

2018 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

Table of contents

1. Introduction	3
1.1. Environment	3
1.2. Summary: climate effectiveness of Swisscom's activities	3
1.3. Climate change carries risks and affords opportunities	3
1.4. Swisscom's targets and energy and climate strategy	4
1.5. Reference systems for the greenhouse gas inventory	5
1.6. System boundaries	5
1.7. Link to Swisscom Sustainability Report 2018	6
1.8. Definition of scopes	6
1.9. Data quality	7
2. Energy management and overall consumption	8
2.1. Energy management	8
2.2. Governance and responsibilities for climate and energy management	8
2.3. Energy consumption at Swisscom	8
2.4. Energy consumption by customers	9
3. Details of emissions	10
3.1. Development of scope 1 emissions	10
3.2. Development of scope 2 emissions	11
3.3. Development of scope 3 emissions	12
4. Details of savings	14
4.1. Overview of savings measures	14
4.2. Savings and efficiency improvements at Swisscom	15
4.2.1 Operational savings and efficiency improvements	15
4.2.2 Reduction of Swisscom's activity-related CO ₂ emissions	15
4.2.3 Reduction of the emissions in the supply chain – Supply Chain Program	15
4.3. Savings by customers (enabling effects with the services portfolio)	16
5. Summary of direct and indirect emissions and savings	18
5.1. Summary of emissions	18
5.2. Summary of savings	18
5.3. Ratio of savings to emissions	18
5.4. Summary of target achievement	19
5.5. Summary of CO ₂ intensities	19
6. Notes	20
6.1. Base year	20
6.2. Recalculation of the base year emissions	20
6.3. Activities and energy consumption	20
6.4. Biomass, removal and CO ₂ sinks	20
6.5. Greenhouse gas inventory according to ISO 14064	21
6.6. Upstream and downstream levels for scope 3 analysis	21
6.7. Emission factors	21
6.8. References	23
6.8.1 Other reports	23
6.8.2 Legislation and directives	23
6.8.3 References for emission factors	23
6.8.4 Other references	23
7. Contact and further questions	24
8. Verification	25

1. Introduction

1.1. Environment

In May 2017, the Swiss population approved the revised Energy Act, which underpins the Swiss Confederation's 2050 energy strategy, in a referendum. The revised act intends to phase out nuclear power plants and promote renewable energies. It also calls for a consistent increase in energy efficiency and the transition to renewable energies. The Paris climate agreement was also ratified by Switzerland on 5 November 2017. It aims to limit the global rise in temperatures to well below 2°C above pre-industrial levels. A representative reference scenario (Representative Concentration Pathway RCP2.6) developed by the Intergovernmental Panel on Climate Change (IPCC) shows how this 2°C target can be achieved. Switzerland developed its own climate scenarios in 2011 and assessed the impacts in 2014. One of these scenarios (the RCP3DP scenario) corresponds to the IPCC RCP2.6 and now serves as a new benchmark for Swisscom. The national climate scenarios were updated in 2018 and published in November 2018. Swisscom will integrate them starting in 2019. Swisscom has set itself clear targets based on the science behind these scenarios and with an awareness of the risks and opportunities associated with climate change. Its strategy is geared towards operational efficiency (increasing energy efficiency and reducing CO₂ emissions), the development and marketing of environmentally friendly solutions, and partnerships with stakeholders active in the field of climate protection. Swisscom aims to work together with its customers to save twice as much CO₂ as it emits throughout the entire company including the supply chain by 2020. This undertaking has been summarised as the "2:1 target". By 2025, Swisscom intends to contribute to further reductions in greenhouse gases of 1% of the estimated Swiss emissions for 2025, which is equivalent to an additional 450,000 tonnes.

Swisscom has verified its 2020 CO₂ reduction targets according to the approach of the Science Based Targets (SBT) initiative, which has recognised them as approved targets.

The 2030 Agenda for Sustainable Development adopted by the United Nations is the new reference framework for Swisscom. Swisscom's climate strategy and its aim to reduce CO₂ emissions relate to the Sustainable Development Goal 13 of the 2030 Agenda: Climate Action.

This report describes the energy and climate strategy followed by Swisscom and Swisscom's carbon footprint according to the ISO 14064 standard and the Greenhouse Gas Protocol (GHG).

1.2. Summary: climate effectiveness of Swisscom's activities

The reporting period is the 2018 financial year, from 1 January 2018 to 31 December 2018. Figures from previous years are provided for information purposes.

The report sets out the direct and indirect climate impact of Swisscom's activities under scope 1, 2 and 3 for the years 2016 to 2018. It also summarises the climate impact of the savings made (directed actions and enabling effects).

- **Emissions:** Swisscom directly (scope 1) and indirectly (scope 2 and scope 3) emitted 500,602 tonnes of carbon dioxide equivalent (CO₂ eq.) in 2018 (437,491 tonnes CO₂ eq. excluding Fastweb, with electricity compensated).
- **Savings:** Within the same period, Swisscom achieved savings of 627,172 tonnes of carbon dioxide equivalent (CO₂ eq.) thanks to directed actions in operations and to enabling effects (also referred to as "scope 4" in this report) by customers (of which 569,003 tonnes CO₂ eq. were attributable to customers alone).
- **Ratio:** The ratio of savings by customers (569,003 tonnes CO₂ eq.) to Swisscom's own emissions (437,491 tonnes CO₂ eq.) was 1.30 in the year under review and within the system boundaries.

The emissions are broken down into 3.2% scope 1 emissions, 11.8% scope 2 emissions (before compensation) and 84.9% scope 3 emissions.

Swisscom's greenhouse gas inventory was independently verified in January 2019 by Société Générale de Surveillance (SGS) in an audit according to ISO 14064. The verification focused on scope 1 and 2 emissions, but additionally covered scope 3 emissions.

Swisscom is also participating in the Carbon Disclosure Project (CDP) as part of the "Investors" and "Supply Chain" projects. In this context, it publishes additional information about its CO₂ emissions.

1.3. Climate change carries risks and affords opportunities

Swisscom applies the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

The following activities in particular contribute to climate protection at Swisscom:

- analysis of the opportunities and risks posed by climate change
- creation of a programme and implementation of appropriate measures relating to the relevant issues

- monitoring and reporting

The coordination and management of these activities by the CR team (Corporate Responsibility team) is subject to a clear Group directive.

Swisscom is presented with opportunities to generate revenue in the set-up and development of a “green” – in other words, sustainable – portfolio of products and services. Further information on the sustainable portfolio can be found in the “Climate protection” section of the Sustainability Report. The impact of the portfolio on the climate and specifically the reduction of CO₂ emissions on the customer side thanks to the use of products from the portfolio is explained in detail in section 5 of this report. The revenue from this portfolio is not discussed separately; information of a financial nature can be found in the Swisscom Annual Report. Further detailed information on the opportunities of the portfolio can be found in the “Climate protection” section of the Sustainability Report.

Risks can be mitigated by reducing CO₂ emissions, not only directly within the company, but also indirectly with customers through a sustainable portfolio of products and services.

