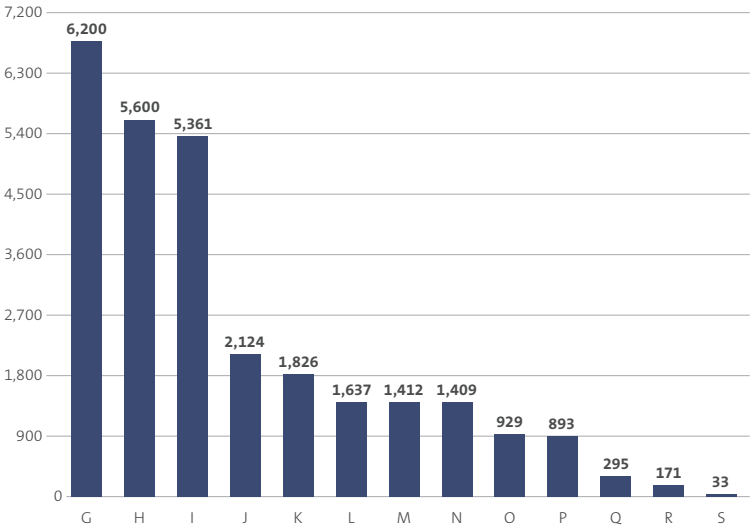
Chart 2: All scope 3 emissions by GHG category in tonnes CO_2 eq



A = Cat. 1 Purchased goods and services
B = Cat. 11 Consumption of sold products
C = Cat. 7 Employee commuting (car)
D = Cat. 4 Upstream transportation and distribution
E = Cat. 15 Investments
F = Cat. 3 Provision of electricity
G = Cat. 2 Capital goods
H = Cat. 9 Downstream transportation & distribution
I = Cat. 12 End of life treatment of sold products
J = Cat. 5 Waste generated in operations
K = Cat. 7 Employee commuting (public transport)
L = Cat. 3 Provision of vehicle fuels (petrol + diesel)
M = Cat. 6 Intercontinental flights
N = Cat. 3 Provision of heating oil
O = Cat. 6 Car journeys to meetings
P = Cat. 6 European flights
Q = Cat. 3 Provision of natural gas
R = Cat. 6 Rail travel in Switzerland
S = Cat. 6 International rail travel

NB Chart 3 provides a more detailed view of the categories to the right of category 3 Provision of electricity

Chart 3: Selected scope 3 emissions by GHG category in tonnes CO_2 eq



G = Cat. 2 Capital goods
H = Cat. 9 Downstream transportation & distribution
I = Cat. 12 End of life treatment of sold products
J = Cat. 5 Waste generated in operations
K = Cat. 7 Employee commuting (public transport)
L = Cat. 3 Provision of vehicle fuels (petrol + diesel)
M = Cat. 6 Intercontinental flights
N = Cat. 3 Provision of heating oil
O = Cat. 6 Car journeys to meetings
P = Cat. 6 European flights
Q = Cat. 3 Provision of natural gas
R = Cat. 6 Rail travel in Switzerland
S = Cat. 6 International rail travel

4. Savings (directed actions)

4.1. Methodology

The impact of measures that lead to energy savings and reduced greenhouse gas emissions are shown under directed actions. These relate in part to savings at customer level through the use of green ICT services («scope 4») compared with the situation where such services are not used.
This section also lists the impact of measures that lead to a reduction in the consumption of heating and vehicle fuels and of electricity at Swisscom. Reductions in greenhouse gas emissions through the use of green ICT services are calculated using the first draft of the GHG Protocol Product Life Cycle Accounting and Reporting Standard ICT Sector Guidance.

Table 6: Measures to reduce emissions (directed actions)

