

2016 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)

Climate strategy of Swisscom



swisscom

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1. Introduction

1.1. From emissions report to climate strategy

Representatives from 195 countries at the 21st Climate Conference in Paris (COP21) signed on 12 December 2015 an agreement to combat climate change. This Agreement aims to limit the global rise in temperatures to clearly less than two degrees Celsius above pre-industrial levels. Swisscom has lost no time and has tested its CO₂ reduction target according to the approach of the Science Based Target (SBT) Setting Initiative, an initiative which helps companies determine how much they must cut emissions to prevent the worst impacts of climate change and remain in line with the level of decarbonisation required to keep global temperature increase below two degrees. The test has been successfully conducted: by the end of 2016, Swisscom is one of 32 companies worldwide whose targets have been approved by the SBT initiative.

The Agenda 2030 is also the new influential framework which Swisscom takes into account. Swisscom's climate strategy and carbon footprint reduction activities relate to the sustainable development goal 13 "climate action".

This greenhouse gas report describes on one hand Swisscom's carbon footprint according to the ISO 14064 standard and the Greenhouse Gas Protocol (GHG). On the other hand, it describes the climate strategy followed by Swisscom.

1.2. Climate effectiveness of Swisscom's activities

The report sets out the direct and indirect climate impact of Swisscom's activities under scope 1, 2 and 3 for the years 2014 to 2016. It also summarises the climate impact of the savings made (directed actions).

Swisscom has set a goal to save by 2020 together with its customers twice as much CO₂ as it emits throughout the entire company including the supply chain – that means to achieve a ratio of 2 to 1.

- > **Overall emissions:** It has been determined that Swisscom directly (scope 1) and indirectly (scope 2 and scope 3) emitted 470'250 tonnes of carbon dioxide equivalent (CO₂ eq.) in the year 2016 (450'975 tonnes CO₂ eq. without Fastweb, with a compensation for electricity).
- > **Savings or avoided emissions:** Within the same time period, savings of 458'404 tonnes carbon dioxide equivalent (CO₂ eq.) were achieved thanks to Directed Actions (sometimes called "scope 4") in operations and by the customers (thereof 448'827 tonnes CO₂ eq. by the customers alone).
- > **Ratio:** The ratio of savings by the customers (448'827 tonnes CO₂ eq.) to Swisscom's own emissions (450'975 tonnes CO₂ eq.) was 0.99 in 2016.

The emissions are broken down into 4.3% scope 1 emissions, 2.2% scope 2 emissions (before compensation) and 93.5% scope 3 emissions.

Swisscom's greenhouse gas inventory was independently verified in January 2017 by the Société Générale de Surveillance (SGS). The verification focused on scope 1 and 2 emissions.

The reporting period is the 2016 financial year, from 1 January 2016 to 31 December 2016. Figures from previous years are provided for information purposes.

Swisscom is also participating in the Carbon Disclosure Project (CDP), modules "Investors" and "Supply Chain", where it publishes additional information about its CO₂ emissions.

1.3. 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 2:

- > **Greenhouse Gas Protocol:** GHG Scope 2 Guidance

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 (Draft 9 November 2011).

1.4. System boundaries

In line with Swisscom's 2016 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 2016, page 74, "Scope of the report" and Note 40, List of Group companies, page 218).

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 the 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") offered in the sustainable portfolio of Swisscom.

The emissions of foreign subsidiaries such as Fastweb are recorded under scope 3 category 15 (Investments).

The reporting organisations up to the end of 2016 were the following:

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

1.5. Link to Swisscom 2016 Sustainability Report

Swisscom corporate responsibility strategy toward energy efficiency and climate protection as well as energy management, energy consumption, CO₂ emissions and savings achieved by customers through the use of services from the sustainable portfolio are also presented in the 2016 Sustainability Report under "Climate change and energy efficiency". The governance regarding Corporate Responsibility, including the climate and energy management, is described in the "Corporate Responsibility Governance and Implementation" section. The key figures and information in this report are in line with those set out in Sustainability Report 2016.