Opportunities and risks arise from the following factors:

- **Adjustments to legislation:** Stricter requirements and standards for product efficiency and CO₂ emissions as well as new or more stringent energy taxation and legislation make it necessary to continuously improve operational processes (such as monitoring of energy consumption) or develop new products (such as more efficient network and terminal devices). Swisscom can support its customers in this process by working with its suppliers to develop more efficient devices or devices for which a standby profile can be configured on request. See section 4 of this report for more information.
- **Changes to physical parameters:** Swisscom’s operations are particularly affected by changes in average and extreme temperatures, the effects of which are evident in ever more extreme and frequent events. The Swiss Federal Office of Meteorology and Climatology (MeteoSwiss) measures these physical parameters and publishes them on its website. Berne, for example, will see a decrease in heating degree days by 143 HDDs per decade or an increase in days with heavy precipitation [> 20 mm]. Swisscom is monitoring these trends, adapting its operations accordingly and undertaking the measures necessary to ensure business continuity.
- **Other climate-related developments:** Stakeholder groups are adapting their behaviour and expectations to the new climate situation. In this context,

the proactive positioning of Swisscom can create trust and enhance its reputation.

1.4. Swisscom’s targets and energy and climate strategy

The energy transition and climate change remain key issues for Swisscom and its stakeholder groups. Swisscom attaches particular importance to reducing energy costs. It also focuses on increasing its own energy efficiency and climate protection as well as keeping its environmental footprint as small as possible.

By the end of 2020, Swisscom has set itself the goal of

- increasing energy efficiency by 35% from 1 January 2016 onward.
- achieving a ratio of savings by customers to Swisscom’s own emissions of two to one: in other words, saving together with its customers twice as much CO₂ in Switzerland as it emits throughout the entire company including the supply chain.

Swisscom’s energy and climate strategy to reach the above-mentioned goals relies on comprehensive energy management, efficiency and reduction measures in its own operations and in the supply chain, energy savings by customers thanks to improved products as well as the promotion of sustainable products and services grouped in an identifiable portfolio. Footprint reduction in the supply chain is to be achieved in partnership with suppliers, for example through the Action Exchange Program of the CDP (Carbon Disclosure Project).

Energy savings by customers and the promotion of sustainable products and services are described in detail in the “Directed actions” section.

Swisscom has reported its reduction targets to the Science Based Targets (SBT) initiative. The SBT initiative is a partnership between CDP, the UN Global Compact, WWF and the World Resources Institute (WRI). It classifies company reduction targets as “science-based” if they are in line with the level of decarbonisation required to keep the global temperature increase below 2°C.

Based on 2013 levels, Swisscom is committed to reducing its emissions by 2020 as follows:

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

The new energy and climate strategy is based on energy demand scenarios extending to 2025. Key elements of this strategy include covering 100% of its energy needs with electricity from renewable sources, producing solar power, eliminating diesel fuels and heating with fossil fuels, using hybrid and electric cars and using environmental energy through heat pumps.

By the end of 2025, Swisscom has set itself the goal of

- further reducing CO₂ emissions.
- increasing energy efficiency by 24%.

The table below provides an overview of all of Swisscom’s climate protection agreements. The results are described in section 5.4.

Partnership	Target agreement	Start year January 1 st	Target year Dec. 31 st	Target
Swisscom	Ratio CO ₂ savings achieved by customers to CO ₂ emissions Swisscom	2016	2020	2:1
Swisscom	Energy efficiency (savings measures over total energy consumption, not weighted)	2016	2020	+35%
EnAW	Energy efficiency (savings measures over total energy consumption, not weighted)	2013	2022	+35%
EnAW	CO ₂ intensity of heating fuels (CO ₂ emissions as a proportion of total CO ₂ emissions) and CO ₂ savings)	2013	2022	92%
EnAW	CO ₂ intensity of fuels (CO ₂ emissions as a proportion of total CO ₂ emissions) and CO ₂ savings)	2013	2022	76%
VBE	Energy efficiency (savings measures over total energy consumption, not weighted)	2006	2020	+25%
SBTI	CO ₂ Reduction Scope 1	2013	2020	-10%
SBTI	CO ₂ Reduction Scope 2	2013	2020	-100%
SBTI	CO ₂ Reduction Scope 3	2013	2020	-18%

1.5. Reference systems for the greenhouse gas inventory

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

International Organization for Standardization (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 Resources Institute (WRI)/World Business Council for Sustainable Development (wbcscd)

- **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 Protocol 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
- **Greenhouse Gas Protocol:** GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (Supplement to the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard)

Until 2017, the following draft standard provided guidance for calculating greenhouse gas emissions savings using green ICT services:

- **Greenhouse Gas Protocol:** GHG Protocol Product Life Cycle Accounting and Reporting Standard ICT Sector Guidance (Draft 9 November 2011)

Global e-Sustainability Initiative (GeSI)

In 2018, Swisscom adopted the following standard to calculate the savings resulting from the use of Green ICT services:

- **GeSI:** ICT Sector Guidance built on the GHG Protocol Product Life Cycle Accounting and Reporting Standard (2017)

Energy consumption and the greenhouse gas inventory are reported in accordance with GRI Standards 302 (Energy) and 305 (Emissions).

1.6. System boundaries

In line with Swisscom’s Annual Report and Sustainability Report 2018, the system boundaries for the greenhouse gas inventory are the fully consolidated companies in Switzerland (i.e. consolidated from a shareholding of 50% or higher; see Sustainability Report 2018, “Scope of the report” and Note 5.4, Group companies).

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).

The emission reductions and avoidances result from targeted measures within the company (“directed actions”) and from the positive effects (“enabling

effects”) of the use of ICT services by customers (scope 4). These savings or emissions avoidance are achieved through services such as videoconferencing 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 2018 were the following:

Swisscom Ltd:

- Swisscom (Switzerland) Ltd and subsidiaries in Switzerland
- Foreign subsidiary Fastweb

1.7. Link to Swisscom Sustainability Report 2018

The Swisscom corporate responsibility strategy on energy efficiency and climate protection as well as energy management, energy consumption, own CO₂ emissions and savings achieved by customers using services from the sustainable ICT portfolio are also presented in the Sustainability Report 2018 under “Energy efficiency and climate protection”. The governance of Corporate Responsibility, including for 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 the Sustainability Report 2018.

1.8. Definition of scopes

Greenhouse gas emissions by scope.

