

CO₂ emissions: hot spots and quantification of scope 3 emissions of a telecom provider

Swisscom
Corporate Responsibility

LCA Tagung, 31.3.2015, Zürich



Agenda

1. Framework, Mission & values, CEO statement
2. Targets and strategy
3. CO₂ emissions and reductions
4. References and standards considered
5. System boundary
6. Scope 3 Supply chain emissions
7. Scope 3 Supply chain hot spots
8. Results
9. Measures and next steps

Internal drivers for sustainability

Sustainability as competitive advantage

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“Our goal is to position Swisscom as one of the most sustainable companies in Switzerland and the global ICT industry, because we have a special responsibility to the environment and society, and because we believe that it also helps us to be more successful in the market.”



Urs Schaeppi, CEO Swisscom

Target for climate protection

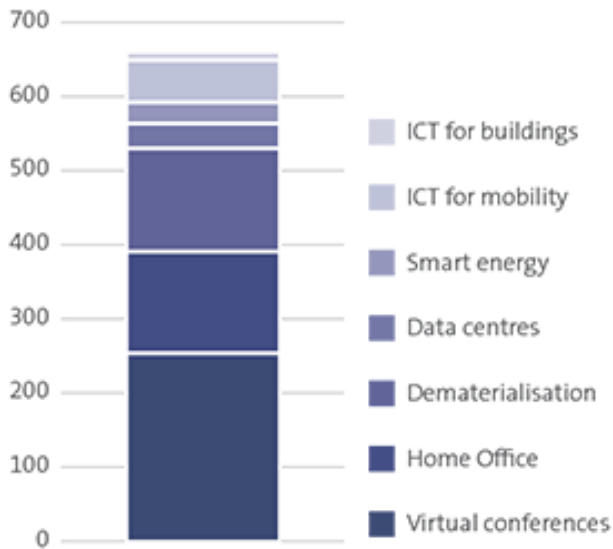


Climate protection

Our goal: in collaboration with our customers we want to save by 2020 double the amount of CO₂ that we generate through our entire operations and supply chain.

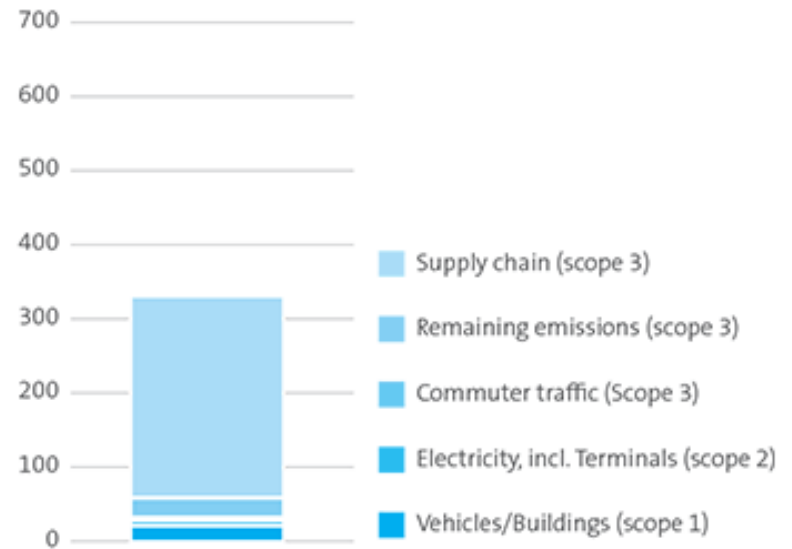
The 2:1 target for 2020

Savings by the customers 2020 in kt CO₂



[Stand 2013: 286 kt CO₂ eq]
 [Stand 2014: 323 kt CO₂ eq]

Emissions Swisscom 2020 in kt CO₂



[Stand 2013: 396 kt CO₂ eq]
 [Stand 2014: 419 kt CO₂ eq]

Standards

- Swisscom's greenhouse gas inventory and its verification are based on the following standards:
- **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)
- **Greenhouse Gas Protocol:** GHG Protocol Corporate Accounting and Reporting Standard
- **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 (1st draft)

System boundary

Scope 1 & 2 : Operations in Switzerland

Limits between scopes 1&2 and 3 not so straightforward.

Ex: Categorizing GHG Emissions Associated with Leased Assets

		Type of Leasing Arrangement	
		Finance / Capital Lease	Operating Lease
Consolidation Approach	Equity Share or Financial Control Approach Used	Lessee does not have ownership and financial control, therefore emissions associated with fuel combustion are scope 1 and with use of purchased electricity are scope 2 .	Lessee does not have ownership or financial control, therefore emissions associated with fuel combustion are scope 3 and with use of purchased electricity are scope 3 .
	Operational Control Approach Used	Lessee does have operational control, therefore emissions associated with fuel combustion are scope 1 and with use of purchased electricity are scope 2 .	Lessee does have operational control, therefore emissions associated with fuel combustion are scope 1 and with use of purchased electricity are scope 2 .