1.6. Definition of scopes

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

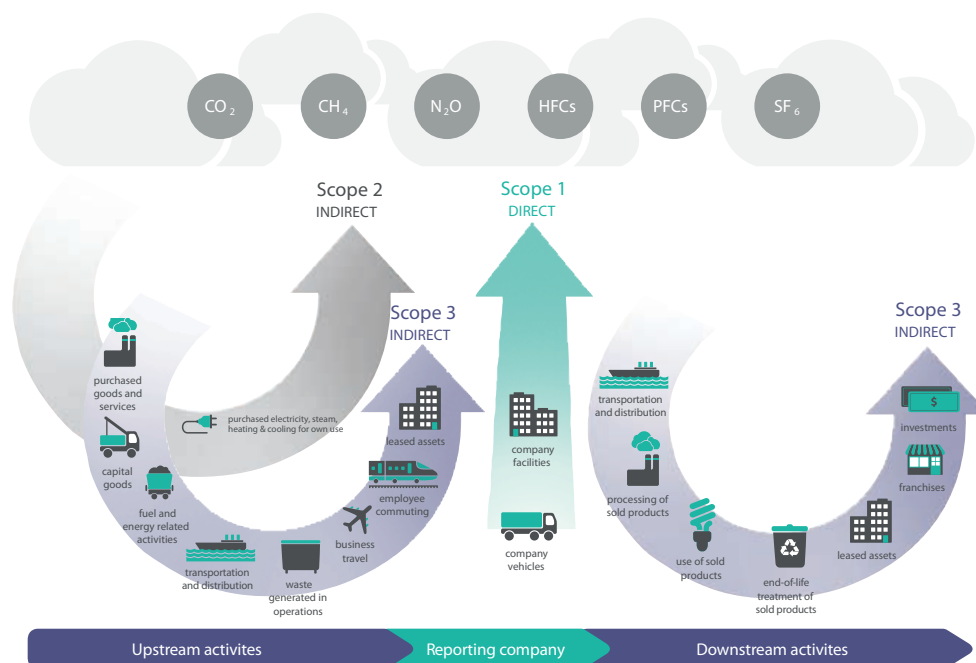


Fig. 1: Greenhouse gas emissions by scopes. Source: GHG Protocol, Corporate Value Chain (scope 3) Accounting and Reporting Standard

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), of the provision of energy (category 3), waste generated in operations (category 5), business travel (category 6), employees commuting (category 7), from "leased assets" (retail spaces in this case, category 8, new as of 2015), goods transportation from distribution centres to Swisscom Shops or to customers (category 9), use of sold products (electricity consumption, category 11), disposal of terminals (category 12) and investments (Fastweb: main Swisscom Group company abroad, 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).

1.7. Data quality

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

- > **Data quality 1:** 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:** Emissions 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 services from the sustainable portfolio for directed actions, fall into this category.

1.8. Climate strategy of Swisscom

For Swisscom and its stakeholders, energy issues and climate change remain central issues. The Swiss Confederation's energy strategy 2050 envisages the phasing-out of nuclear power plants and the promotion of renewable energies. It calls for the possibility to consistently pursue the possibilities for increasing energy efficiency and to move towards renewable energies.

Swisscom places a particular emphasis on reducing energy costs, increasing its own energy efficiency and climate protection as well as keeping the company's environmental footprint as low as possible.

Swisscom has set the following targets by the end of 2020:

- > To increase energy efficiency by 35% from 2016 onwards
- > To save together with its customers twice as much CO₂ as it emits throughout the entire company including the supply chain, that means to achieve a ratio of 2 to 1.

Swisscom's energy and climate strategy to reach the above mentioned goals relies on a comprehensive energy management, on efficiency and reduction measures in its own operation and in the supply chain, on energy savings by the customers thanks to improved products as well as on the promotion of sustainable products and services grouped in an identifiable portfolio.

Efficiency and reduction measures to reduce the footprint in the company's operations are cost-cutting measures such as fresh-air cooling of the network (method "Mistral"), substitution with lower-carbon energy sources, heat recovery, increased use of heat pumps, own electricity generation with photovoltaic systems and offsetting of emissions from electricity with Guarantees of Origin ("market based" approach).

Footprint reduction in the supply chain shall be achieved in partnership with suppliers, among other through the CDP Action Exchange Program.

Swisscom has reported its reduction targets to the Science Based Target Initiative (SBT). The SBT initiative is a partnership between CDP (Carbon Disclosure Project), the UN Global Compact, WWF and the World Resources Institute (WRI). It classifies reduction targets of companies as "scientifically founded", provided that these targets contribute to the necessary reduction of CO₂ in order to keep the global temperature rise below two degrees Celsius compared to pre-industrial level.