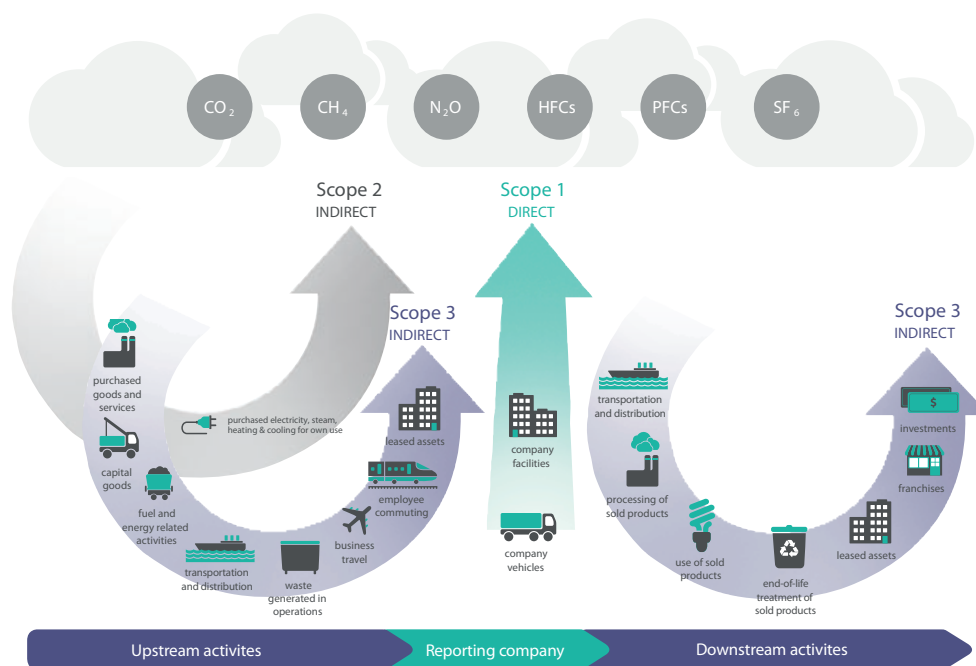


Fig. 1: Greenhouse gas emissions by scope. (Source: GHG Protocol, Corporate Value Chain (scope 3) Accounting and Reporting Standard)

Scope 1 and 2 emissions are generated by Swisscom’s activities at various locations (multi-sites). The definitions are given in the GHG Protocol for scope 3 emissions.

Relevant scope 3 greenhouse gas emissions are those from:

- the supply chain (categories 1, 2 and 4)
- the provision of energy (category 3)
- waste generated in operations (category 5)
- business travel (category 6)

- employee commuting (category 7)
- leased assets (in this case retail space, category 8)
- transportation from distribution centres to Swisscom Shops or to customers (category 9)
- the use of sold products (electricity consumption, category 11)
- the disposal of terminals (category 12)
- investments (main Swisscom Group company abroad: Fastweb; category 15)

The following scope 3 categories are not relevant for Swisscom: processing of sold products (category 10), downstream leased assets (category 13) and franchises (category 14).

1.9. 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 are 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 (category 1), capital goods (category 2), provision of energy (category 3), upstream and downstream transportation and distribution in Switzerland (categories 4 and 9), waste generated in operations (category 5), disposal of terminal devices (category 12) and investments (category 15) fall into this category.
- **Data quality 3:** Emissions are estimated, with approximate values or empirical information used. Emissions from business travel (category 6), employee commuting (category 7), leased assets (category 8) and use of sold products (category 11), along with enabling effects or savings achieved using services from the sustainable ICT portfolio (scope 4), fall into this category.

2. Energy management and overall consumption

2.1. Energy management

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

- determining energy requirements over a specific period of time
- determining the energy mix, particularly the electricity mix
- determining and approving energy efficiency targets and measures
- implementing energy efficiency measures
- generating electricity
- using waste heat
- monitoring, accounting and reporting
- research and development projects – e.g. relating to balancing energy – and virtual power plants (tiko)
- developing and marketing sustainable ICT products and services

In the year under review, Swisscom used scenarios to determine its energy needs through 2025 and the associated CO₂ emissions.

2.2. 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 (GCR) division is responsible for the implementation of the Corporate Responsibility (CR) strategy. 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

2.3. Energy consumption at Swisscom

In 2018, energy consumption (electricity and fuels) rose slightly (558 GWh compared to 548 in 2017). This was a result of growth in the core business. In spite of that, thanks to the implemented efficiency measures and resulting savings, energy efficiency was increased from 1 January 2016 onward by 20.5% in the year under review (source: Sustainability Report 2018).

The private usage of vehicles from the Swisscom fleet was taken into consideration and subtracted from the fuel consumption.

Table 1: Energy consumption and energy mix of Swisscom Ltd in Switzerland according to system boundaries (source: Swisscom Annual Report 2018)

Energy consumption and mix [MWh]	2016	2017	2018
Electrical energy consumption	448,543	467,505	485,141
Vehicle fuel consumption petrol	5,987	4,544	4,655
Vehicle fuel consumption diesel	32,319	30,912	30,795
Vehicle fuel consumption natural gas	536	86	47
Heating oil consumption (emergency power systems)	953	926	1,044
Heating energy consumption heating oil	28,578	25,704	18,150
Heating energy consumption natural gas	7,821	7,390	7,595
Heating energy consumption district heating	11,013	11,098	10,338
Heating energy consumption biomass	–	–	319
Total energy consumption	535,751	548,165	558,083

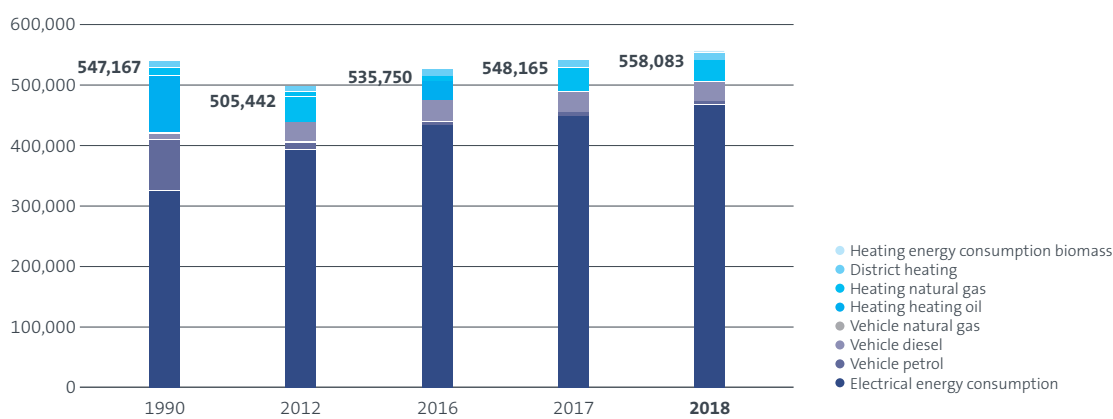
Table 1.1: Overview of energy consumption and energy mix of Swisscom Ltd

In g CO ₂ eq. / kWh	2016	2017	2018
Energy consumption			
Electricity	448,543	467,505	485,141
Fuels	38,842	35,542	35,497
Heating fuels	48,366	45,117	37,446
Total energy consumption	535,751	548,165	558,083

The table shows the shift in energy consumption from fossil sources to electricity

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

in Megawatthours MWh



2.4. Energy consumption by customers

The energy consumed by customer devices can be extrapolated to 299 GWh based on the devices, the energy consumption of each device and the typical usage profiles (2017: 273 GWh). Swisscom makes its customers aware of the many options available for reducing energy consumption, as well as offering concrete solutions.

3. Details of emissions

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 beyond Swisscom's control (SF₆).

Scope 1 emissions from heating fuels and refrigerants fell slightly year-on-year in 2018. This is due to

building renovations and the reduced loss of refrigerants. The emissions from fuels are unchanged; the use of new, more fuel-efficient vehicles (reduction of the average CO₂ emissions of fleet cars) is continuing.