Scope 3: Supply chain -> Data from suppliers are rarely available.

Clear and reasonable definition of the considered emission sources and company-wide definition of system boundaries are difficult

Scope 3 emissions in the Supply chain

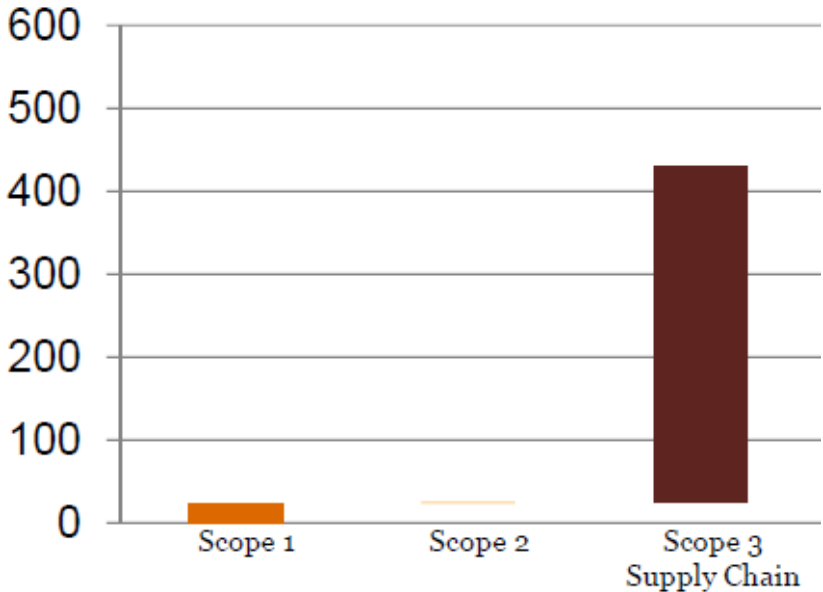
Solution chosen (2011):

ESCHER Method (ESCHER = Efficient Supply Chain Emissions Reporting)

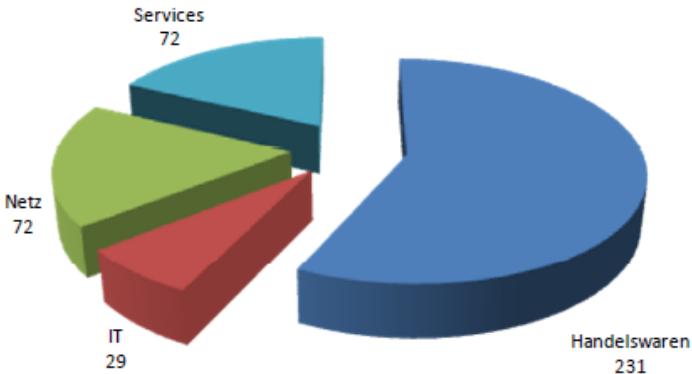
- Provides an efficient, inexpensive acquisition and management of the supply chain emissions.
- Based on recognized econometric methods and input / output data.
- Requires only readily available data from accounting.
- Capture all the upstream emissions of doing business.
- Meets the requirements of ISO 14064, the GHG Protocol Accounting Standards (2004) as well as the GHG Protocol Scope 3 Accounting and Reporting Standards.

Emissions of the supply chain dominate the total CO₂ emissions of Swisscom

- Analysis 2011: Emissions of the supply chain dominate the total CO₂ emissions of Swisscom.