Swisscom is committed to reduce from 2013 on to 2020 its

- > scope 1 emissions by 10%
- > scope 2 emissions by 100%
- > scope 3 emissions by 18%

2. Energy management and consumption

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

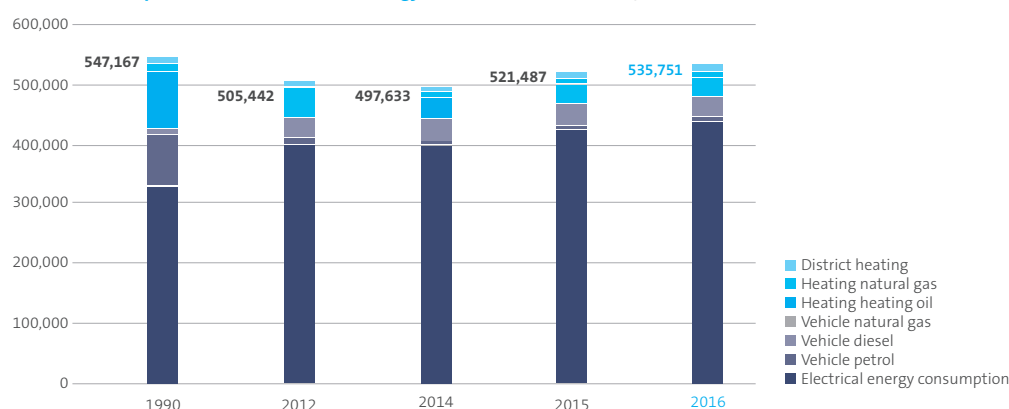
2.2. Operational energy consumption

In 2016, energy consumption (electricity and fuels) rose slightly (536 GWh compared to 521 in 2014). This was a result of growth in the core business. In spite of that, thanks to the implemented efficiency measures and resulting reduction in additional consumption, energy efficiency was increased by 8.9% in 2016 compared to 1 January 2016 (Source: Sustainability Report 2016). 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 2016 Sustainability Report)

Energy consumption and mix [MWh]	2014	2015	2016
Electrical energy consumption	408,453	434,233	448,543
Vehicle fuel consumption petrol	4,542	4,441	5,987
Vehicle fuel consumption diesel	36,069	34,721	32,319
Vehicle fuel consumption natural gas	812	729	536
Heating energy consumption heating oil	34,080	30,376	29,531
Heating energy consumption natural gas	7,324	6,783	7,821
Heating energy consumption district heating	6,352	10,204	11,013
Total energy consumption	497,633	521,487	535,751

Chart 1: Development of Swisscom Ltd's energy mix in Switzerland in Megawatt-hours MWh



2.3. Energy consumption by customers

The electricity consumed by the devices of Swisscom customers was again estimated in 2016. 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 customers amounted to 273 GWh (2014: 269 GWh) and thus accounted for an additional 50.8% (2015: 51.6%) 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. This set-top box remained on the market in 2015. In the year under review, Swisscom launched a new, UHD-enabled TV box that, despite improved performance, does not consume more power than the previous TV box. In addition, it has launched Internet Box 2, which offers the customer several options for energy savings.

2.4. Governance and Responsibilities for climate and energy management

The Board of Directors of Swisscom is committed to pursuing a strategy geared towards sustainability. It addresses the relevant economic, environmental and social issues in plenary sessions. The implementation of the strategy is delegated to the CEO of Swisscom Ltd. In turn, the CEO can transfer powers and responsibilities to subordinate units and is supported in operational management by the members of the Group Executive Board. The Group Communications & Responsibility division (GCR) is responsible for the implementation of the CR strategy. The Group Executive Board members and the Head of Group Communications & Responsibility have been named as internal sponsors for the priorities of the CR strategy. They are responsible for progress and the achievement of targets within their priority areas. The areas of responsibility are aligned to the core tasks of the respective Group Executive Board members and the Head of Group Communications & Responsibility. They are defined as follows:

- > **Overall management:** Head of Group Communications & Responsibility
- > **Energy efficiency and climate protection:** Head of IT, Network & Infrastructure and Head of Group Business Steering (CFO) of Swisscom Ltd

3. Detailed information on scope categories

3.1. Development of scope 1 emissions

In terms of direct emissions, Swisscom reports 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 (SF₆).

Scope 1 emissions in 2016 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 CO₂ emissions for fleet cars) as well as to a reduction of refrigerants loss.

Emissions from fuel consumption for stationary emergency power systems are reported separately. Up to 2014, only the CO₂ emissions from the combustion processes were considered, but not the CH₄ and N₂O emissions (missing materiality). As of 2016, CH₄ and N₂O 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 cooling systems are critical for network operation and are dealt with in a separate efficiency program.