Emissions from oil consumption for stationary emergency power stations and emissions from the loss of refrigerants in cooling systems are reported separately. These 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:	2016	2017	2018
Vehicle fuel consumption petrol	1,621	1,222	1,260
Vehicle fuel consumption diesel	8,671	8,292	8,261
Vehicle fuel consumption natural gas	95	15	8
Heating energy consumption heating oil	7,644	6,876	4,855
Heating oil consumption (emergency power systems)	255	248	279
Heating energy consumption natural gas	1,550	1,465	1,506
Heating energy consumption biomass			–
Scope 1 CO ₂ eq. emissions (from energy consumption)	19,837	18,119	16,171
Scope 1 CO ₂ eq. emissions (from refrigerants)	220	352	118
Scope 1 CO₂ eq. emissions	20,057	18,471	16,289

The reduction in Scope 1 emissions amounts to 12% in 2018. This success is due, on the one hand, to a mix of energy sources with lower CO₂ emissions and, on the other, increasingly to the replacement of oil

heating systems by heat pumps or, since 2018, by wood heating systems as well as a reduction of around 9% in the number of heating degree days compared with 2017.

3.2. Development of scope 2 emissions

Since 1 January 2010, Swisscom has followed a market-based approach. It covers 100% of its electricity needs with a mix of renewable energy sources, mostly domestic hydroelectricity with some solar and wind power. This has led to a drastic reduction in scope 2 emissions.

Efficiency measures have also helped prevent scope 2 emissions at Swisscom, reducing total electrical consumption in operations and in the buildings by 33.0 GWh in 2018 (2017: 26.2 GWh). Effective methods in this regard have been the virtualisation of servers, the Mistral fresh-air cooling method, the renovation of the entire mobile network with energy-efficient infrastructure and the increased efficiency of data centres (lower PUE values).

Finally, Swisscom also generates electricity from photovoltaic installations. Total output of 2,205 had been installed by the end of 2018, producing an estimated 1,864 MWh (2017: 1,756 MWh) in the reporting year.

In accordance with GHG Protocol Scope 2 Guidance, this report contains the hypothetical scope 2 emissions prior to compensation (location-based approach) and the effective emissions after 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 guarantees of origin from hydropower.

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

In g CO ₂ eq. / kWh	Validity	Emission factor (total)	EF Scope 2 (direct)	EF Scope 3 (indirect)
Electricity				
Supplier electricity mix Switzerland (“location-based”)	from 2014	149.40	119.90	25.50
Certified electricity (“market based”)	until 2016	15.60	0	15.60
Certified electricity (“market based”)	from 2017	13.00	0	13.00
District heating				
District heating (general)	2016	75.94		
District heating (average value)	2017	85.40		
District heating according to scopes	2018	146.10	101.78	44.32

In 2016, Swisscom applied a precisely determined emission factor for district heating of 75.94 CO₂/kWh. In 2017, the emission factor was 85.4 g CO₂/kWh, and in 2018 the emission factor for district heating was

calculated by scope (scope 2 and 3). It was based on a calculation performed by myclimate specifically for Swisscom over a weighted average using the district heating calculator from the company treeze Ltd.

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:	2016	2017	2018
Electricity consumption supplier electricity mix Switzerland (“location-based”)	53,780	56,054	58,168
Electricity consumption certified electricity (“market based”)	0	0	0
Heating energy consumption district heating	826	948	1,052
Scope 2 CO₂ eq. emissions (with certified electricity)	826	948	1,052

3.3. Development of scope 3 emissions

The emissions in the supply chain are considered 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 significantly exceed other scope 3 emissions. Other emissions are derived from materials and energy flows or are estimated using approximate values or empirical information (category 7 and category 11).

Table 5: Details of scope 3 emissions

Scope 3 CO ₂ eq. emissions [tonnes] from:	2016	2017	2018
Cat. 1 Purchased goods and services	320,900	263,400	311,600
Cat. 2 Capital goods	6,000	8,900	3,900
Cat. 3 Provision of electricity	5,831	6,078	6,307
Cat. 3 Provision of district heating			458
Cat. 3 Provision of vehicle fuels (petrol + diesel) ¹	1,657	2,031	1,977
Cat. 3 Provision of heating oil	1,369	1,191	831
Cat. 3 Provision of natural gas	492	461	409
Cat. 3 Provision of biomass	–	–	8
Cat. 4 Upstream transportation and distribution	22,100	19,000	17,800
Cat. 5 Waste generated in operations	3,970	3,342	2,434
Cat. 6 Rail travel in Switzerland	167	96	102
Cat. 6 International rail travel	30	19	22
Cat. 6 European flights	894	1,030	1,016
Cat. 6 Intercontinental flights	1,281	1,471	1,400
Cat. 6 Car journeys to meetings	1,023	841	905
Cat. 7 Employee commuting (public transport)	1,829	1,370	1,318
Cat. 7 Employee commuting (car)	17,478	16,150	15,543
Cat. 8 Upstream leased assets	9600	5,300	8,000
Cat. 9 Downstream transportation & distribution	5,600	5,600	1,200
Cat. 11 Use of sold products	24,994	42,788	44,700
Cat. 12 End of life treatment of sold products	3,709	2,315	220
Cat. 15 Investments	9,698	4,884	4,943
Total Scope 3 CO₂ eq. emissions	438,624	386,265	425,093

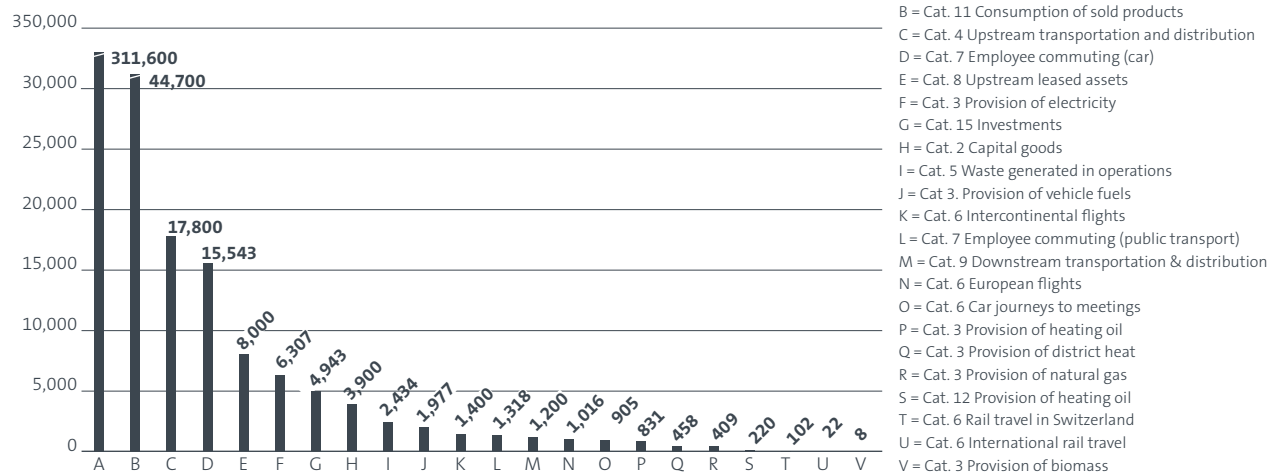
1 Vehicle fuel consumption without private use of Swisscom's fleet

Categories 10, 13 and 14 are not relevant for Swisscom.