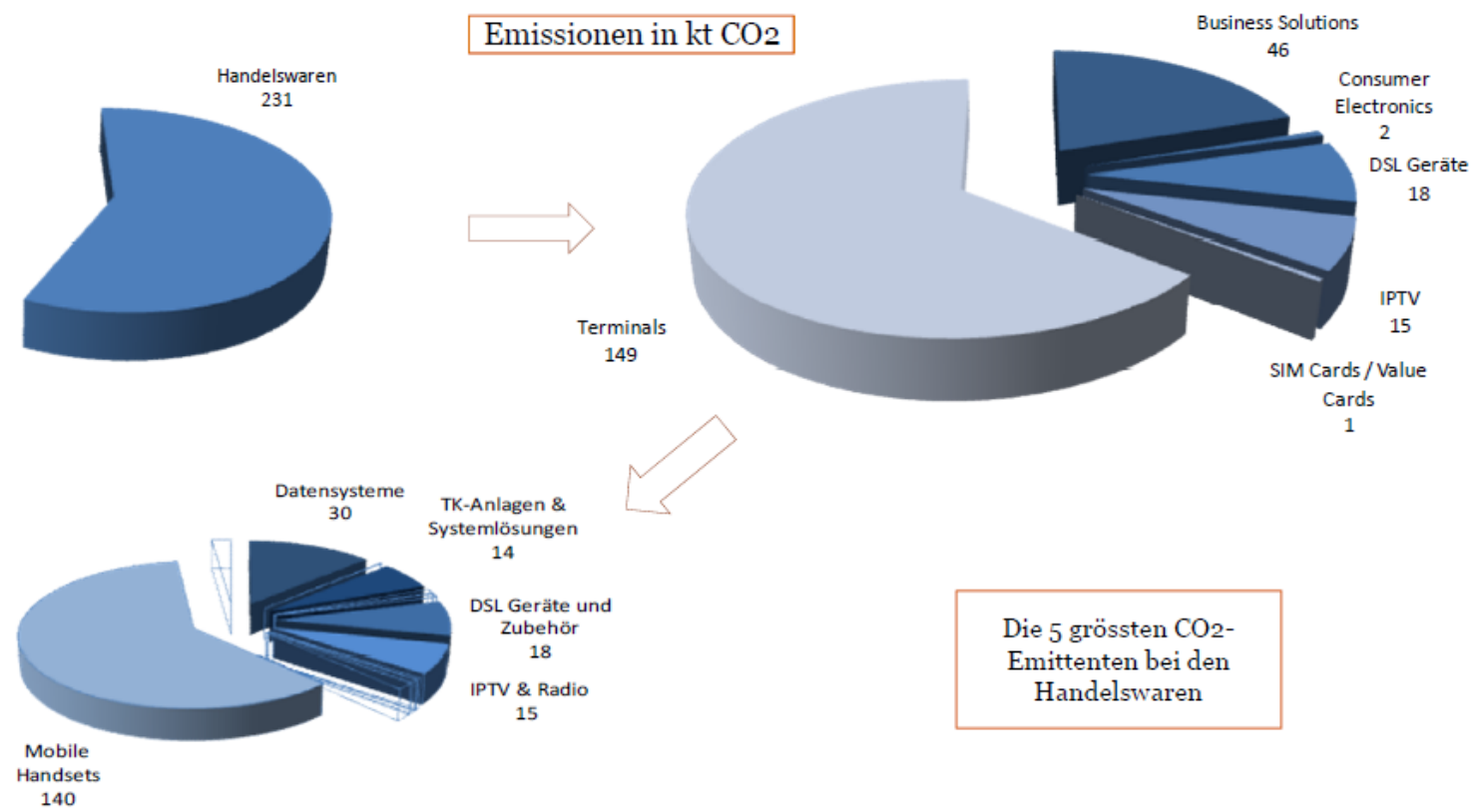
	Mio. CHF	kt CO ₂	% CO ₂
Merchandise	901	231	57%
Services	1'052	72	18%
Network	711	72	18%
IT	408	29	7%
Others	4	<1	0%
Total	3'076	405	100%