Scope	Directed Actions
Scope 1 emissions	Increase efficiency, reduce the need (target 2: 1) > Fleet roadmap down to 95 g CO_2 / km in 2020 > Route planning and coordinated deployment of personnel (Work Force Management) > Building renovations
Scope 2 emissions	Increase efficiency (+ 25% by 2015 from 2010; + 35% by 2020 from 2016) Implementation of a program to increase energy efficiency > Compensation with GoOs and green electricity labelled naturemade star > Cooling of networks with fresh air (Mistral) > Virtualization of servers > Low PUE of data centers
Scope 3 cat. 1 Purchased goods	Selective measures in the supply chain Integration of suppliers in the CDP supply chain module
Scope 3 Cat. 2 capital goods	Selective measures in the supply chain Integration of suppliers in the CDP supply chain module
Scope 3 cat. 3 Provision of electricity	Increase efficiency (+ 25% by 2015 from 2010; + 35% by 2020 from 2016) Most important measure: cooling of networks with fresh air (Mistral)
Scope 3 cat. 3 Provision of vehicle fuels (petrol+diesel)	Increasing efficiency, reducing the need (-3 g CO_2 / km per year) Most important measure: Fleet roadmap down to 95 g CO_2 / km in 2020
Scope 3 cat. 3 Provision of heating oil	Increase efficiency, reduce the need (target 2: 1) Most important measure: building renovations
Scope 3 cat. 3 Provision of natural gas	Increase efficiency, reduce the need (target 2: 1) Most important measure: building renovations
Scope 3 Cat 4 Upstream Transportation and Distribution	Selective measures in the supply chain Integration of suppliers in the CDP supply chain module
Scope 3 cat. 5 Waste generated in operations	Waste separation and recycling, local disposal
Scope 3 cat. 6 Rail travel in Switzerland	Replacement with virtual mobility (Unified Communication and Collaboration (UCC)), telepresence meetings
Scope 3 cat. 6 International rail travel	Same
Scope 3 cat. 6 European flights	Same, plus stricter approval process for flights
Scope 3 cat. 6 Intercontinental flights	Same, plus stricter approval process for flights
Scope 3 cat. 6 Car journeys to meetings	Replacement with telepresence/videoconferencing
Scope 3 cat. 7 Employee commuting (public transport)	Promotion of home office (remote working), home office guidelines
Scope 3 cat. 7 Employee commuting (car)	Promotion of home office (remote working), home office guidelines, reduction of parking spaces, promotion of public transport
Scope 3 cat. 8 Upstream leased assets (shops)	Selective measures in the supply chain
Scope 3 cat. 9 Downstream transportation and distribution (to the customers)	Selective measures in the supply chain Integration of suppliers in the CDP supply chain module
Scope 3 cat. 11 Consumption of sold products	Reduction of energy consumption of the devices > Routers with a 25% lower standby compared to older devices > "1-Watt" set-top boxes
Scope 3 cat. 12 Disposal of terminals	Sorting and recycling, local elimination, Program Mobile Aid (re-use)
Scope 3 cat. 15 Investments	Environmental management at subsidiary Fastweb, aims to reduce of energy consumption and use green electricity

4.2. Savings or increased efficiency in operation

There are three types of operational savings:

a) Savings resulting from operational measures under the terms of the target agreement on CO_2 reduction and energy efficiency improvements concluded with the Energy Agency for Industry (EnAW):
   Swisscom reports annually on its carbon footprint under the terms of the target agreement with the Energy Agency for Industry (EnAW), which was first signed in 2004 and renewed at the end of 2013. This new target agreement runs to the end of 2020 and aims to increase energy efficiency. It is based on the Swiss CO_2 Act, in force since 1 May 2000, and Energy Act, in force since 1 January 1999. Execution of the agreement is governed by the implementing directive issued by the Federal Offices for the Environment and Energy on 2 July 2007. The base year 1990 is defined as the reference year for calculating the reduction in CO_2 emissions (as absolute value in t/a).
   The aim of the new target agreement is to increase in energy efficiency by 35% to 2020 compared to 1 January 2016. An interim target of a 25% increase in energy efficiency compared with 1 January 2010 has also been set for the period up to the end of 2015. This goal is achieved by the end of 2014 (26.4%). This goal was exceeded by the end of 2015 (29.6%). In addition, Swisscom reduced its direct CO_2 emissions (scope 1) from the combustion of fossil energies by a total of 62.3% compared to the reference year of 1990 or by 23.5% compared with 1 January 2010.
   The operational efficiency measures are set out in a catalogue of measures and implemented on an ongoing basis. There are 17 registered measures designed to help boost efficiency. The three most effective measures are the renovation of the entire mobile network with more energy efficient infrastructure, the use of fresh-air cooling for networks and the virtualisation of servers in data centres.
b) Savings through the use of green electricity and guarantees of origin:
   Since 2010, Swisscom has offset the proportion of nuclear power, electricity of unknown origin and electricity from fossil fuels in its electricity mix or used for its network infrastructure and the buildings it manages by purchasing guarantees of origin. As a result, Swisscom once again used 100% renewable electricity in 2015, independently certified.
   Swisscom purchased in 2015 18.5 GWh of naturemade star green electricity from solar (14.5 GWh) and wind power (4 GWh).
   The use of certified electricity reduces CO_2 emissions from electricity to indirect emissions (see table 4 details of scope 2 emissions).
c) Savings through own electricity generation:
   Where economically feasible, Swisscom constructs its own solar installations in order to generate solar power. Total output of 1,281 kWp had been installed by the end of 2015.