Emissions in the supply chain (categories 1, 2, 4 and 8) increased in 2018, mainly due to higher purchase volumes than in the previous year and higher CO₂ intensities of new or newly included suppliers. The increase in purchase volume ultimately represents an increase in the number of devices installed with customers and explains the increase in emissions in category 11. Emissions in category 3 for the provision of fossil fuels are decreasing. This is a result of replacing traditional heating systems with heat pumps or increasing the recovery of waste heat. The provision of biomass and its transport cause some emissions that are estimated here. The use of biomass is considered CO₂-free, i.e. the biogenic CO₂ is not classified under scope 1. The emissions from the provision of electricity for 2017 and 2018 (category 3) were calculated taking into account the new emission factor for electricity. With respect to category 12 emissions, their reduction is due to a new approach that is limited to equipment that has actually been returned and disposed of.

Chart 2: All scope 3 emissions by GHG category

in tonnes CO₂ eq

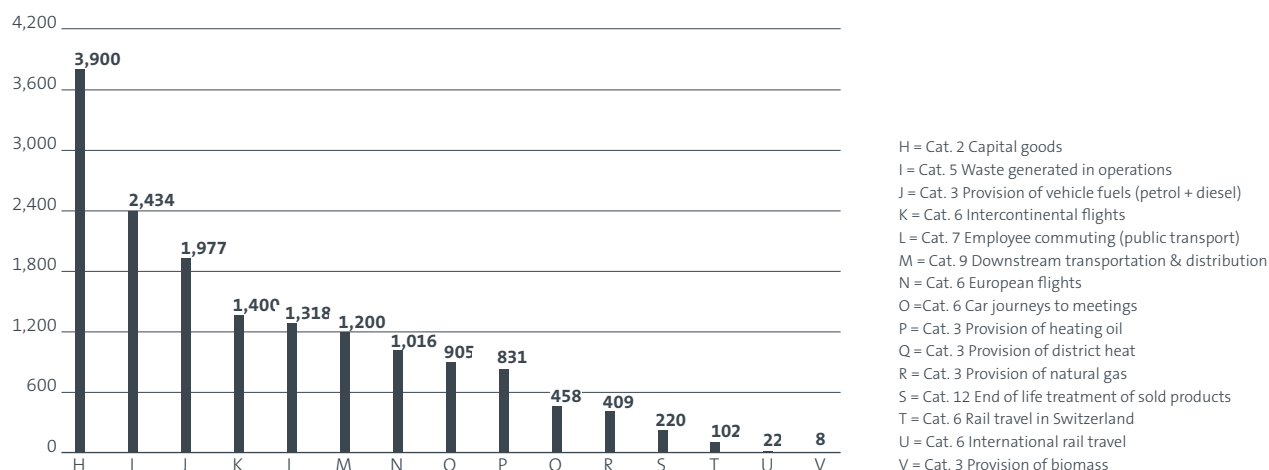


- A = Cat. 1 Purchased goods and services
- B = Cat. 11 Consumption of sold products
- C = Cat. 4 Upstream transportation and distribution
- D = Cat. 7 Employee commuting (car)
- E = Cat. 8 Upstream leased assets
- F = Cat. 3 Provision of electricity
- G = Cat. 15 Investments
- H = Cat. 2 Capital goods
- I = Cat. 5 Waste generated in operations
- J = Cat. 3 Provision of vehicle fuels
- K = Cat. 6 Intercontinental flights
- L = Cat. 7 Employee commuting (public transport)
- M = Cat. 9 Downstream transportation & distribution
- N = Cat. 6 European flights
- O = Cat. 6 Car journeys to meetings
- P = Cat. 3 Provision of heating oil
- Q = Cat. 3 Provision of district heat
- R = Cat. 3 Provision of natural gas
- S = Cat. 12 Provision of heating oil
- T = Cat. 6 Rail travel in Switzerland
- U = Cat. 6 International rail travel
- V = Cat. 3 Provision of biomass

Chart 3 provides a more detailed view of the categories with lower emissions.

Chart 3: Selected scope 3 emissions by GHG category

in tonnes CO₂ eq



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

4. Details of savings

4.1. Overview of savings measures

Measures that lead to energy savings and reduced greenhouse gas emissions are described in the report as “directed actions” and “enabling effects”. These relate to savings by customers using green ICT services (“enabling effects”, scope 4) as well as measures within Swisscom that lead to a reduction in the consumption of heating and vehicle fuels and of

electricity. Until 2017, reductions in greenhouse gas emissions using green ICT services were calculated using the GHG Protocol Product Life Cycle Accounting and Reporting Standard ICT Sector Guidance. Since 2018, they have been calculated in accordance to the ICT Sector Guidance based on the GHG Protocol Product Life Cycle Accounting and Reporting Standard.

Table 6: Measures to reduce emissions (directed actions)

Scope	Directed Actions
Scope 1 emissions	Increase efficiency, reduce the need (target 2: 1) <ul style="list-style-type: none"> • Fleet roadmap: spec emissions down to 95 g CO₂ / 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) <ul style="list-style-type: none"> • Implementation of a program to increase energy efficiency • Compensation with Guarantee of Origin and green electricity labelled naturemade star • Virtualization of servers • Cooling of networks with fresh air (Mistral) • Low PUE of data centers
Scope 3 cat. 1 Purchased goods	Selective measures in the supply chain <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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) <ul style="list-style-type: none"> • 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) <ul style="list-style-type: none"> • Most important measure: Fleet roadmap: spec. emission down to 95 g CO₂ / km in 2020
Scope 3 cat. 3 Provision of heating oil	Increase efficiency, reduce the need (target 2: 1) <ul style="list-style-type: none"> • Most important measure: building renovations
Scope 3 cat. 3 Provision of natural gas	Increase efficiency, reduce the need (target 2: 1) <ul style="list-style-type: none"> • Most important measure: building renovations
Scope 3 Cat 4 Upstream Transportation and Distribution	Selective measures in the supply chain <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Integration of suppliers in the CDP supply chain module
Scope 3 cat. 11 Consumption of sold products	Reduction of energy consumption of the device <ul style="list-style-type: none"> • 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 and efficiency improvements at Swisscom

4.2.1 Operational savings and efficiency improvements

To reduce the ecological footprint in the company's operations, Swisscom is adopting cost-cutting measures: including fresh-air cooling of the network (Mistral), the use of low-carbon energy sources, heat recovery, the increased use of heat pumps, own electricity generation with photovoltaic systems and the offsetting of emissions from electricity with guarantees of origin (market-based approach). There are three types of operational savings that lead to a reduction in CO₂ emissions:

- a) Savings resulting from operational measures under the terms of the target agreement on energy efficiency improvements and CO₂ reduction concluded with the Energy Agency for Industry (EnAW):

Swisscom reports its efficiency levels and carbon footprint on an annual basis under the terms of this target agreement. The target agreement runs to the end of 2020 and aims to increase energy efficiency. It is based on the Energy Act and the Swiss CO₂ Act. Execution of the agreement is governed by the implementing directive issued by the Federal Offices for the Environment and Energy on 9 November 2011.

Swisscom's aim according to the target agreement is to increase energy efficiency by 35% by 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 functions in the mobile network.

- b) Savings through the use of eco-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. Thus, Swisscom once again used 100% renewable electricity in 2018, as certified independently.

The company purchased 20.0 GWh of "naturemade star" eco-electricity from solar energy in 2018 (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 to generate solar power. Total output of 2,205 kWp had been installed by the end of 2018.