- Source: Analysis of Swisscom emissions, method Escher, pwc



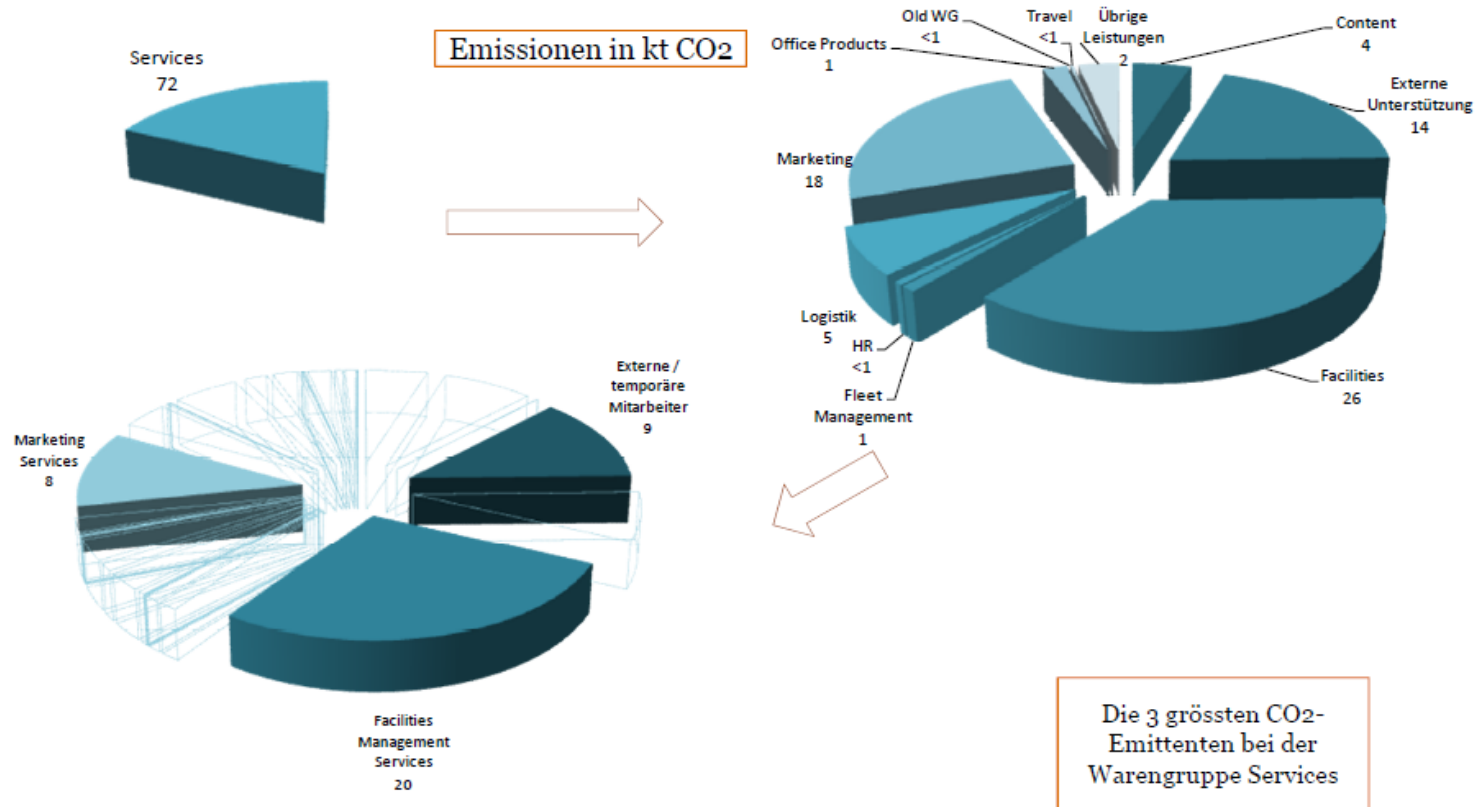
Hot spots in the supply chain: merchandise