4.3. Savings at customer level through green ICT

Green ICT offers five types of savings:

a) Savings through services that help customers to replace some of their travel. These include conferencing services, UCC and remote access, which permit mobile working and the transmission of images, data and sound over long distances. Swisscom also provides machine-to-machine applications to help optimise logistics systems and reduce the number of transport kilometres travelled by logistics fleets.
b) Savings through services that enable customers to give up their own data centres and servers and outsource them to highly efficient data centres operated via predominantly virtual servers. These Swisscom data centres are also operated using 100% renewable energy, leading to further reductions in greenhouse gas emissions.
c) Savings through services that enable customers to control devices or vehicles more intelligently via machine-to-machine connections. This includes the optimisation of logistics systems by optimising routing or monitoring the levels of oil tanks, waste containers, etc. However, it also includes the remote controlling of heating in holiday apartments.
d) Savings through dematerialisation services. This refers to customers replacing previously physical items such as CDs, DVDs or magazines with data transmitted via a broadband connection. However, dematerialisations also includes reductions in shopping trips due to online ordering and in retail space as physical shops are replaced by virtual ones.
e) Savings through services to extend the useful life of mobile handsets. The Swisscom Mobile Aid project recycles used but still usable handsets for further use in developing countries. This extends their useful life and gives people in developing countries access to low-cost smartphones.
f) Savings through services that help to reduce paper consumption. These include electronic billing and the electronic trading platform Conextrade, on which companies can handle all their transactions electronically. Further paper savings are achieved with the Dynamic Printing service, which has significantly reduced paper waste in many cases through intelligent zone concepts and new features such as follow-me printing (documents are not printed until the user is at the printer).

The savings achieved through green ICT services are listed in the table below. They amount to some 362,789 tonnes (2014: 323,619 tonnes) of equivalent CO_2. The calculation method was developed with the myclimate foundation.
Compared to last year the savings are greater, especially for two reasons:

- The number of accounts UCC (Unified Collaboration & Communication) has risen further in 2015, thanks to marketing campaigns.
- The savings from dematerialisation of goods, shopping trips and shop areas through e-commerce were considered on the basis of a new study by the University of St Gall. This study estimates the revenue with e-commerce in Switzerland higher than in the previous year; the savings are calculated accordingly. The current approach is in line with that used by companies such as British Telecom.

Table 7: Savings through the use of green ICT services

Area of green ICT	**Service group**	**Service**	**2013**	**2014**	**2015**
Reducing travel	Virtual conferences	Conferencing service	46,146	44,015	35,648
		MCC/UCC	4,019	45,152	72,525
	Home office	Home office services	116,826	97,761	112,990
	Machine-to-Machine	Logistics, heating	12,173	14,250	14,817
Saving energy	Data centre services	Hosting	7,664	9,338	11,730
		Housing	1,517	1,664	2,236
Saving paper	Saving paper	e-bill, Conextrade, printing	955	1,083	1,524
Dematerialisation		Data carriers and retail space	95,596	109,331	109,542
Mobile Aid			1,025	1,025	1,775
Total CO_2 eq. Green ICT Savings			**285,922**	**323,619**	**362,789**

5. Summary of direct, indirect emissions and savings

Scope 1 emissions from energy consumption have been reduced by 23.5% compared with 1 January 2010 (18.7% in 2014), ahead of the target of a 12% reduction by the end of 2015. This success can be attributed to restructuring and operational optimization of buildings and fleet.