4.2.2 Reduction of Swisscom's activity-related CO₂ emissions

Swisscom makes its customers aware of the many options available for reducing energy consumption, as well as offering concrete solutions:

- a) Campaigns: Swisscom participates in awareness-raising and information campaigns run by the Swiss Federal Office of Energy (SFOE). The goal of these campaigns is to optimise the energy consumption of devices such as modems, routers and TV set-top boxes by encouraging customers to use the optimum settings. Swisscom augments these educational measures by continuing to inform its customers about energy consumption and explaining energy-optimised settings on its website.
- b) Swisscom TV: Swisscom TV 2.0 now stores recordings in the cloud, rather than on the set-top box itself. As a result, the box does not need a hard disk and consumes only around 26 kWh annually – which represents another significant improvement over the previous year (36 kWh). One reason for the box's reduced energy consumption is an optimised operating system; Swisscom has also provided Swisscom TV customers with detailed information on the most energy-efficient settings for their set-top box for day-to-day use and when they are on holiday. Swisscom finished replacing its customers' old TV boxes with the new, cloud-based TV box in 2017. At the end of 2018, Swisscom TV had 1.519 million customers and has thus experienced steady growth totalling 50% since 2013. Nevertheless, in the same period, customers' overall electricity consumption has fallen from 80 GWh to 61 GWh owing to the constant efficiency improvements to the box and the software/operating system.
- c) Internet-Box: the current Internet-Box 2 offers several energy-saving features. One is a time switch allowing users to set times during which the Wi-Fi, central storage or telephony (DECT) functions are switched off. Furthermore, the Internet-Box 2 means fewer devices are used in the home network. This is because the box replaces the multiple devices that used to be required for wireless connection of computers, TVs and HD fixed-line telephony, thereby significantly reducing energy consumption.

4.2.3 Reduction of the emissions in the supply chain – Supply Chain Program

In the year under review, Swisscom continued its cooperation with the Carbon Disclosure Project (CDP). The CDP is a non-profit organisation founded in 2000. The organisation encourages companies to publish relevant environmental data, including data on harmful greenhouse gas emissions and water consumption. Once a year, the CDP, on behalf of investors, uses standardised questionnaires to collect information and data from companies on a voluntary

basis as regards CO₂ emissions, climate risks and reduction goals and strategies. The CDP maintains the world's largest database of this kind.

As part of its cooperation with the CDP, Swisscom contacted and surveyed 71 (prior year: 62) of its key suppliers. The suppliers surveyed have a high order volume or a high degree of environmental relevance. The response rate was 92% (prior year: 91%), which again allowed the survey to be brought to a successful conclusion. In the fourth quarter of 2018, the CDP analysed the responses and applied a scoring system to rate the suppliers who took part. The results are partially incorporated into the e-tasc platform from EcoVadis and used as a basis on which to comprehensively assess Swisscom's key suppliers.

As part of its new CR Strategy 2025, Swisscom is once again pursuing a defined target in the area of climate protection. As the supply chain is responsible for a major portion of Scope 3 emissions, CO₂ emissions in the supply chain play a fundamental role in climate protection. Swisscom will again take part in the Action Exchange Programme (AEP) in 2019 as part of its work with the CDP and define specific development plans with individual suppliers. Thanks to the emission data that the CDP collects from suppliers, Swisscom has a reliable basis for determining reduction targets for itself as well as for its key suppliers.

4.3. Savings by customers (enabling effects with the services portfolio)

Customers can reduce their emissions by using the sustainable portfolio made available to them by Swisscom. The sustainable portfolio offers six 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.

- b) 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.
- c) Savings through services that enable customers to control devices or vehicles intelligently via machine-to-machine connections. These services help, for example, to optimise logistics systems by improving route selection or to make monitoring of filling levels, such as oil tanks or waste containers, efficient. These services reduce the number of transport kilometres travelled by logistics fleets. They also make it possible to control heating remotely.
- 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, dematerialisation 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 functioning mobile handsets for further use in developing countries. This extends their useful life and gives people in developing countries access to low-cost devices.
- 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 significantly reduces paper waste through an intelligent zone concept and 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 Table 7. Swisscom developed the calculation method in collaboration with the myclimate foundation.

Table 7: Savings using services of green ICT services

Sustainable ICT portfolio	Service group	Service	2016	2017	2018
Reducing travel	Virtual conferences	Conferencing service	37,539	34,300	27,769
		MCC/UCC	86,445	114,498	138,519
	Home office	Home office services	165,599	176,023	196,129
Saving energy	Machine-to-Machine	Logistics, heating	35,724	38,659	40,897
		Data centre services	Hosting	11,302	23,359
Saving paper	Saving paper	Housing	953	1,236	1,148
		e-bill, Conextrade, printing	1,308	1,282	1,439
Dematerialisation		Data carriers and retail space	108,023	107,085	116,689
Mobile Aid			1,935	1,830	2,035
Total CO₂ eq. savings portfolio			448,827	498,273	569,003

Managed Unified Communications and Collaboration (UCC) is a solution that combines telephony, email,

instant messaging, desktop sharing, and telephone and video conferencing. This location-independent

communication enables simple and flexible collaboration over any distance without having to travel. The use of these collaborative communication services as well as home office services is steadily increasing to a pleasing extent. This explains the increase in CO₂ savings in this category. The massive virtualisation of servers in 2018 and the improvement of the PUE (power usage effectiveness) in data centres where customer applications are hosted (hosting) have produced very significant CO₂ savings. The CO₂ savings brought about by dematerialisation increased considerably in 2018. The extent of a rebound effect (if any) in this category is currently being investigated. As a precaution, this report assumes a 5% rebound, and the savings have been reduced by this percentage. A rebound effect could be due to product returns or an increase in freight transport.

5. Summary of direct and indirect emissions and savings

5.1. Summary of emissions

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

CO ₂ eq. emissions [tonnes]	2016	2017	2018
Scope 1 (from consumption of fossil energies)	19,837	18,119	16,171
Scope 1 (from refrigerants)	220	352	118
Scope 2 (from electricity, "location-based")	53,780	56,054	58,168
Scope 2 (from district heating)	826	948	1,052
Total Scopes 1, 2 ("location-based")	74,663	75,473	75,509
Total Scopes 1, 2 ("market-based")	20,883	19,419	17,341
Scope 3	438,624	386,265	425,093
Total Scopes 1, 2 ("location-based"), 3	513,288	461,738	500,602

5.2. Summary of savings

Table 9: Impact of directed actions and enabling effects

Directed Actions + Enabling Effects	2016	2017	2018
Savings by customers thanks to the sustainable ICT portfolio (enabling effects)	448,827	498,273	569,003
Electricity offset with guarantees of origin/green electricity (as directed action)	53,780	56,054	58,168
Total Directed Action and Enabling Effects	502,607	554,326	627,172

The reductions in energy consumption and emissions resulting from increased energy efficiency (4.2.1a) are already included and not counted a second time here.

5.3. Ratio of savings to emissions

Table 10: Ratio of savings to emissions

Target 2:1	2016	2017	2018
Savings by customers thanks to the sustainable ICT portfolio (enabling effects)	448,827	498,273	569,003
Emissions (without Fastweb, electricity compensated)	449,809	400,800	437,491
Ratio savings to emissions (without electricity and Fastweb)	0.99	1.24	1.30

The ratio of savings by customers to the emissions of Swisscom (excluding Fastweb, with electricity compensated) was 1.30 in 2018.