Source: Analysis of Swisscom emissions, method Escher, pwc



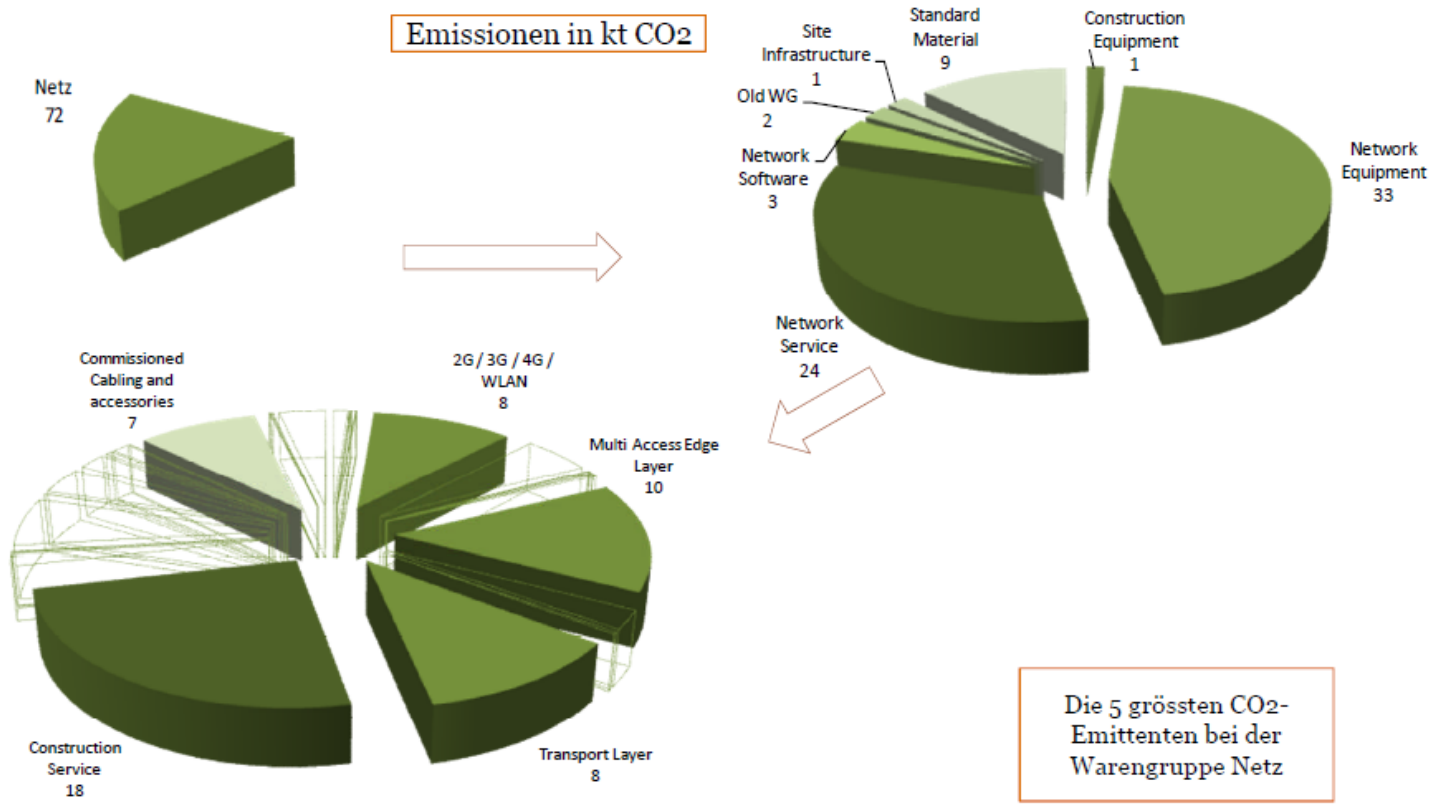
Hot spots in the supply chain: services



Source: Analysis of Swisscom emissions, method Escher, pwc



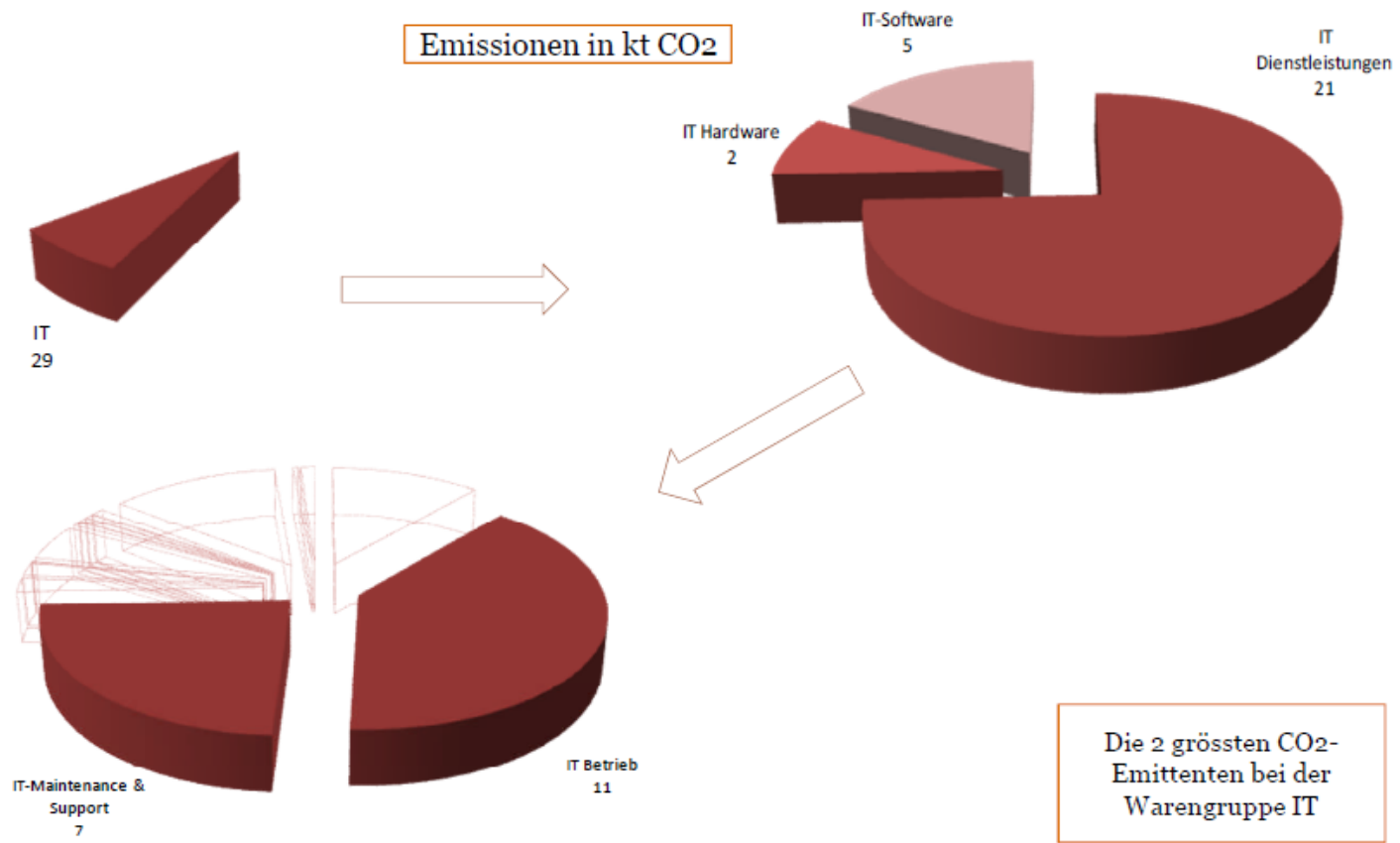
Hot spots in the supply chain: network



Source: Analysis of Swisscom emissions, method Escher, pwc



Hot spots in the supply chain: IT



Outcome

- Data behind the ESCHER method is based on validated average values per revenue.
- For the main sources of emissions issuers (around 20 category provide 75% of emissions), data should be supplemented by
 - Effective data of the selected suppliers
 - Life Cycle Assessment of Products and Services
 - Calculation based on numbers instead of sales

Mandate to calculate the emissions in the supply chain and to develop a tool an Treeze Ltd.

Scope 3 Emissions: LCA approach

- Based on the insights gained with Escher, a methodology was developed to quantify the greenhouse gas emissions of the supply chain (categories 1, Scope 2 and 4 of the emissions 3) using LCA data.
- The hotspots are either CO₂-intensive or have large purchase volumes. With a calculation tool, the CO₂ emissions of the supply chain on the basis of the purchase volume (in Swiss francs), building space or purchased quantities are quantified.
- Greenhouse gas emissions are calculated using the global warming potentials according to the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007, TS 2).

This review of greenhouse gas emissions was carried on by Treeze Ltd. on mandate from Swisscom

Source of data