Table 2: Details of scope 1 emissions

Scope 1 CO ₂ eq. emissions [tonnes] from:	2014	2015	2016
Vehicle fuel consumption petrol	1,196	1,229	1,621
Vehicle fuel consumption diesel	9,529	9,305	8,671
Vehicle fuel consumption natural gas	102	126	95
Heating energy consumption heating oil	8,867	7,867	7,644
Heating oil consumption (emergency power systems)	245	255	255
Heating energy consumption natural gas	1,441	1,334	1,550
Scope 1 CO ₂ eq. emissions (from energy consumption) ¹	21,380	20,115	19,837
Scope 1 CO ₂ eq. emissions (from refrigerants)	271	503	220
Scope 1 CO₂ eq. emissions	21,652	20,618	20,057

¹ New: from 2015 the CO₂ eq. for the CH₄ and N₂O emissions are calculated. In 2016 6t CO₂ eq. CH₄ and 56 t CO₂ eq. N₂O

3.2. Development of scope 2 emissions

Since 1 January 2010 Swisscom follows a “market based” approach and covers 100% of its electricity need with 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 avoiding electrical consumption in the operations by a total of 39.4 GWh (2015: 20.4 GWh), thus preventing scope 2 emissions. The most effective measures have been the virtualisation of servers, the Mistral fresh-air cooling method, a technology swap in the whole mobile network and the increased efficiency of Data Centers (lower PUE values).

Finally, Swisscom also generates electricity from photovoltaic installations. A total power of 1,669 kW has been installed by the end of 2016, producing an estimated 1500 MWh (950 MWh in 2015).

Swisscom reports here according to the GHG Scope 2 Guidance 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 CO₂ emissions from electricity to the indirect emissions (provision of electricity) shown in section 3.3. Swisscom compensates the non-renewable part of its electricity mix with Guarantees of Origin (GoO) in two quality levels (conventional and best-quality such as naturemade star GoO), which meet the quality criteria for verification. A residual-mix calculation does not exist 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)	Scope2 electricity emissions (direct)	Scope 3 electricity emissions (indirect)
Electricity				
Supplier electricity mix Switzerland (“location-based”)	from 2012	91.47	21.35	70.12
Certified electricity (“market based”)	from 2012	15.6	0	15.6

Up to 2014, Swisscom used an average emission factor of 125g CO₂/kWh for district heating. Since 2015, a precisely determined emission factor of 75.95g CO₂/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:	2014	2015	2016
Electricity consumption (supplier electricity mix Switzerland, “location-based”)	8,720	9,271	9,576
Electricity consumption (certified electricity, “market based”)	–	–	–
Heating energy consumption district heating	794	765	826
Scope 2 CO₂ eq. emissions (with certified electricity)	794	765	826

3.3. Development of scope 3 emissions

The emissions in the supply chain are taken into account in this report. A model for calculating supply chain emissions was drawn up with the life cycle specialists from the company Treeze Ltd. Supply chain emissions make a very significantly share of scope 3 emissions. Other emissions are derived from materials or energy flows or are estimated with approximate values or empirical information used (cat. 7 and cat. 11).