Table 8: Summary of scope 1, 2 and 3 emissions

CO_2 eq. emissions [tonnes]	2013	2014	2015
Scope 1 (from consumption of fossil energies)	23,835	21,380	20,115
Scope 1 (from refrigerants)	226	271	503
Scope 2 (from electricity)	8,510	8,720	9,271
Scope 2 (from district heating)	948	794	765
Total Scopes 1, 2	**33,519**	**31,166**	**30,654**
Scope 3	423,180	449,343	437,516
Total Scopes 1, 2, 3	**456,699**	**480,509**	**468,170**

Table 9: Impact of directed actions

Directed Actions	2013	2014	2015
Savings by customers thanks to Green ICT services	285,922	323,619	362,789
Electricity offset with guarantees of origin/green electricity	8,510	8,720	9,271
Total Directed Action	**294,432**	**332,339**	**372,060**

N.B. The reductions in energy consumption and emissions through increased energy efficiency (4.2 a) are already taken into account and not counted a second time here.

Table 10: Ratio of savings to emissions

Target 2:1	2013	2014	2015
Savings by customers thanks to Green ICT services	285,922	323,619	362,789
Emissions (electricity compensated)	395,545	419,143	449,604
Ratio savings to emissions (without electricity and Fastweb)	**0.72**	**0.77**	0.81

The ratio of savings by customers to the emissions Swisscom (excluding Fastweb, with electricity compensated) was 0.81 in the 2015.

6. Explanations and assumptions

6.1. Base year

The base year for scope 1 and 2 emissions is 2002.
2002 is also the start year for the first target agreement with the Energy Agency for Industry (EnAW). Swisscom has energy data for the base year, which have been published.
There have been no material changes in the reporting boundaries since 2002. Swisscom Ltd is still engaged in the same activities as in 2002, with any changes (purchase or sale of small companies, slight changes in the real estate structure) immaterial in terms of CO_2 emissions.

6.2. Recalculation of the base year emissions

Significant changes in the scope of consolidation or application of new or corrected emission factors that would cause a change in greenhouse gas emissions by more than 10% (compared to the emissions in the same year before the amendments) should generate a recalculation of the emissions in the base year in accordance to the standard.
Scope 1: No significant change in the consolidation scope in 2015.
Scope 2: New emissions factor for district heating was applied as of 2015.
Scope 3: The emissions factors were modified as per ecoinvent, Version 3.1. These revisions have an effect on scope 3 emissions, category 5 (waste disposal), category 6 (Business Travel) and category 7 (commuting), which were calculated accordingly. New intensity factors in the delivery chain for 2015 were defined. These revisions have an effect on scope 3 emissions, category 1, 2 and 4 (to be seen as delivery chain), which were calculated accordingly.
The ensuing adjustments to the emissions are below 10% and do not require re-calculation of the emissions in the base year (2002).

6.3. Activities and energy consumption

We take the following consumption of fossil fuels into account under scope 1:
- All fuel used to operate the company's own vehicles: In the case of allocated vehicles, this covers business journeys to customers and switching centres (regional exchanges, base stations, street cabinets, etc.), while in the case of pool vehicles, it covers journeys to meetings.
- Fuel used to heat our buildings
- Fuel for emergency power systems

We also included emissions from coolant refilling in scope 1 (direct emissions).

Under scope 2 (indirect emissions) we take into account emissions from electricity consumption for the operation of:
- all types of switching equipment (access (DSL, FTTH, FTTS) and core network)
- base stations (mobile) and transmitter stations (radio and television)
- buildings' air-conditioning, lighting and ventilation systems
- shops (lighting and ventilation)
- computerised office workplaces
- data centres
- Swisscom TV (servers)

We take emissions from district heating into account under scope 2 (indirect emissions).

We take the following emissions into account under scope 3:

- **Category 1:** Purchased goods
- **Category 2:** Capital goods, in our case until 2012 changes in the vehicle fleet during the year (vehicles purchased minus those sold)
- **Category 3:** Provision of fuel- and energy (electricity, vehicle and heating fuels)
- **Category 4:** upstream transportation and distribution from places of origin to distribution centres in Switzerland
- **Category 5:** Waste generated in operations
- **Category 6:** Flights
- **Category 6:** Rail travel
- **Category 6:** Journeys to meetings in private cars
- **Category 7:** Employee commuting
- **Category 8:** Retail space including shops which are located outside our buildings (75% of our shops or 102 shops).
- **Category 9:** Downstream transportation and distribution from distribution centres in Switzerland to customers. Emissions are still estimated at the date of the climate report. The estimate refers to the value of the previous year, corrected for a slight increase in emissions.
- **Category 11:** Consumption of sold products
- **Category 12:** Disposal of terminals
- **Category 15:** Investments, Fastweb in Italy

All other scope 3 categories according to the GHG Protocol, namely categories 10 (processing of sold products), 13 (downstream leased assets) and 14 (franchises), are not relevant for Swisscom.