- The data for the calculation of scope 3 GHG emissions is based on one hand on:
 - annual reports, CDP reports, environmental reports and CO₂ footprint balances of suppliers or of their products.
 - LCA data from previous LCA projects at Swisscom
- In three of the essential components and services (DSL equipment, IPTV and radio as well for 'construction services'), information on GHG emissions was available (Schori & Frischknecht, 2012).
- In addition, CDP reports of Huawei (2013), Alcatel-Lucent (2013), Cisco (2013), Nokia (2013), Ericsson (2013) and environmental reports of Apple (2011, 2012a, b) were available.
- On the other hand, interviews were conducted to better understand the structure and content of the hotspots and model. Swisscom supplied the purchasing volumes and expenditure of the divisions and their subcategories for the years 2009 until 2012.

Method

- CO₂ intensities of subcategories are calculated:
 - Ex: Calculation of CO₂ intensity subcategory DSL equipment and supplies, reference year 2010

DSL Geräte und Zubehör	Einheit	Menge	Kommentar
CO ₂ -Emission	kt CO ₂ -eq	12.11	Schori und Frischknecht, 2012, Vereinfachte Klimabilanz von Handelswaren und Diensten Swisscom, Präsentation, interne Projektnummer 335
Einkaufsvolumen	CHF	83'553'894	Swisscom, Warengruppen, Bezugsjahr 2010
CO ₂ -Intensität	kg CO ₂ -eq/CHF	0.14	

- Extrapolation: from these hotspots a CO₂ intensity weighted by the volume of purchases was calculated for the category of merchandise.

By means of these CO₂ greenhouse gas emissions, intensities of all other balance sheet items of merchandise were determined.