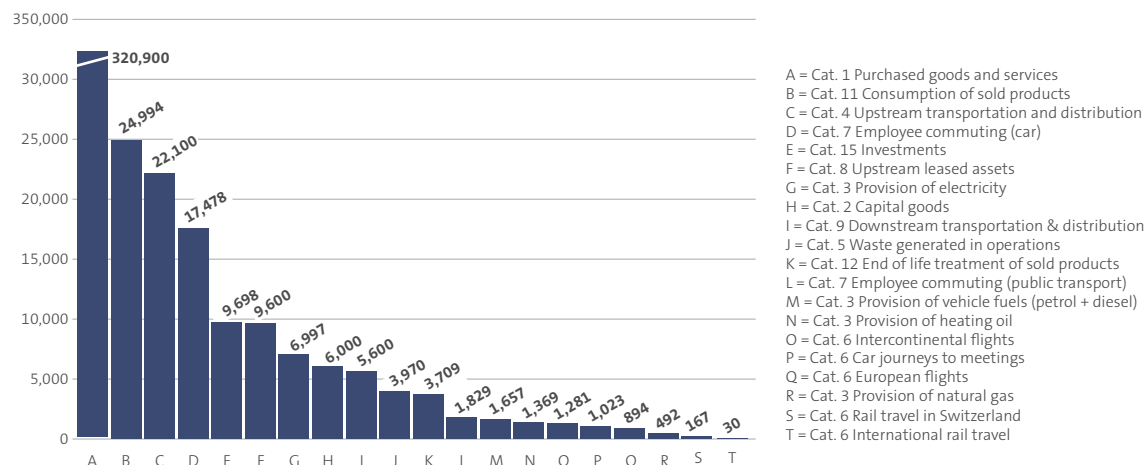
Table 5: Details of scope 3 emissions

Scope 3 CO ₂ eq. emissions (tonnes) from:	2014	2015	2016
Cat. 1 Purchased goods and services	304,200	336,800	320,900
Cat. 2 Capital goods	12,900	6,200	6,000
Cat. 3 Provision of electricity	6,372	6,774	6,997
Cat. 3 Provision of vehicle fuels (petrol + diesel) ¹	1,741	1,637	1,657
Cat. 3 Provision of heating oil	1,694	1,409	1,369
Cat. 3 Provision of natural gas	403	295	492
Cat. 4 Upstream transportation and distribution	11,800	14,700	22,100
Cat. 5 Waste generated in operations	1,127	2,124	3,970
Cat. 6 Rail travel in Switzerland	106	171	167
Cat. 6 International rail travel	33	33	30
Cat. 6 European flights	802	893	894
Cat. 6 Intercontinental flights	1,647	1,412	1,281
Cat. 6 Car journeys to meetings	983	929	1,023
Cat. 7 Employee commuting (public transport)	1,750	1,826	1,829
Cat. 7 Employee commuting (car)	15,669	17,445	17,478
Cat. 8 Upstream leased assets		1.3	9,600.0
Cat. 9 Downstream transportation & distribution	5,600	5,600	5,600
Cat. 11 Use of sold products	22,704	24,610	24,994
Cat. 12 End of life treatment of sold products	7,167	5,361	3,709
Cat. 15 Investments	52,645	9,296	9,698
Scope 3 CO₂ eq. emissions	449,343	437,516	439,791

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

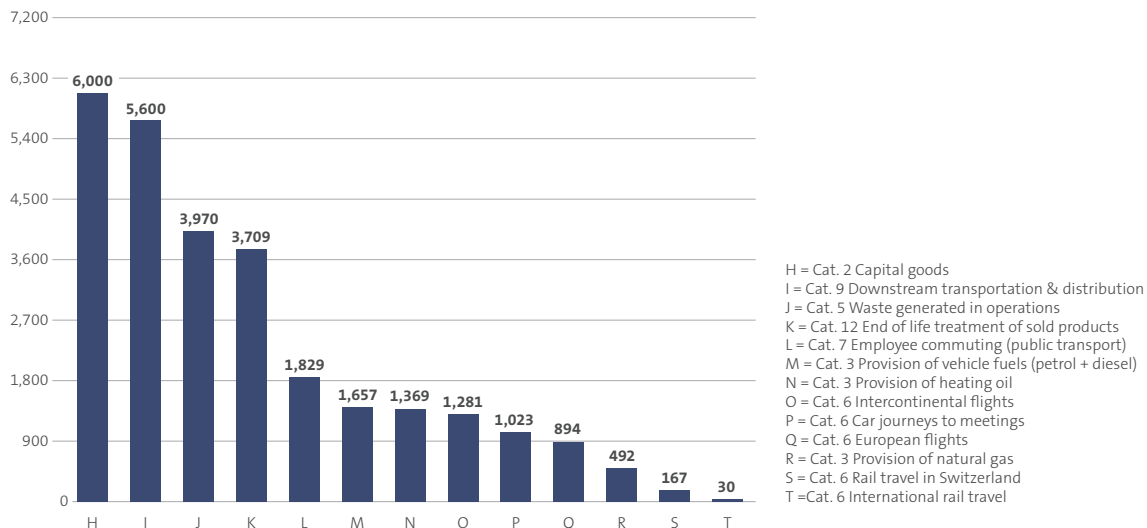
NB: Categories 10, 13 and 14 are not relevant. The sharp decrease in category 15 is due to the use of renewable electricity at Fastweb.