5.4. Summary of target achievement

Table 11: Achievement of targets

Partnership	Target agreement	Status 2018	Target year	Target
Swisscom	Ratio CO ₂ savings achieved by customers to CO ₂ emissions Swisscom	1.30	2020	2:1
Swisscom	Energy efficiency (savings measures over total energy consumption, not weighted)	19.5%	2020	35%
EnAW	Energy efficiency (savings measures over total energy consumption, weighted)	20.5%	2022	35%
EnAW	CO ₂ intensity of heating fuels (CO ₂ emissions as a proportion of total CO ₂ emissions) ¹ and CO ₂ savings)	93.4%	2022	92%
EnAW	CO ₂ intensity of fuels (CO ₂ emissions as a proportion of total CO ₂ emissions) ¹ and CO ₂ savings)	69.8%	2022	76%
VBE	Energy efficiency (savings measures over total energy consumption, not weighted) ¹	43.3%	2020	25%
SBTI	CO ₂ Reduction Scope 1	-32%	2020	-10%
SBTI	CO ₂ Reduction Scope 2	-98.3%	2020	-100%
SBTI	CO ₂ Reduction Scope 3	+0.45%	2020	-18%

¹ Data from previous year (externa reports)

The 2018 results are evidence of a very positive trend (with the exception of scope 3 emissions). Several targets have already been achieved: e.g. scope 1 emission reduction, VBE energy efficiency and CO₂ intensity for fuels according to EnAW. With regard to indirect scope 3 emissions, the supply chain is causing

difficulties as the programmes implemented with suppliers have not yet shown their full impact. The indicators of the EnAW and the VBE are consistent with the values for 2017 defined by the partners of the target agreements, as the indicators for 2018 will not be available until March 2019.

5.5. Summary of CO₂ intensities

Table 12: CO₂ intensities

Tonnes CO ₂ eq. or To/unit	Unit	2014	2015	2016	2017	2018
CO₂-intensities						
CO ₂ scope 1	tonnes	21,696	20,633	20,057	18,472	16,289
CO ₂ Scope 2 ("market based")	tonnes	794	765	826	948	1,052
CO ₂ -intensity of energy	Tonnes / TJ	15.3	13.7	12.9	11.5	9.9
CO ₂ -intensity turnover	Tonnes / mio. CHF	2.3	2.2	2.2	2.0	1.9

The intensities are calculated on the basis of the verified indicators and published in Swisscom's sustainability reports or annual reports. Only scope 1 and 2 emissions related to operations are taken into account. The revenue is Swisscom's revenue in Switzerland. The CO₂ intensity of Swisscom's energy mix is declining. This is a direct result of the efficiency and emission reduction programmes implemented in recent years, particularly in buildings. Swisscom, for example, is systematically replacing oil heating systems with heat pumps or wood heating systems; it also reuses residual heat from IT processes wherever possible.

6. Notes

6.1. Base year

The new base year for scope 1 and 2 emissions is 2012.

2012 is also the start year for the second target agreement with the Energy Agency for 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 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

In accordance with the ISO 14064-1 standard, significant changes in the scope of consolidation, changes of ownership or control, or the application of new or corrected emission factors shall lead to a recalculation of the base year emissions, provided these changes result in a change to the greenhouse gas emissions of more than 10% (compared to the emissions in the same year before the changes).

Scope 1: No significant changes are expected in the scope of consolidation in 2018.

Scope 2: There are no changes in 2018 compared to the previous year.

Scope 3: No base year recalculation was performed. The scope 3 emissions included in category 3 are based on electricity with guarantees of origin ("marked-based" approach).

6.3. Activities and energy consumption

Swisscom takes the following forms of 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 buildings
- fuel for emergency power systems
- refilling of refrigerants

Under scope 2 (indirect emissions), Swisscom considers emissions from electricity consumption for the operation of the following systems and facilities:

- all types of switching equipment (access network, i.e. DSL, FTTH, FTTS and core network)
- base stations (mobile) and transmitter stations (radio and television)
- base stations (mobile) and transmitter stations (radio and television)
- shops (lighting and ventilation)
- computerised office workplaces
- data centres, minus the electricity consumed for hosting and housing
- Swisscom TV (servers)

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

Swisscom takes the following categories 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 Swisscom buildings – 75% of Swisscom Shops or 102 shops)
- **Category 9:** Downstream transportation and distribution from distribution centres in Switzerland to customers (according to estimates based on the previous year)
- **Category 11:** Use of sold products
- **Category 12:** Disposal of terminals
- **Category 15:** Investments and/or the subsidiary Fastweb in Italy

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

6.4. Biomass, removal and CO₂ sinks

As in previous years, Swisscom did not make use of any forms of CO₂ removal or CO₂ sinks within the operational scope of the company in 2018. It has renovated a number of sites and now heats them with wood pellets (biomass). The heating systems are the automatic pellet firing type with an output of less

than 50 kW (system category 11). The biomass consumed has been newly recorded and emissions have been recalculated.

6.5. Greenhouse gas inventory according to ISO 14064

A greenhouse gas inventory according to ISO 14064 includes the emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and, since 2013, nitrogen trifluoride (NF₃). This selection is consistent with the requirements of the Kyoto Protocol. Swisscom reports on its emissions in aggregated form of the CO₂ equivalents for CO₂, CH₄ and N₂O. Emissions from refrigerants are listed separately. The emission sources are as follows:

Combustion:

- **CO₂**: combustion of fossil fuels (heating and mobility) or from the processes to produce electricity (biogenic CO₂ from biomass combustion – i.e. from wood heating – continues to remain at a marginal level)
- **CH₄**: combustion of fossil fuels (heating and mobility)
- **N₂O**: combustion of fossil fuels (heating and mobility)

Cooling:

- **HFCs**: losses of refrigerants from cooling systems
- **PFCs**: losses of refrigerants

The following greenhouse gases are not included in the inventory:

- **SF₆**: These emissions are beyond the control of Swisscom.
- **Other**: The emissions from fire extinguishers are negligible or non-existent (halon).
- **NF₃**: Emissions from the production of LCD monitors (displays) are not currently included in the inventory due to a lack of clarity regarding their detection.

6.6. Upstream and downstream levels for scope 3 analysis

The analysis of scope 3 emissions in categories 6 and 7 (travel and commuting) considers not only direct operations but also the upstream and downstream activities in connection with the manufacture of vehicles (trains and cars) and the construction of infrastructure (road and rail), which are optional under the GHG Protocol standard for upstream and downstream phases. Upstream and downstream activities for the other categories are not recorded due to a lack of data.

6.7. Emission factors

Emission factors for scope 1 emissions:

Since 2015, Swisscom has used the emission factors of the ecoinvent life cycle inventory database for scope 1 emissions from the consumption of fossil fuels. For scope 1 emissions from refrigerants, Swisscom uses the corresponding global warming potential with a horizon of 100 years (GWP100) and reports the emissions in tonnes of CO₂ eq. (IPCC 2013).

Other sources of emissions such as emissions from fire extinguishers are negligible, non-existent (halon) or outside Swisscom's control (SF₆).