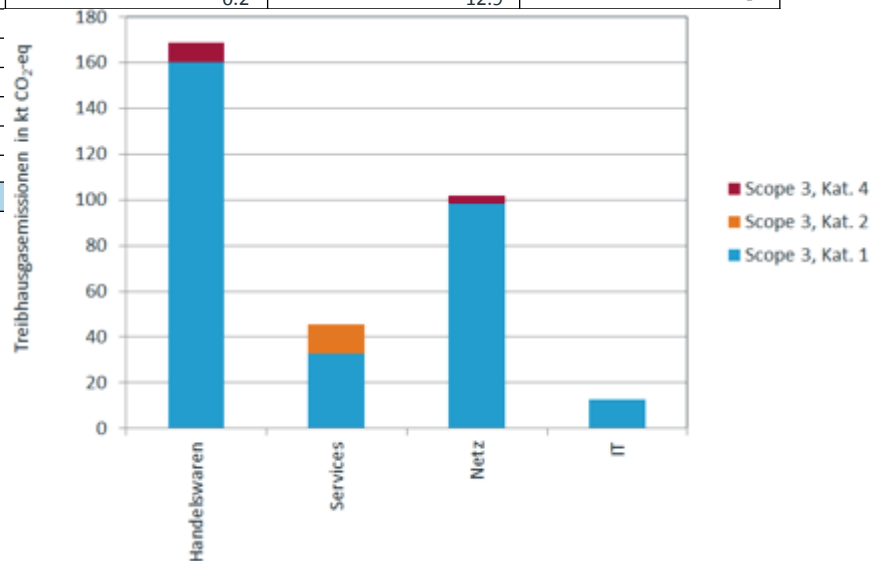
NB The emissions of the hotspots have not been recalculated using the weighted average intensity, but actually determined by the effective intensities.

Results: CO₂ emissions of the supply chain

Bezugsjahr

2014

	Treibhausgasemissionen total pro Subkategorie	Treibhausgasemissionen Kat. 1	Treibhausgasemissionen Kat. 2	Treibhausgasemissionen Kat. 4
	kt CO ₂ -eq	kt CO ₂ -eq	kt CO ₂ -eq	kt CO ₂ -eq
Handelswaren	168.6	160.5	-	8.1
1. Mobile phones	93.6	89.4	-	4.3
2. Television access equipment	25.5	24.8	-	0.8
3. DSL access equipment and accessories	13.7	12.9	-	0.8
4. Maintenance or support fees	8.0	7.6	-	0.4
Übrige Handelswaren	27.7	25.8	-	1.9
Services	45.4	32.6	12.9	-
Facility management	1.1	1.1	-	-
Technische Infrastruktur und Interieur	13.0	0.2	12.9	-
Marketing Services	26.1			
External support	3.2			
Services nec	2.0			
Netz	102.0			
IT	12.8			
Summe	328.8			



CO₂ emissions of the supply chain.

Externally verified and published in the climate report of Swisscom

Measures to reduce scope 3 emissions

Supply chain

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Swisscom, GCR-CR, 58th LCA Tagung ZH 31.03.2015

- Concentration of 10 Telcos
- Standardization, coordination of audits, exchange, progress monitoring
- Interpretation of audit results, provision of Corrective Actions (CAP)
- Basis: JAC own process, Checklist and Guidelines, conduct audits by external audit firms
- JAC represents a purchasing volume of about 150 billion / year; common action possible
- Promote dialogue with suppliers (JAC CSR Forum)

Measures to reduce scope 3 emissions



Examples:

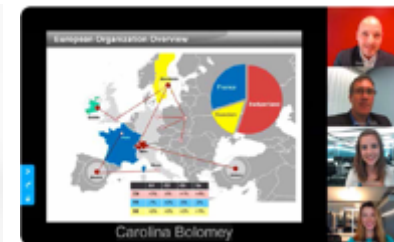
- 1) Data center Wankdorf – most efficient data center of Switzerland, with rain water cooling and waste heat recovery
- 2) New TV Box - 40% less power consumption than previous TV box
- 3) Lync and Vida – Reduction of travel to meetings



RZ Wankdorf



TV-Box



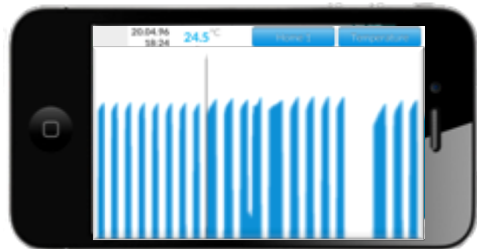
Vidia

tiko (provided by Swisscom Energy Solutions)

Innovative and reliable solutions for demand response and load management

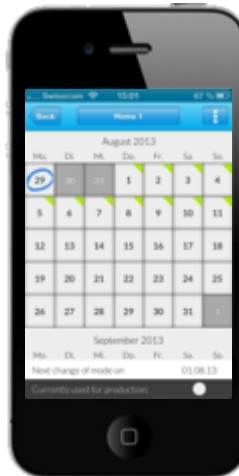
Retain Control

- With tiko you have full transparency over your heating energy consumption. You can also compare your consumption to others.