Chart 2: All scope 3 emissions by GHG category in tonnes CO₂ eq



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 CO₂ eq



4. Savings (directed actions)

4.1. Methodology

Measures that lead to energy savings and reduced greenhouse gas emissions are classified as directed actions. These relate in part to savings by customers through the use of services from the sustainable portfolio ("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 services of the sustainable portfolio 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: spec emissions 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 (+ 35% by 2020 from 2016) Implementation of a program to increase energy efficiency > Compensation with GoOs and green electricity labelled naturemade star > Virtualization of servers > Cooling of networks with fresh air (Mistral) > Swap technology of mobile network and 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 and Action Exchange Program
Scope 3 Cat. 2 capital goods	Selective measures in the supply chain Integration of suppliers in the CDP supply chain module and Action Exchange Program
Scope 3 cat. 3 Provision of electricity	Increase efficiency (+ 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: spec. emission 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 and Action Exchange Program
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 device > Routers with a 25% lower standby compared to older devices > "1-Watt" set-top boxes > Internet Box 2 with savings parameters
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 CO₂ 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). This target agreement runs to the end of 2020 and aims to increase energy efficiency. It is based on the Swiss CO₂ Act and Energy Act. Execution of the agreement is governed by the implementing directive issued by the Federal Offices for the Environment and Energy on 2 July 2007, resp. its revised version from 9 November 2011.

The aim of the target agreement is to increase in energy efficiency by 35% to 2020 compared to 1 January 2016.

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 virtualisation of servers in data centres, the use of fresh-air cooling for networks and since 2015 the activation of savings functionalities in the mobile network.

- b) Savings through the use of renewable electricity and Guarantees of Origin:

Since 2010, Swisscom follows the “market based” approach and has offset the proportion of non-renewable electricity (nuclear power, electricity of unknown origin and electricity from fossil fuels) in its electricity mix by purchasing Guarantees of Origin. As a result, Swisscom once again used 100% renewable electricity in 2016, independently certified.

Swisscom purchased in 2016 25.0 GWh of naturemade star renewable electricity from solar (21.0 GWh) and wind power (4 GWh).

The use of certified electricity reduces CO₂ 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 photovoltaic installations in order to generate solar power. A total power of 1,669 kWp had been installed by the end of 2016.

4.3. Savings by customers through the use of services from the sustainable portfolio

The sustainable portfolio offers five types of savings:

- 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.
- Savings through services that enable customers to give up their own data centres and servers and outsource them to highly efficient data centres with a level of server virtualisation. These Swisscom data centres are also operated using 100% renewable energy, leading to further reductions in greenhouse gas emissions.
- Savings through services that enable customers to control devices or vehicles more intelligently via machine-to-machine connections, to monitor the levels of oil tanks, waste containers, etc. or to remote control the heating in holiday apartments. This helps optimise logistics systems and routing in order to reduce the number of transport kilometres travelled by logistics fleets.
- 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, dematerialisation also includes reductions in shopping trips due to online ordering and in retail space as physical shops are replaced by virtual ones.
- 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.
- 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 Dynamic Printing services, which significantly reduce paper waste 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 services of the sustainable portfolio are listed in the table below. 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 2016, thanks to marketing campaigns.
- > The increase in home office savings is based on a new study that estimates the number of users higher than previous studies. The savings are calculated accordingly.

Table 7: Savings through the use of services of the sustainable portfolio

Sustainable ICT portfolio	Service group	Service	2014	2015	2016
Reducing travel	Virtual conferences	Conferencing service	44,015	35,648	37,539
		MCC/UCC	45,152	72,525	86,445
	Home office	Home office services	97,761	112,990	165,599
	Machine-to-Machine	Logistics, heating	14,250	14,817	35,724
Saving energy	Data centre services	Hosting	9,338	11,730	11,302
		Housing	1,664	2,236	953
Saving paper	Saving paper	e-bill, Conextrade, printing	1,083	1,524	1,308
Dematerialisation		Data carriers and retail space	109,331	109,542	108,023
Mobile Aid			1,025	1,775	1,935
Total CO ₂ eq. savings portfolio			323,619	362,789	448,827

5. Summary of direct, indirect emissions and savings

Scope 1 emissions from the consumption of fossil fuels have been reduced by 1.4% compared to January 1, 2016. This success can be attributed to a favorable mix of lower carbon energy sources.