6.4. Biomass, removal, CO_2 sinks

There is no significant burning of biomass within the operational scope of the company, nor any use of removal or sinks. A telecom exchange in Twann (Canton of Berne) was renovated in 2014 and is heated with wood pellets (biomass). The emissions from the few kilograms of wood were not included in 2015.

6.5. Considered greenhouse gas inventory

A greenhouse gas inventory in accordance with ISO 14064 includes the emissions of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6). This selection coincides with the requirements of the Kyoto Protocol. Swisscom reports on its emissions in aggregated form of CO_2 equivalents for CO_2, CH_4 and N_xO. Refrigerants are listed separately.

- **CO_2:** From burning fossil fuels and fuel (heating and mobility) or from the production processes of power
- **CH_4:** From burning fossil fuels and fuel (heating and mobility)
- **N_2O:** From burning fossil fuels and fuel (heating and mobility)
- **HFC's:** used as refrigerants in refrigeration systems
- **PFC's:** use as a refrigerant and as an insulating agent

Not considered in the greenhouse gas inventory

- **SF_6:** These emissions are beyond the control of Swisscom
- **Other:** This emissions from fire extinguishers are negligible or non-existent (Halon)

6.6. Upstream and downstream levels for scope 3 analysis

The analysis of scope 3 emissions takes into account not only direct operations but also the upstream and downstream activities in connection with the manufacture of vehicles (trains and cars) and infrastructure (road and rail), which are optional under the GHG Protocol standard.

6.7. Emission factors

We use for scope 1 emissions from the consumption of heating oil, petrol, diesel and natural gas the emission factors of the ecoinvent life cycle inventory database v3.1 and until 2014 the official emission factors published by the Federal Office for the Environment (FOEN) "CO_2 emission factors for the Swiss greenhouse gas inventory" for. These emission factors are calculated for CO_2. The CO_2 to CO_2 eq. difference for these fuels is relatively small and can be ignored.

For scope 1 emissions from refrigerants we use the corresponding global warming potential with a horizon of 100 years (GWP100, IPCC 2013) and report the emissions in tonnes of CO_2 eq.

Other sources of emissions such as emissions from fire extinguishers are negligible, non-existent (halon) or outside Swisscom's control (SF_6).

The emission factors set out in Table 3 are used for scope 2 emissions from electricity, with the emissions reported in tonnes of CO_2 eq. These emission factors has been calculated for the individual scopes by myclimate on the basis of the new study on the mix Switzerland (environmental balance mix Switzerland 2011 published on 01.06.2015) and on basis of the data from ecoinvent v3.1.

Swisscom applies a typical, average emissions factor for Scope 2 emissions from district heating of 125 g CO_2 eq./kWh for the years up to 2014, and 75.94 g CO_2 eq./kWh as of 2015. Swisscom obtains its district heating from various heating networks, which use individual emissions factors determined by myclimate in the fall of 2015.

For scope 3 emissions we use the emission factors from the ecoinvent life cycle inventory database v2.2 or wherever possible, from the new version 3.1.

Specific emission factors from the ecoinvent v3.1 are derived for the following:

- Determination of emissions in the supply chain (categories 1, 2 and 4). These emission factors have been calculated specifically for Swisscom by the company Treeze based on the data from ecoinvent v2.2 for individual scopes (Methodology for the determination of greenhouse gas emissions in the supply chain of the ICT sector).
- Provision of electricity (category 3, table 3), disposal of waste (category 5), mobility (categories 6 and 7), use of devices (category 11) and for the disposal of terminals (category 12). These emission factors have been calculated for the individual scopes by myclimate on the basis of data from ecoinvent v3.1.
- Supply chain emissions of the category 9, downstream transportation and distribution to the customers. These emission factors have been calculated by the logistic partner (Die Post).
- Savings at customer level thanks to green ICT. These emission factors have been calculated specifically for Swisscom for the individual scopes by myclimate on the basis of data from ecoinvent v3.1, of different studies and on the base of Swisscom own data.