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 were calculated by myclimate based on a study on the Swiss electricity mix (environmental review: electricity mix Switzerland 2014 from 7 December 2016) and on the basis of the data provided for the individual scopes by ecoinvent version 3.1 and version 3.4 from 2018 onward.

Swisscom sources its district heating from different heat networks. For scope 2 emissions from district heating, Swisscom used an emission factor of 75.94 g CO₂ eq./kWh calculated directly by myclimate in autumn 2015 for 2015 and 2016. In 2017, Swisscom applied an emission factor of 85.4 g CO₂ eq./kWh calculated by myclimate specifically for Swisscom over a weighted average using the district heating calculator from the company treeze Ltd. In 2018, the emission factor for district heating was calculated by scope (scope 2 and 3).

Emission factors for scope 3 emissions:

For scope 3 emissions, Swisscom uses the emission factors from the ecoinvent life cycle inventory database version 2.2 for mobility, as is shown in the mobitool, or, wherever possible, version 3.4.

Specific emission factors from the ecoinvent life cycle inventory database version 3.1 were derived for the following:

- **Emissions in the supply chain (categories 1, 2, 4 and 8)**: The relevant emission factors have been calculated for the individual scopes based on data from ecoinvent version 3.1 and version 3.4 from 2018 onward by the company treeze Ltd. (methodology for determining greenhouse gas emissions in the ICT sector supply chain).
- **Emissions from the provision of electricity (category 3, Table 3), the disposal of waste (category 5) and the use and disposal of terminals (categories 11 and 12)**: The relevant emission factors have been calculated for the individual scopes by myclimate based on data from ecoinvent version 3.1 and version 3.4 from 2018 onward.

- **Provision of district heating (category 3, table 3):**
In 2018, the respective emission factors were calculated on the basis of ecoinvent version 3.4 data.
- **Business travel (category 6):** The relevant emission factors and emissions have been calculated by the partner companies (SBB or Kuoni Business Travel).
- **Mobility (category 7):** The relevant emission factors correspond to those of mobitool, based on ecoinvent version 2.2.
- **Downstream transportation and distribution to customers (category 9):** The relevant emission factors and emissions have been estimated by the logistic partner (Swiss Post).

Emission factors for savings (scope 4):

- **Emission factors for determining customer savings thanks to Green ICT:** the relevant emission factors have been calculated for the individual scopes by myclimate based on data from ecoinvent version 3.4 and various external studies as well as Swisscom's own data.

6.8. References

6.8.1 Other reports

- **Swisscom Sustainability Report 2018:** <http://report.swisscom.ch/de>
- Swisscom Climate Reports 2016 and 2017
- Carbon Disclosure Project (CDP): <https://www.cdp.net>

6.8.2 Legislation and directives

- Swiss Federal Act of 23 December 2011 on the Reduction of CO₂ emissions (CO₂ Act); SR 641.71; www.admin.ch/ch/d/sr/c641_71.html
- Swiss Federal Energy Act of 30 September 2016 (EnG); SR 730.0; www.admin.ch/ch/d/sr/c730_0.html
- **Directive:** Target agreement with the federal government to boost energy efficiency, Berne, 14 March 2014

6.8.3 References for emission factors

- **FOEN:** Fact sheet “CO₂-emission factors for greenhouse gas inventory (2016)” fact sheet, <https://www.bafu.admin.ch/dam/bafu/de/dokumente/klima/fachinfo-daten/co2-emissionsfaktorendesschweizeriscentreibhausgasinventars.pdf.download.pdf/co2-emissionsfaktorendesschweizeriscentreibhausgasinventars.pdf>
- **ecoinvent life cycle inventory database version 2.2 (2010) and version 3.4:** www.ecoinvent.org
- **mobitool:** www.mobitool.ch; the mobitool database takes its data from the ecoinvent life cycle inventory database (version 2.2)
- **Emission factor for district heating:** district heat calculator from treeze Ltd., http://treeze.ch/fileadmin/user_upload/calculators/KBOB_Rechner/Fernwaerme.html
- **District heating 2018:** scope 2 and 3 emission factors, myclimate, in relation to the ecoinvent life cycle inventory database (version 3.4)
- **Electricity:** Environmental review: electricity mix Switzerland 2011, Philippe Stolz, Rolf Frischknecht, treeze Ltd., on behalf of Swiss Federal Office for the Environment (FOEN), 6 January 2015
- **Electricity:** Environmental review: electricity mix Switzerland 2014, Annika Messmer, Rolf Frischknecht, treeze Ltd., on behalf of Swiss Federal Office for the Environment (FOEN), 7 December 2016
- **SFOE 2016:** Swiss wood energy statistics, 2017 survey
- **Swisscom’s supply chain greenhouse gas emissions (scope 3):** methodology report (11 January 2019). Philippe Stolz, Rolf Frischknecht, treeze Ltd. Swisscom internal document, unpublished emission factors for directed actions (savings or scope 4): “green ICT effect”; Swisscom internal document, not published.

6.8.4 Other references

- **EnAW (Energy Agency of the Swiss Private Sector):** <https://enaw.ch>
- **VBE (“Exemplary in energy” initiative):** www.energie-vorbild.admin.ch/vbe/de/home.html
- **SBTI (Science Based Targets initiative):** <https://sciencebasedtargets.org/>
- **Energy Strategy 2050 Swiss federal government:** www.bfe.admin.ch/energiestrategie2050/index.html?lang=de
- **Climate change in Switzerland:** www.bafu.admin.ch/bafu/de/home/themen/klima/fachinformationen/klimawandel.html
- **MeteoSchweiz (climate indicators):** www.meteoschweiz.admin.ch/home/klima/schweizer-klima-im-detail/klima-indikatoren.html
- **Climate change scenarios in 2014 (CH2014 – Impacts):** www.ch2014-impacts.ch/index.php?lang=fr
- **Climate change scenarios in 2018:** www.meteoschweiz.admin.ch/home/klima/klimawandel-schweiz/klimaszenarien.html

7. Contact and further questions

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8. Verification



Greenhouse Gas Verification Statement Number
CCP.ISO1406401.(1500615).2018/02/19

The inventory of Greenhouse Gas emissions in the period
01/01/2018 – 31/12/2018 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:

75'509 tCO₂e (Scope 1+2; gross location-based emissions for
electricity)

17'341 tCO₂e (Scope 1+2; gross market-based emissions for
electricity)

425'093 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:



Peter Simmonds
Business Manager
SGS United Kingdom Ltd
Verification Statement Date 14th February 2019

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).2018/02/19

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 01/01/2018 – 31/12/2018.

SGS conducted a third party verification following the requirements of ISO 14064-3:2006 of the provided CO₂ equivalent assertion in the period November 2018 to January 2019.

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 12/06/2018.

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: 01/01/2018 – 31/12/2018
- 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 01/01/2018 – 31/12/2018 disclosing Scope 1 and 2 emissions of 75'509 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 75'509 tonnes CO₂e represents mandatory reportable emissions according to boundaries as defined by ISO 14064-1. A further 425'093 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 01/01/2018 to 31/12/2018, and in addition to scope 1 and 2 emissions of 75'509 metric tonnes CO₂ equivalent (including location-based emissions for electricity), is a disclosure of emissions of 17'341 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 01/01/2018 – 31/12/2018 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)**. 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.