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

CO ₂ eq. emissions [tonnes]	2014	2015	2016
Scope 1 (from consumption of fossil energies)	21,380	20,115	19,837
Scope 1 (from refrigerants)	271	503	220
Scope 2 (from electricity)	8,720	9,271	9,576
Scope 2 (from district heating)	794	765	826
Total Scopes 1, 2	31,166	30,654	30,459
Scope 3	449,343	437,516	439,791
Total Scopes 1, 2, 3	480,509	468,170	470,250

Table 9: Impact of directed actions

Directed Actions	2014	2015	2016
Savings by customers thanks to the sustainable ICT portfolio	323,619	362,789	448,827
Electricity offset with guarantees of origin/green electricity	8,720	9,271	9,576
Total Directed Action	332,339	372,060	458,403

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	2014	2015	2016
Savings by customers thanks to the sustainable ICT portfolio	323,619	362,789	448,827
[Emissionen (ohne Fastweb, Strom kompensiert)]	419,143	449,604	450,975
Ratio savings to emissions (without electricity and Fastweb)	0.77	0.81	0.99

The ratio of savings by customers to the emissions Swisscom (excluding Fastweb, with electricity compensated) was 0.99 in the 2016.

6. Notes

6.1. Base year

The new base year is 2012.

2012 is also the start year for the second target agreement with the Energy Agency for the Industry (EnAW). Swisscom has energy data for the base year, which have been published in previous climate reports.

There have been no material changes in the reporting boundaries since 2012. Swisscom Ltd is still engaged in the same activities as in 2012, with any changes (purchase or sale of small companies, slight changes in the real estate structure) immaterial in terms of CO₂ 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 scope of consolidation in 2016.

Scope 2: No significant change in the scope of consolidation in 2016.

Scope 3: No significant change in the scope of consolidation in 2016.

6.3. Activities and energy consumption

Swisscom takes the following consumption into account under scope 1 (direct emissions):

- > All fuel used to operate the company's own vehicles: In the case of allocated vehicles, this covers business journeys to customers and to 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
- > Refrigerants refilling

Under scope 2 (indirect emissions) Swisscom takes 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)

Swisscom takes emissions from district heating into account under scope 2 (indirect emissions).

Swisscom takes the following emissions into account under scope 3:

- > **Category 1:** Purchased goods
- > **Category 2:** Capital goods
- > **Category 3:** Provision of 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:** Business travel (flights, rail travel and journeys to meetings in private cars)
- > **Category 7:** Employee commuting
- > **Category 8:** Leased assets (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 estimated with reference to the value of the previous year.
- > **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, CO₂ 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 are not material and were not included in 2016.

6.5. Considered greenhouse gas inventory

A greenhouse gas inventory in accordance with ISO 14064 includes the emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆). Swisscom reports on its emissions in aggregated form of CO₂ equivalents for CO₂, CH₄ and N₂O. Emissions from refrigerants are listed separately. The sources of emissions are the following:

- > **CO₂:** Combustion of fossil fuels (heating and mobility) or for the production of power
- > **CH₄:** Combustion of fossil fuels (heating and mobility)
- > **N₂O:** Combustion of fossil fuels (heating and mobility)
- > **HFCs:** Losses of refrigerants from cooling systems
- > **PFCs:** Losses of refrigerants or insulating agents

Not considered in the greenhouse gas inventory as not directly material for Swisscom

- > **SF₆:** These emissions are beyond the control of Swisscom
- > **Other:** The 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 devices or vehicles (trains and cars) and with the construction of infrastructure (road and rail), which are optional under the GHG Protocol standard.

6.7. Emission factors

Emission factors for scope 1 emissions:

Swisscom uses 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) "CO₂ emission factors for the Swiss greenhouse gas inventory". The official emission factors of the FOEN are given for CO₂. The CO₂ to CO₂ eq. difference for these fuels is relatively small and was ignored until 2014.

For scope 1 emissions from refrigerants Swisscom uses the corresponding global warming potential with a horizon of 100 years (GWP100, IPCC 2013) and report the emissions in tonnes of CO₂ eq.

Emission factors for scope 2 emissions:

The emission factors set out in Table 3 are used for scope 2 emissions from electricity, with the emissions reported in tonnes of CO₂ eq. These emission factors have been calculated for the "location-based" and for the "market based" approaches by myclimate on the basis of the 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 applied a typical, average emission factor for scope 2 emissions from district heating of 125 g CO₂ eq./kWh for the years up to 2014, and 75.94 g CO₂ eq./kWh as of 2015. Swisscom obtains its heat from various district heating networks, for which individual emissions factors were determined by myclimate in the fall of 2015 and an average factor derived.