6.8. References

6.8.1. Other reports

- Swisscom Sustainability Report 2015: http://report.swisscom.ch/en
- Swisscom Climate Reports 2013 and 2014
- Carbon Disclosure Project (CDP): https://www.cdproject.net/

6.8.2. Legislation and directives

- Swiss Federal Act of 8 October 1999 on the Reduction of CO_2 emissions (CO_2 Act); SR 641.71; http://www.admin.ch/opc/en/classified-compilation/20091310/index.html
- Swiss Federal Energy Act of 26 June 1998; SR 730.0 www.admin.ch/ch/d/sr/c730_0.html (not available in English)
- Implementing directive: Obligations and target agreements, directive of the FOEN and FOE to the Energy Agency for Industry (EnAW) on the development of proposals to limit emissions and reduce energy consumption and on the implementation of the obligations and target agreements (not available in English). Berne, 2 July 2007, amended 9 November 2011
- Appendix to the implementing directive: Obligations and target agreements, description of target agreement models, reporting. Berne, 2 July 2007, amended 9 November 2011

6.8.3. Emission factors

- CO_2 emission factors for the Swiss greenhouse gas inventory: http://www.bafu.admin.ch/klima/09570/index.html?lang=en
- ecoinvent life cycle inventory database v2.2 (2010) und v3.1: www.ecoinvent.org
- Mobitool: www.mobitool.ch. The Mobitool database takes its data from the ecoinvent life cycle inventory database v2.2 (2010).
- Report on the methodology used to monitor Swisscom's supply chain greenhouse gas emissions (scope 3) (6.2.2014). Swisscom internal report, not published.
- Environmental performance mix Switzerland 2011 Philippe Stolz, Rolf Frischknecht: treeze Ltd. Federal Office for the Environment, 06.01.2015
- Emission factors for Directed Actions (savings): «Green ICT effect». Swisscom internal document, not published.

7. Responsibility and further questions

Swisscom Group Communication & Responsibility
Corporate Responsibility
3050 Berne
Contact: Res Witschi / Pascal Salina
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8. Verification

Greenhouse Gas Verification Statement Number CCP.ISO1406401.(1500346).2015/04/16

The inventory of Greenhouse Gas emissions in the period 01/01/2015 – 31/12/2015 for
Swisscom AG

Alte Tiefenaustrasse 6, CH-3050 Bern

has been verified in accordance with ISO 14064-3:2006 as meeting the requirements of

ISO 14064-1 and
WRI/WBCSD GHG Protocol – A Corporate Accounting and Reporting Standard

To represent a total amount of:
30'654 tCO_2e (Scope 1+2; gross location-based emissions for electricity)
21'383 tCO_2e (Scope 1+2; gross market-based emissions for electricity)
437'516 tCO_2e (Scope 3 emissions)

For the following activities
Network and transmission infrastructure for telecommunication operation, data centre and administration of Swisscom AG in Switzerland

Lead Assessor: Daniel Aegerter
Technical Reviewer: Peter Simmonds
Authorised by:

Jonathan Hall
Business Manager
SGS United Kingdom Ltd
Verification Statement Date 15th April 2016
This Statement is not valid without the full verification scope, objectives, criteria and conclusion available on pages 2 to 4 of this Statement.

Schedule Accompanying Greenhouse Gas Verification Statement Number CCP.ISO1406401.(1500346).2015/04/16

Brief Description of Verification Process
SGS has been contracted by Swisscom AG (hereinafter referred to as "Swisscom") for the verification of direct and indirect carbon dioxide (CO_2) equivalent emissions as provided by Swisscom, Alte Tiefenaustrasse 6, in their GHG Assertion in the form of a Greenhouse Gas Emissions Report covering CO_2 equivalent emissions.

Roles and responsibilities
The management of Swisscom is responsible for the organization's GHG information system, the development and maintenance of records and reporting procedures in accordance with that system, including the calculation and determination of GHG emissions information and the reported GHG emissions.

It is SGS' responsibility to express an independent GHG verification opinion on the emissions as provided in the Swisscom GHG Assertion for the period 01/01/2015 – 31/12/2015.

SGS conducted a third party verification following the requirements of ISO 14064-3: 2006 of the provided CO_2 equivalent assertion in the period November 2015 to March 2016.

The assessment included a desk review and site visits at the headquarters in Worblaufen. The verification was based on the verification scope, objectives and criteria as agreed between Swisscom and SGS on 14/04/2015.