Save energy

- With Eco Mode you can reduce your daily heating time by up to 60% and simply save energy.



Get alarms

- If your device operates unusually, you will be informed via SMS or email so you can react quickly.



tiko heating systems become effective storage systems

The intelligent storage network of tiko can react to these fluctuations. That way we can support the integration of additional renewable energies for power supply.

The background of the slide is a dense, interconnected network of nodes and lines. The nodes are represented by various circular icons in shades of blue, green, purple, and grey. These icons include symbols for mobile phones, laptops, servers, Wi-Fi signals, and people, representing different types of IoT devices and their interactions. The lines connecting the nodes form a complex web, suggesting a highly connected network.

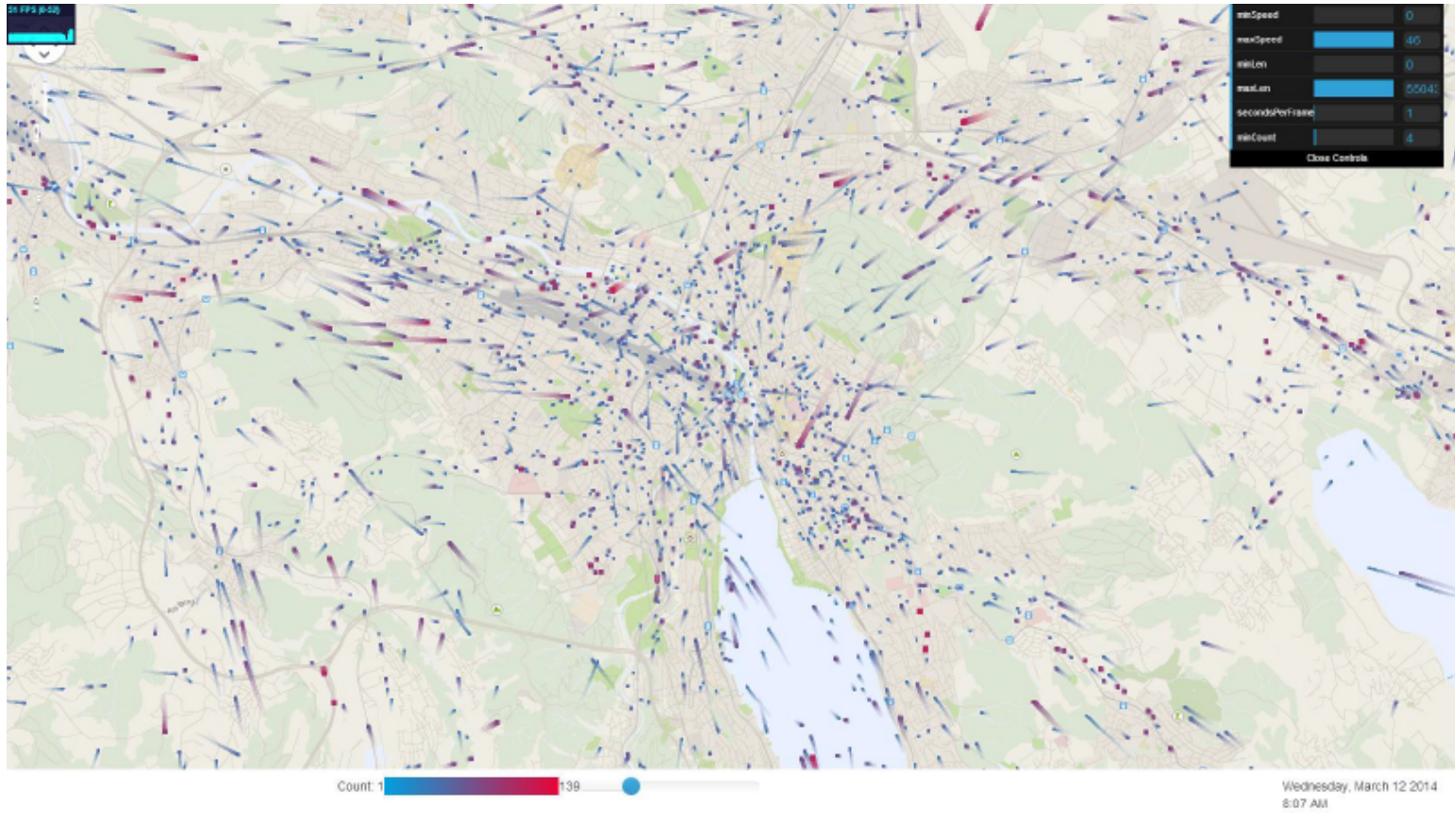
Internet of things

Big Data for Good

Transportation means detection and "real time" analysis

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