Emission factors for scope 3 emissions:

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

Specific emission factors were derived for the following:

- > Emissions in the supply chain (categories 1, 2, 4 and 8). The emission factors have been calculated specifically for the supply chain of Swisscom by the company Treeze based on the data from ecoinvent 3.1 for individual categories (Methodology for the determination of greenhouse gas emissions in the supply chain of the ICT sector).
- > Provision of electricity (category 3), disposal of waste (category 5), use and disposal of devices (category 11 and 12). These emission factors have been calculated for the individual categories by myclimate on the basis of data from ecoinvent v3.1.
- > Travel (category 6). These emission factors and emissions have been calculated by the partner companies (SBB or Kuoni Business Travel).
- > Mobility (category 7). The emission factors are those of Mobitool, based on the ecoinvent v2.2.
- > Downstream transportation and distribution to the customers, category 9. These emission factors and emissions have been estimated by the logistic partner (Die Post).

Emission factors for savings ("scope 4"):

- > Savings achieved by customers through the use of ICT services. These emission factors for the individual categories have been estimated specifically for Swisscom by myclimate on the basis of data from ecoinvent v3.1, of data extracted from different studies and on the basis of Swisscom own data.

6.8. References

6.8.1. Other reports

- > Swisscom Sustainability Report 2016: <http://report.swisscom.ch/en>
- > Swisscom Climate Reports 2014 and 2015
- > 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 CO₂ emissions (CO₂ 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)
- > Implementation 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 (available in German and French only). 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

- > CO₂ 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. Contact and further questions

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8. Verification



Greenhouse Gas Verification Statement Number
CCP.ISO1406401.(1500615).2016/06/17

The inventory of Greenhouse Gas emissions in the period
01/01/2016 – 31/12/2016 for
Swisscom AG

Alte Tiefenastrasse 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:

30'459 tCO₂e (Scope 1+2; gross location-based emissions for
electricity)

20'883 tCO₂e (Scope 1+2; gross market-based emissions for
electricity)

439'791 tCO₂e (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 23rd June 2017
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.(1500615).2016/06/17

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 (CO₂) equivalent emissions as provided by Swisscom, Alte Tiefenastrasse 6, in their GHG Assertion in the form of a Greenhouse Gas Emissions Report covering CO₂ 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 01/01/2016 – 31/12/2016.

SGS conducted a third party verification following the requirements of ISO 14064-3:2006 of the provided CO₂ equivalent assertion in the period November 2016 to June 2017.

The assessment included a desk review and site visits at the headquarters in Worblaufen (Switzerland). The verification was based on the verification scope, objectives and criteria as agreed between Swisscom and SGS on 09/09/2016.

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 CO₂ 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 CO₂ 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: CO₂, N₂O, CH₄ 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: 01/01/2016 – 31/12/2016
- 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 CO₂ equivalent emissions are as declared by the organization's CO₂ 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 01/01/2016 – 31/12/2016 disclosing Scope 1 and 2 emissions of 30'459 metric tonnes of CO₂ 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 30'459 tonnes CO₂e represents mandatory reportable emissions according to boundaries as defined by ISO 14064-1. A further 439'791 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 01/01/2016 to 31/12/2016, and in addition to scope 1 and 2 emissions of 30'459 metric tonnes CO₂ equivalent (including location-based emissions for electricity), is a disclosure of emissions of 20'883 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 CO₂ equivalent assertion is materially correct and is a fair representation of the CO₂ 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 CO₂ equivalent emissions for the period 01/01/2016 – 31/12/2016 are fairly stated.

The scope 3 emissions are verified to a limited level of assurance. SGS concludes with limited assurance that there is no evidence to suggest that the presented CO₂ equivalent assertion is not materially correct and is not a fair representation of the CO₂ equivalent data and information.

This statement shall be interpreted with the CO₂ equivalent assertion of Swisscom as a whole.

Note: This Statement is issued, on behalf of Client, by SGS United Kingdom Ltd, Rossmore Business Park, Inward Way, Ellesmere Port, Cheshire, CH65 3EN ("SGS") under its General Conditions for GHG Validation and Verification Services. The findings recorded hereon are based upon an audit performed by SGS. A full copy of this statement and the supporting GHG Assertion may be consulted at [Swisscom website \(www.swisscom.ch\)](http://www.swisscom.ch). This Statement does not relieve Client from compliance with any bylaws, federal, national or regional acts and regulations or with any guidelines issued pursuant to such regulations. Stipulations to the contrary are not binding on SGS and SGS shall have no responsibility vis-à-vis parties other than its Client.