Level of Assurance
The level of assurance agreed is that of reasonable assurance for Scope 1 and 2 emissions, and that of limited assurance for Scope 3 emissions.

Scope
Swisscom has commissioned an independent verification by SGS of reported CO_2 equivalent emissions arising from their activities, to establish conformance with the requirements of ISO 14064-1:2006 and "GHG Protocol Company Accounting and Reporting Standard" within the scope of the verification as outlined below. Data and information supporting the CO_2 equivalent assertion were historical in nature and proven by evidence.

This engagement covers verification of emissions from anthropogenic sources of greenhouse gases included within the organization's boundary and meets the requirements of ISO 14064-3:2006.

- The organizational boundary was established following the operational control approach.
- Title or description of activities: Network and transmission infrastructure for telecommunication operation, data centre and administration
- Location/boundary of the activities: Switzerland
- Physical infrastructure, activities, technologies and processes of the organization: Network and transmission infrastructure for telecommunication operation, data centre and administration.

- GHG sources, sinks and/or reservoirs included:
  Scope 1 - stationary combustion, mobile combustion, fugitive emissions;
  Scope 2 – purchased electricity and district heat;
  Scope 3 – purchased goods and services, capital goods, energy upstream emissions, upstream transportation and distribution, waste generated, business travel, employee commuting, downstream transportation and distribution, use of sold products, end of life treatment of sold products, investments.
- Types of GHGs included: CO_2, N_2O, CH_4 and HFCs.
- Directed actions: efficiency improvements in operations, indirect savings due to green ICT services, use of green electricity.
- GHG information for the following period was verified: 01/01/2015 – 31/12/2015
- Intended user of the verification statement: Stakeholders such as national and international NGO's, customers, general public, regulators and rating agencies.

Objective
The purposes of this verification exercise are, by review of objective evidence, to independently review:

- Whether the CO_2 equivalent emissions are as declared by the organization's CO_2 equivalent assertion
- That the data reported are accurate, complete, consistent, transparent and free of material error or omission.

Criteria
Criteria against which the verification assessment is undertaken are the requirements of ISO 14064-1:2006 and WRI/WBCSD GHG Protocol – A Corporate Accounting and Reporting Standard.

Materiality
The materiality required of the verification was considered by SGS to be below 5% for Scope 1 and Scope 2 emissions, based on the needs of the intended user of the GHG Assertion

Conclusion
Swisscom provided the GHG assertion based on the requirements of ISO 14064-1:2006. The GHG information for the period 01/01/2015 – 31/12/2015 disclosing Scope 1 and 2 emissions of 30'654 metric tonnes of CO_2 equivalent (including gross location-based emissions for electricity) are verified by SGS to a reasonable level of assurance, consistent with the agreed verification scope, objectives and criteria. The amount of 30'654 tonnes CO2e represents mandatory reportable emissions according to boundaries as defined by ISO 14064-1. A further 437'516 tonnes CO2e from Scope 3 sources are verified by SGS to a limited level of assurance, consistent with the agreed verification scope, objectives and criteria.

Included in the Swisscom GHG assertion for the period 01/01/2015 to 31/12/2015, and in addition to scope 1 and 2 emissions of 30'654 metric tonnes CO2 equivalent (including location-based emissions for electricity), is a disclosure of emissions of 21'383 tonnes CO2 equivalent including market-based emissions for electricity. This figure includes renewable electricity used by Swisscom AG, and amounting to

100% of electricity consumption originating from renewable sources. These emissions have been verified by SGS based on WRI GHG Protocol Scope 2 Guidance.

SGS' approach is risk-based, drawing on an understanding of the risks associated with modeling GHG emission information and the controls in place to mitigate these risks. Our examination included assessment, on a sample basis, of evidence relevant to the voluntary reporting of emission information.

SGS concludes with reasonable assurance for Scope 1 and Scope 2 emissions that the presented CO_2 equivalent assertion is materially correct and is a fair representation of the CO_2 equivalent data and information, and is prepared following the requirements of ISO 14064-1.

We planned and performed our work to obtain the information, explanations and evidence that we considered necessary to provide a reasonable level of assurance that the Scope 1 and Scope 2 CO_2 equivalent emissions for the period 01/01/2015 – 31/12/2015 are fairly stated.

The scope 3 emissions are verified to a limited level of assurance.

This statement shall be interpreted with the CO_2 equivalent assertion of Swisscom as a whole.